

Course Descriptions

COURSE ABBREVIATIONS

The abbreviation preceding the course number identifies the department offering the course. The first digit in the course number indicates the recommended class level of the course. The digit after the dash in the course number denotes the credit-hour value of the course. The 1-credit lecture/recitation period is 50 minutes long. A student who is enrolled in a 3-semester hour course will attend class for 150 minutes per week during a 16-week term. A 3-semester hour course will require six to nine hours of work each week outside of class. A laboratory credit includes two to four hours per week in the laboratory, drafting room, or field. Unless the course descriptions specify laboratory work, classes will consist of lectures and discussions.

Level of Courses	Student Classification
1000–2000	Lower-division
3000–4000	Upper-division
5000	Graduate students or qualified seniors who have instructor's or dean's permission
6000	Graduate degree students
7000	Master's and PhD students
8000	PhD students

Abbreviations are used in the course descriptions:

<i>Coreq.</i>	<i>Corequisite</i>
<i>Hrs.</i>	<i>Hours</i>
<i>Lect.</i>	<i>Lecture</i>
<i>Rec.</i>	<i>Recitation</i>
<i>Sem.</i>	<i>Semester</i>
<i>Wk.</i>	<i>Week</i>

Graduate School policy permits specifically approved courses to be offered concurrently at the 4000 and 5000 levels. Students should expect work at the graduate (5000) level to involve demonstration of greater maturity and critical skills than at the undergraduate level (4000).

ACCT: Accounting (Business)

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. Semester Hours: 3. Prerequisite: MATH 1070 and sophomore standing. A grade of 'C' or better is required in this course to proceed to ACCT 2220.

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. Semester Hours: 3. When Offered: *Fall, Spring, Summer*. Prerequisite: ACCT 2200 with a grade of 'C' or better and sophomore standing. Strictly enforced.

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 accounting information to make decisions focusing on cost behavior analysis, budgeting and product costing in entrepreneurial and arts related businesses. Semester Hours: 3. Prerequisite: MATH 1070 or 1110.

ACCT 3054 - Accounting Systems and Data Processing. The design and analysis of accounting information systems, with special emphasis on computers and computer programming, and the role of accounting in the role of accounting in the management process. Must earn a grade of 'C' or better to qualify for graduation. Semester Hours: 3. Prerequisite: Completion of ACCT 2220 and ISMG 2050 with a grade of 'C' or better (Strictly enforced).

ACCT 3220 - Intermediate Financial Accounting I. An intensive analysis of generally accepted accounting principles, accounting theory and preparation of annual financial statements for public corporations. Must complete course with a 'C' to qualify in graduation requirements. Semester Hours: 3. Prerequisite: Completion of ACCT 2220 with a grade of 'C' or better. Strictly enforced.

ACCT 3230 - Intermediate Financial Accounting II. Selected topics not covered in ACCT 3220. Must complete course with a grade of 'C' to qualify in graduation requirements. Semester Hours: 3. When Offered: *Fall, Spring*. Prerequisite: ACCT 3220, completed with a grade of a 'C' or better. Strictly enforced.

ACCT 3320 - Intermediate Cost Accounting. Cost analysis for purposes of control and decision making. Analysis of cost behavior, role of accounting in planning and control, and managerial uses of cost accounting data. Includes use of computer assisted decision models. Must receive a 'C' grade to qualify in graduation requirements. Semester Hours: 3. When Offered: *Fall, Spring, Summer*. Prerequisite: ACCT 2220, ACCT 3054 and DSCI 2010 completed with a grade of 'C' or better. Strictly enforced.

ACCT 3939 - Internship/Cooperative Education. Supervised experiences involving the application of concepts and skills in an employment situation. Semester Hours: 1 to 3. Prerequisite: Senior standing and 3.5 GPA.

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). Semester Hours: 3. Prerequisite: ACCT 2200 and ACCT 2220 or equivalent. Must have a 'C' or better in courses. Strictly enforced. Note: Students who have taken ACCT 3220 or ACCT 3230 (or equivalent) may not take this course.

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). Semester Hours: 3. When Offered: *Spring*. Prerequisite: ACCT 2200 and 2220 or equivalent with a grade of a 'C' or better. Note: Students who have taken ACCT 3320 or its equivalent may not take this course.

ACCT 4240 - Advanced Financial Accounting. Advanced financial accounting concepts and practices with emphasis on accounting for partnerships, business combinations and consolidations. Semester Hours: 3. Prerequisite: Completion of ACCT 3230 with a grade of a 'C' or better. Strictly enforced. Cross-listed with: ACCT 6024.

ACCT 4330 - Managerial Accounting Problems and Cases. Critical analysis of advanced topics in managerial accounting. Considerable use of cases and current readings. Semester Hours: 3. Prerequisite: Completion of ACCT 3320 with a grade of 'C'. Strictly enforced.

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. Semester Hours: 3. When Offered: *Spring*. Prerequisite: Completion of ACCT 3220 with a grade of 'C' or better. Strictly enforced. Cross-listed with: ACCT 6370 and INTB 6370.

ACCT 4410 - Income Tax Accounting. Provisions and procedures of federal income tax laws and requirements affecting individuals and business organizations, including problems of tax planning and compliance. Semester Hours: 3. When Offered: *Fall, Spring*. Prerequisite: ACCT 3054 or ACCT 3220 completed with a grade of 'C' or better. Strictly enforced. Cross-listed with: ACCT 6140. Note: Students cannot receive credit for both ACCT 4410 and ACCT 6140.

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. Semester Hours: 3. Prerequisite: Completion of ACCT 3220 with a grade of 'C' or better strictly enforced. Cross-listed with: ACCT 6520.

ACCT 4620 - Auditing. Generally accepted auditing standards and the philosophy supporting them; auditing techniques available to the independent public accountant. Pertinent publications of the AICPA reviewed. Semester Hours: 3. When Offered: *Fall, Spring*. Prerequisite: ACCT 3054 and ACCT 3220 each course must be completed with a grade of a 'C' or better. Strictly enforced. Cross-listed with: ACCT 6020.

ACCT 4780 - Accounting IS Processes and Control. 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. Semester Hours: 3. Prerequisite: Completion of ACCT 2200, ACCT 2220 and ACCT 3054 with a grade of 'C' or better (Strictly enforced). Cross-listed with: ACCT 6510, ISMG 4780, and ISMG 6510.

ACCT 4800 - Accounting for Government and Nonprofit Organizations. Planning and control of government and nonprofit organizations. Includes program budgets, responsibility accounting and fund accounting. Semester Hours: 3. Prerequisite: Completion of ACCT 3220 with a grade of 'C' and permission of instructor, strictly enforced. Cross-listed with: ACCT 6080.

ACCT 4840 - Independent Study. Semester Hours: 1 to 8.

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. Semester Hours: 3. When Offered: *Fall, Spring, Summer*. Prerequisite: Permission of instructor. Cross-listed with: ACCT 6015.

ACCT 4950 - Special Topics. Research methods and results, special topics and professional developments in accounting. Consult the current 'Schedule Planner' for semester offerings. Semester Hours: 3. Prerequisite: Varies according to topic and instructor requirements.

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. Semester Hours: 3. Prerequisite: Permission of instructor. Cross-listed with: ACCT 4915. Note: This class is rarely offered.

ACCT 6020 - Auditing. Generally accepted auditing techniques and the philosophy supporting them; auditing techniques available to the independent public accountant. Pertinent publications of the AICPA reviewed. Semester Hours: 3. When Offered: *Fall, Spring*. Prerequisite:

ACCT 3054 and ACCT 3220 (or equivalent) with a 'C' or better, strictly enforced. Cross-listed with: ACCT 4620.

ACCT 6024 - Advanced Financial Accounting. Advanced financial accounting concepts and practice with emphasis on accounting for partnerships, business combinations and consolidations. Semester Hours: 3. When Offered: *Fall, Spring*. Prerequisite: ACCT 3230 or equivalent. Cross-listed with: ACCT 4240.

ACCT 6030 - Financial Accounting. Accelerated 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). Semester Hours: 3. When Offered: *Fall*. Prerequisite: BUSN 6550 or equivalent. Note: Students who have taken ACCT 3220 or ACCT 3230 (or equivalent) may not take this course.

ACCT 6033 - Advanced Managerial Accounting. Critical analysis of advanced topics in managerial accounting. Semester Hours: 3. Prerequisite: ACCT 3220. Note: This class is rarely offered.

ACCT 6070 - Management Accounting. Designed to provide graduate business 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). Semester Hours: 3. Prerequisite: BUSN 6550 or equivalent. Note: This class is rarely offered. Students who have taken ACCT 3320 or its equivalent may not take this course.

ACCT 6080 - Accounting for Government and Nonprofit Organizations. Planning and control of government and nonprofit organizations. Includes program budgets, responsibility accounting and fund accounting. Semester Hours: 3. When Offered: *Spring*. Prerequisite: ACCT 3220 or BUSN 6550 or permission of instructor. Cross-listed with: ACCT 4800.

ACCT 6140 - Tax Planning for Managers. A Federal tax survey course with an emphasis on tax planning for the graduate student who wants to understand the impact of taxation on individual and business transactions. Course materials emphasize the application of individual, partnership and corporate tax principles to the decision making process. Semester Hours: 3. When Offered: *Fall, Spring*. Prerequisite: BUSN 6550 or equivalent. Cross-listed with: ACCT 4410. Note: Students cannot receive credit for both ACCT 4410 and 6140.

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. Semester Hours: 3. When Offered: *Fall, Spring*. Prerequisite: ACCT 3230 and ACCT 4620 or ACCT 6020 or current concurrent registration in ACCT 4620 or ACCT 6020.

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. Semester Hours: 3. When Offered: *Fall, Spring*. Prerequisite: ACCT 3320 or ACCT 6070 (or equivalent).

ACCT 6280 - Professional Judgment and Decision Making in Accounting. Accounting is a process of providing economic information useful for decision making. This course provides (1) an opportunity to develop professional judgment skills, and (2) tools to make better decisions through an active, case-oriented learning method. Cases involve representative problems professional accountants face in financial reporting, audit, tax, business services, and practice management, including ethical conflicts and technical decisions. Participants learn to apply a structured decision model, incorporating critical, creative, evaluative and reflective judgment processes and learn how to recognize and avoid common decision errors and biases. Semester Hours: 3. Prerequisite: ACCT 4620 (or equivalent) or permission of instructor.

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. Semester Hours: 3. Prerequisite: BUSN 6550 or equivalent. Note: This class is rarely offered.

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. Semester Hours: 3. When Offered: *Fall*. Prerequisite: BUSN 6550 or equivalent.

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. Semester Hours: 3. When Offered: *Fall*. Prerequisite: ACCT 3230, ACCT 4620, ACCT 6020 or permission of instructor.

ACCT 6360 - Fraud Examination. This course examines the theories and methods of fraud examination in the context of auditing both for-profit and not-for-profit entities. Topics include identification of weaknesses in accounting controls, analytical review, and forensic accounting methods. Semester Hours: 3. Prerequisite: ACCT 4620 or ACCT 6620.

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. Semester Hours: 3. When Offered: *Spring*. Prerequisite: BUSN 6550 or equivalent. Cross-listed with: INTB 6370 and ACCT 4370. Note: Students cannot receive credit for both ACCT 6370 and INTB 6370.

ACCT 6380 - Forensic Accounting. An examination of investigative auditing, fraud auditing, litigation support, and economic quantification of damages. Semester Hours: 3.

ACCT 6390 - International Taxation. Examines U.S. federal tax law consequences of doing business abroad, foreign source income, tax relief for employees stationed abroad, transfer pricing, and tax planning for multinational businesses. Semester Hours: 3.

ACCT 6410 - Advanced Tax For Individuals. An advanced federal individual income tax course stressing the methodology used in tax research and in tax planning. Includes use of specialized tax software to address compliance and planning issues by solving complex case-type real-life situations. Semester Hours: 3. When Offered: *Spring*. Prerequisite: ACCT 4410 or 6140 (or equivalent).

ACCT 6420 - Advanced Tax for Businesses. An advanced federal tax course stressing research and tax planning issues of corporate and partnership entities. Includes use of specialized tax software to address compliance and planning issues by solving complex case-type real-life situations. Semester Hours: 3. When Offered: *Fall*. Prerequisite: ACCT 4410 or 6140 (or equivalent).

ACCT 6430 - International Taxation. International taxation focuses on the U.S. taxation of international transactions, including a review of the taxation systems in several countries. Includes different forms of doing business in several countries (e.g. in the U.S., would include sole proprietorship, partnerships, limited liability companies and corporations), the ease of operating each form of business, identifying how business owners are protected from the business liabilities and risks and the different, if any, tax treatments afforded each form of business. Other topics include a review of tax rates, consumption regimes (e.g. value-added taxes), the taxation of U.S. expatriates, the tax consequences of repatriating profits to the U.S., the application of any tax treaties with the U.S. and related tax matters. Semester Hours: 3. When Offered: *Summer*.

ACCT 6450 - Research Problems in Income Tax Accounting. Study of the methodology used in tax research and in tax planning, together with a study of some aspects of tax administration and tax practice and of some aspects of the current law and proposals for its revision. Semester Hours: 3. Prerequisite: ACCT 4410 or ACCT 6410 or permission of instructor. Note: This class is rarely offered.

ACCT 6460 - Advance Topics in Taxation. Course will focus on

advanced topics in tax planning for closely held businesses. Format: lectures by expert tax professionals and questions/discussion on various topics with emphasis on current issues and trends. Semester Hours: 3. Prerequisite: ACCT 6140.

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. Semester Hours: 3. Prerequisite: BUSN 6550 or equivalent.

ACCT 6510 - Accounting IS Processes and Control. The course is designed to develop knowledge and skills used to understand and evaluate corporatizing 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. Semester Hours: 3. When Offered: *Fall*. Prerequisite: ACCT 3054 or ISMG 3000 or equivalent professional experience. Cross-listed with: ACCT 4780, ISMG 4780 and 6510.

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. Semester Hours: 3. When Offered: *Spring*. Prerequisite: BUSN 6550 or ACCT 3220 or permission of instructor. Cross-listed with: ACCT 4520.

ACCT 6620 - Advanced Auditing. Development of auditing as a profession, including evolution of standards and audit reports. Historical and contemporary literature in the field reviewed. Semester Hours: 3. When Offered: *Fall, Spring*. Prerequisite: ACCT 4620 or ACCT 6020 or equivalent.

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. Semester Hours: 3. Prerequisite: Varies according to topics and instructor requirements.

ACCT 6840 - Independent Study. Permission of instructor required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Semester Hours: 1 to 8.

ACCT 6939 - Internship/Cooperative Education. Supervised experiences involving the application of concepts and skills in an employment situation. Semester Hours: 1 to 3. Prerequisite: 15 semester hours for MS students and 21 hours for MBA students and a cumulative 3.2 GPA.

ACCT 6950 - Master's Thesis. Semester Hours: 1 to 8.

ANTH 1000 - Anthropology: Past and Present. Anthropology is the study of humankind in all of its diversity and complexity. Anthropologists have traditionally approached the study from four distinct perspectives: biological, cultural, linguistic and archaeological. This course considers how anthropologists study humankind from these four perspectives and the robust picture of humanity that emerges. Semester Hours: 3.

ANTH: Anthropology (Liberal Arts and Sciences)

ANTH 1111 - Freshman Seminar. Semester Hours: 1 to 3.

ANTH 1302 - Introduction to Archaeology: SS3. 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. Semester Hours: 4. Note: Three hours of lecture and a two-hour lab each week.

ANTH 1303 - Introduction to Biological Anthropology: SC1.

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. Semester Hours: 4. Note: Three hours of lecture and a two-hour lab each week.

ANTH 2102 - Culture and the Human Experience: SS3. 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. Semester Hours: 3.

ANTH 2700 thru 2790 - Current Topics in Anthropology.

Introductory level course offering a flexible format for dealing with a specific topic of special interest in anthropology, such as aging; race and prejudice; science and human values; warfare and aggression; ethnicity; cultural diversity through film, myth and folklore; anthropological approaches to world problems; and Colorado prehistory. Semester Hours: 3. Note: Specific topic published in the Schedule Planner.

ANTH 2840 - Independent Study. Semester Hours: 1 to 3.

ANTH 2939 - Internship/Cooperative Education. Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: 15 hours of 2.75 GPA.

ANTH 3000 - Globalization, Migration, Transnationalism.

Examines the cultural dynamics of globalization, including: global capitalist transformations, development and the role of aid organizations, international migration, the maintenance of transnational ties, and cross-border social formations. Reviews theories of globalization as well as their applied implications. Semester Hours: 3. Prerequisite: Upper-division undergraduate standing or permission of instructor. Note: Introductory course in Anthropology.

ANTH 3006 - Development, Environment and Culture. Investigates theories, issues and problems in development and its relationship to social and environmental problems. Considers the connections between development and underdevelopment, the success and failures of development policies and five case studies in development. Semester Hours: 3. Prerequisite: Anthropology and microeconomics or macroeconomics.

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. Semester Hours: 3. Prerequisite: Introductory course in cultural anthropology.

ANTH 3121 - Language 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. Semester Hours: 3. Prerequisite: Introductory course in cultural anthropology.

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. Semester Hours: 3.

ANTH 3200 - Human Migration: Nomads, Sojourners, and Settlers.

Explores the relationship between human migration, voluntary and forced and social organization and culture in the modern world. Case studies include pastoralists, foragers, refugees, immigrants, sojourners and settlers and their impact on health, culture, identity, ethnicity, tradition and nationality. Semester Hours: 3. Cross-listed with: HBSC 3200.

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. Semester Hours: 3.

Prerequisite: Introductory course in archaeology.

ANTH 3310 - Colorado Archaeology. A survey of the prehistoric and protohistoric peoples of the five major culture areas of Colorado: the Four Corners, Great Basin, Rocky Mountains, High Plains, and Front Range. Of special interest will be the study of the initial peopling of Colorado, economic and political organization, ethnic interaction and the history of archaeological work in the region. Semester Hours: 3. Prerequisite: ANTH 1302.

ANTH 3330 - Topics in Archaeology. A flexible format for addressing specific topics in archaeology. Examples include the archaeology of the Great Plains, the Mediterranean Region, etc. Semester Hours: 3.

Prerequisite: An introductory course in archaeology.

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. Semester Hours: 3.

ANTH 3420 - Anthropology and Politics of the Global Tobacco Epidemic. Examines anthropological perspectives on tobacco, tobacco-related health policymaking, and cigarette manufacturers and leaf-buying companies in the global tobacco epidemic. Semester Hours: 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. Semester Hours: 3. Prerequisite: ANTH 1303.

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. Semester Hours: 3. Prerequisite: ANTH 1303.

ANTH 3910 - Cross-Cultural Field Experience. An intensive contact with another culture through supervised travel in the U.S. or in a country other than the United States. Written reports required. Semester Hours: 3 to 6. Note: Class includes pre-trip orientation lectures; in-country lectures by local resource people and supervising UC Denver faculty.

ANTH 3939 - Internship/Cooperative Education. Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: Junior standing and 2.75 GPA.

ANTH 4000 - 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. Semester Hours: 1 to 4. Prerequisite: Permission of instructor. Cross-listed with: ANTH 5000.

ANTH 4010 - Global Health Studies I: The Biocultural Basis of 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. Semester Hours: 3. Prerequisite: Upper division and/or graduate standing. Cross-listed with: ANTH 5014, HBSC 4010 and 5010. Note: The first of a two-course sequence in medical anthropology and global health studies; the second is ANTH 4020.

ANTH 4020 - 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 inter-relationship of health, foreign policy and global security. Semester Hours: 3. Prerequisite: Upper division and/or graduate standing. Cross-listed with: ANTH 5024, HBSC 4020 and 5020.

ANTH 4030 - 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. Semester Hours: 3. Prerequisite: Introductory anthropology and/or biology. Cross-listed with: ANTH 5030.

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. Semester Hours: 3. Prerequisite: Introductory course in anthropology. Cross-listed with: ANTH 5040.

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. Semester Hours: 3. Prerequisite: College-level algebra or its equivalent. Cross-listed with: ANTH 5053.

ANTH 4060 - Evolutionary Medicine. Applies evolutionary principles to an understanding of human health and illness. The view complements perspectives on health and disease emanating from biological and social sciences, but considers the health or disease process from the perspective of pathogen and host, current and previous environments, and various phases of the life cycle. Semester Hours: 3. Prerequisite: ANTH 1303. Cross-listed with: ANTH 5060, HBSC 4060 and 5060.

ANTH 4070 - 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. Semester Hours: 3. Prerequisite: Upper division standing and permission of instructor. Cross-listed with: ANTH 5070.

ANTH 4080 - 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. Semester Hours: 3. Prerequisite: HBSC/ANTH 4010/5014, HBSC/ANTH 4020/5024, HLTH 6070 or equivalent. Cross-listed with: ANTH 5080, HBSC 4080 and 5080.

ANTH 4090 - Political Economy of Drug Culture. An anthropological study of how illegal drug use impacts the social, political, economic and medical sectors of any community. Examines the interplay between these sectors and drug users through the lens of political economy. Semester Hours: 3. Prerequisite: ANTH 2102. Cross-listed with: ANTH 5090.

ANTH 4101 - Applied Statistics Using SAS and SPSS I. Teaches the practical statistical tools social scientists use to analyze real-world problems. Split into four modules, each taught by a different instructor. The first module introduces SAS and SPSS; modules 2-4 are problem-based and cover topics such as ANOVA, multivariate regression and cluster analysis. Semester Hours: 3. Prerequisite: Any statistics course.

ANTH 4102 - Applied Statistics Using SAS and SPSS II. (Continuation of ANTH 4101.) Students use the skills they learned in the previous semester to analyze a social issue of their choosing and present their findings. Semester Hours: 3. Prerequisite: ANTH 4101. Note: In addition to lectures, weekly one-on-one meetings between faculty and students are required.

ANTH 4130 - 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. Semester Hours: 3. Prerequisite: ANTH 2102 or equivalent. Cross-listed with: ANTH 5130, RLST 4010, 5010.

ANTH 4140 - Principles of Economic Anthropology. Both formalist and substantivist perspectives are used to examine economic organization in a cross-cultural perspective. Special attention is focused on gift-giving in pre-stratified societies, craft specialization in middle-range societies, specialized economies in non-market-oriented ancient states and economic organization in modern world systems. Semester Hours: 3. Prerequisite: ANTH 2102 or equivalent. Cross-listed with: ANTH 5140.

ANTH 4150 - 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. Semester Hours: 3. Prerequisite: ANTH 1303 and 2102 or equivalent. Cross-listed with: ANTH 5150.

ANTH 4160 - Topics in Language, Society and Culture. A changing set of topics that address the nature of language in society and analysis of 'languaculture.' Topics may include: language and power, language and identity, conversational analysis, language and self, language socialization, nonverbal communication, evolution of language, ethnopoetics, language as social action, orality and literacy, linguistic hygiene, language and gender, discourse analysis, deception and truth. Semester Hours: 3. Prerequisite: ANTH 2102 or equivalent. Cross-listed with: ANTH 5160.

ANTH 4170 - 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. Semester Hours: 3. Prerequisite: ANTH 2102 or equivalent. Cross-listed with: ANTH 5170.

ANTH 4180 - 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. Semester Hours: 3. Prerequisite: ANTH 2102 or equivalent. Cross-listed with: ANTH 5180.

ANTH 4190 - Ethnicity and Nationalism. Anthropological research on ethnicity and nationalism throughout the world, in both simple and complex societies; theoretical and ethnographic research will be mutually reinforcing. Semester Hours: 3. Prerequisite: Senior or graduate standing, a course in anthropology, or permission of instructor. Cross-listed with: ANTH 5190.

ANTH 4200 - 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. Semester Hours: 3. Prerequisite: ANTH 2102 or equivalent. Cross-listed with: ANTH 5200.

ANTH 4210 - Archaeology of the American Southwest. Considers the origins, characteristics, and interrelationships of the major culture areas in the American Southwest, including the Anasazi, Hohokam, Mogollon, Sinagua and Northern Mexico. Semester Hours: 3. Prerequisite: Introduction to archaeology. Cross-listed with: ANTH 5210.

ANTH 4220 - Community in Global Context. Presents the community study method from the perspective of anthropology and as a widely applicable research technique in planning, development and other areas of public affairs. Also includes analyses of case studies and student field research. Semester Hours: 3. Prerequisite: Introductory course in cultural anthropology. Cross-listed with: ANTH 5220.

ANTH 4250 - Culture Change in the Modern World. Processes and dilemmas of culture change using macro-level theories as well as models of change for communities and individuals. Conceptual and practical problems of modernity relating to globalization, urbanization, environmental degradation and technological change. Semester Hours: 3. Prerequisite: At least one course in cultural anthropology.

ANTH 4260 - 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. Semester Hours: 3. Prerequisite: ANTH 1303 or equivalent. Cross-listed with: ANTH 5260.

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. Semester Hours: 3. Prerequisite: Introduction to archaeology. Cross-listed with: ANTH 5320.

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. Semester Hours: 3. Prerequisite: ANTH 1302. Cross-listed with: ANTH 5330.

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. Semester Hours: 3. Prerequisite: ANTH 1302. Cross-listed with: ANTH 5380.

ANTH 4390 - Laboratory Methods in Archaeology. Methods and theories of archaeology are used to scrutinize the collection and interpretation of data and the relationships of archaeology to other disciplines. Core materials emphasize the critique of basic archaeological assumptions. Semester Hours: 3. Prerequisite: ANTH 1302 or equivalent. Note: Course content varies slightly each time it is offered, in response to student needs and the availability of projects (e.g., laboratory work, urban excavation, survey and mapping). May be repeated for credit when topics change.

ANTH 4400 - 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. Semester Hours: 3. Prerequisite: ANTH 1302 or equivalent. Cross-listed with: ANTH 5400.

ANTH 4450 - 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. Semester Hours: 3. Prerequisite: ANTH 4070, ANTH 4170 and graduate standing or permission of instructor. Cross-listed with: ANTH 5450.

ANTH 4460 - 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. Semester Hours: 3. Prerequisite: ANTH 4450 or permission of instructor. Cross-listed with: ANTH 5460.

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. Semester Hours: 3. Prerequisite: ANTH 1303 and 3512 or equivalent. Cross-listed with: ANTH 5500.

ANTH 4520 - Human Biological Variation. Human biological variation and adaptation, considered from an evolutionary perspective. How we measure and classify human variation often affects the conclusions we draw. This course considers the causes and maintenance of human variability and adaptability, including cultural and social factors in the genesis and maintenance of normal and abnormal traits.

Semester Hours: 3. Prerequisite: Introductory course in biological or physical anthropology. Cross-listed with: ANTH 5520.

ANTH 4540 - Forensic Anthropology. The goals of this course are to provide detailed knowledge of the human skeleton, as well as the methods employed in determination of biological characteristics that can predict an individual's identity. The application of human osteological knowledge to forensic and anthropological problems and research are discussed in the context of a 'hands-on' session during each lecture period. Semester Hours: 3. Prerequisite: ANTH 1303 or equivalent. Cross-listed with: ANTH 5540.

ANTH 4550 - 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. Semester Hours: 3. Prerequisite: ANTH 1303 or equivalent. Cross-listed with: ANTH 5550.

ANTH 4560 - Human Ecology. Studies demographic and ecological variables as they relate to human populations. Aspects of natural selection, overpopulation and environmental deterioration are considered. Semester Hours: 3. Prerequisite: Introductory course in biological or physical anthropology. Cross-listed with: ANTH 5560.

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. Semester Hours: 3. Prerequisite: ANTH 1302 or equivalent. Cross-listed with: ANTH 5570.

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. Semester Hours: 3. Prerequisite: ANTH 1303 or equivalent. Cross-listed with: ANTH 5580.

ANTH 4590 - Primate Behavior. Studies nonhuman primate behavior with emphasis on understanding social behavior, ecology and issues related to human evolution. Semester Hours: 3. Prerequisite: ANTH 1303 or equivalent. Cross-listed with: ANTH 5590.

ANTH 4640 - 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. Semester Hours: 3. Prerequisite: ANTH 1303. Cross-listed with: ANTH 5640.

ANTH 4730 - Peoples and Cultures of Sub-Saharan Africa. Covers various types of societies and civilizations that have existed in sub-Saharan Africa. Explores foragers, pastoralists, agricultural societies, chiefdoms, kingdoms, and empires, as these emerged and interacted with each other. Details their ideas and social orders, including the following topics: race, ethnicity, kinship, politics, economics, religion, magic, witchcraft, sorcery, marriage, age, gender, stratification, art, literature and oral traditions. Also addresses the impact of colonialism, the rise of nations, changes in the post-colonial period, warfare, and the impact of globalism on Africa today. Semester Hours: 3. Prerequisite: Upper division standing. Cross-listed with: ANTH 5730, ETST 4730.

ANTH 4740 - Ethnography of Mexico and Central America. Geographic affiliations, culture, history, traditional ways of life and culture change in Mexico and Central America. Semester Hours: 3. Cross-listed with: ANTH 5740.

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. Semester Hours: 3. Prerequisite: Junior or senior standing and course work equivalent to a minor in anthropology. Cross-listed with: ANTH 5810. Note: Centers on the critical examination and discussion of presentations made by department faculty and graduate students.

ANTH 4840 - Independent Study. Directed study based on a specific subfield of anthropology. Semester Hours: 1 to 3. Note: Permission of instructor required.

ANTH 4910 - 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. Semester Hours: 3 to 6. Prerequisite: Introductory course in archaeology. Cross-listed with: ANTH 5910.

ANTH 4995 - Travel Study. A flexible format that permits courses to be taught in various areas of the world. Cultures of the Himalayas. Concerned broadly with contemporary Himalayan culture. Focuses on Tibetan cultures and the Tibetan diaspora, and the Nepalese (Newari) culture of the Katmandu Valley. The goals for this course are: to acquaint the student with social, political and cultural features of this part of the world; to teach, through directed field experiences, how cultural anthropology is practiced; to understand how the process of tourism differs from the study of anthropology; how tourism, however it is practiced, changes in fundamental ways those subject to it. The Arts of Self and Society in Contemporary China. An intensive introduction to contemporary conditions and issues in the People's Republic of China, including social relations, popular culture, eating practices, religious practices and everyday life. Uses a combination of readings, lectures, field trips to local sites and ethnographic field projects. Usually situated in Kunming, Yunnan province, in southwest China, but the location may vary. Semester Hours: 3 to 9. Prerequisite: Permission of instructor. Cross-listed with: ANTH 5995. Note: Students enroll additionally in Chinese language classes at levels from beginning to advanced. .

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. Semester Hours: 1 to 6. Prerequisite: Permission of instructor. Cross-listed with: ANTH 4000.

ANTH 5014 - Global Health Studies I: The Biocultural Basis of 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. Semester Hours: 3. Prerequisite: Upper division and/or graduate standing. Cross-listed with: ANTH 4010, HBSC 4010 and 5010. Note: The first of a two-course sequence in medical anthropology and global health studies; the second is ANTH 5024.

ANTH 5024 - 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 inter-relationship of health, foreign policy and global security. Semester Hours: 3. Prerequisite: Upper division and/or graduate standing. Cross-listed with: ANTH 4020, HBSC 4020 and 5020.

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. Semester Hours: 3. Prerequisite: Introductory anthropology and/or biology and graduate standing. Cross-listed with: ANTH 4030.

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. Semester Hours: 3. Prerequisite: Introductory course in anthropology and graduate standing. Cross-listed with: ANTH 4040.

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.

Semester Hours: 3. Prerequisite: College-level algebra and graduate standing. Cross-listed with: ANTH 4050.

ANTH 5060 - Evolutionary Medicine. Applies evolutionary principles to an understanding of human health and illness. The view complements perspectives on health and disease emanating from biological and social sciences, but considers the health or disease process from the perspective of pathogen and host, current and previous environments, and various phases of the life cycle. Semester Hours: 3. Prerequisite: ANTH 1303. Cross-listed with: ANTH 4060, HBSC 4060 and 5060.

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. Semester Hours: 3. Prerequisite: Upper division standing and permission of instructor. Cross-listed with: ANTH 4070.

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. Semester Hours: 3. Prerequisite: HBSC/ANTH 5014/4010, HBSC/ANTH 5024/4020, HLTH 6070 or equivalent. Cross-listed with: ANTH 4080, HBSC 5080 and 4080.

ANTH 5090 - Political Economy of Drug Culture. An anthropological study of how illegal drug use impacts the social, political, economic and medical sectors of any community. Examines the interplay between these sectors and drug users through the lens of political economy. Semester Hours: 3. Prerequisite: ANTH 2102. Cross-listed with: ANTH 4090.

ANTH 5130 - 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. Semester Hours: 3. Prerequisite: Background in cultural anthropology and graduate standing. Cross-listed with: ANTH 4130, RLST 4010, 5010.

ANTH 5140 - Principles of Economic Anthropology. Both formalist and substantivist perspectives are used to examine economic organization in a cross-cultural perspective. Special attention is focused on gift-giving in pre-stratified societies, craft specialization in middle-range societies, specialized economies in non-market-oriented ancient states and economic organization in modern world systems. Semester Hours: 3. Prerequisite: Introductory course in cultural anthropology. Cross-listed with: ANTH 4140.

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. Semester Hours: 3. Prerequisite: Background in cultural anthropology and graduate standing. Cross-listed with: ANTH 4150.

ANTH 5160 - Topics in Language, Society and Culture. A changing set of topics that address the nature of language in society and analysis of 'languaculture.' Topics may include: language and power, language and identity, conversational analysis, language and self, language socialization, nonverbal communication, evolution of language, ethnopoetics, language as social action, orality and literacy, linguistic hygiene, language and gender, discourse analysis, deception and truth. Semester Hours: 3. Prerequisite: ANTH 3121 or 6133 or equivalent. Cross-listed with: ANTH 4160.

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. Semester Hours: 3. Prerequisite: ANTH 2102 or equivalent. Cross-listed with: ANTH 4170.

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. Semester Hours: 3. Prerequisite: ANTH 2102 or equivalent. Cross-listed with: ANTH 4180.

ANTH 5190 - Ethnicity and Nationalism. Anthropological research on ethnicity and nationalism throughout the world, in both simple and complex societies; theoretical and ethnographic research will be mutually reinforcing. Semester Hours: 3. Prerequisite: Senior or graduate standing, a course in anthropology or permission of instructor. Cross-listed with: ANTH 4190.

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. Semester Hours: 3. Prerequisite: Graduate standing. Cross-listed with: ANTH 4200.

ANTH 5210 - Archaeology of the American Southwest. Considers the origins, characteristics and interrelationships of the major culture areas in the American Southwest, including the Anasazi, Hohokam, Mogollon, Sinagua and Northern Mexico. Semester Hours: 3. Prerequisite: Introduction to archaeology and graduate standing. Cross-listed with: ANTH 4210.

ANTH 5220 - Community in Global Context. Presents the community study method from the perspective of anthropology and as a widely applicable research technique in planning, development and other areas of public affairs. Also includes analyses of case studies and student field research. Semester Hours: 3. Prerequisite: Background in cultural anthropology and graduate standing. Cross-listed with: ANTH 4220.

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. Semester Hours: 3. Prerequisite: ANTH 1303 or equivalent. Cross-listed with: ANTH 4260.

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. Semester Hours: 3. Prerequisite: Introduction to archaeology. Cross-listed with: ANTH 4320.

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. Semester Hours: 3. Prerequisite: ANTH 1302. Cross-listed with: ANTH 4330.

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. Semester Hours: 3. Prerequisite: ANTH 1302. Cross-listed with: ANTH 4380.

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. Semester Hours: 3. Prerequisite: ANTH 1302 or equivalent. Cross-listed with: ANTH 4400.

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. Semester Hours: 3. Prerequisite: ANTH 4070, ANTH 4170 and graduate standing or permission of instructor. Cross-listed with: ANTH 4450.

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. Semester Hours: 3. Prerequisite: ANTH 5450 or permission of instructor. Cross-listed with: ANTH 4460.

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. Semester Hours: 3. Cross-listed with: ANTH 4500.

ANTH 5520 - Human Biological Variation. Human biological variation and adaptation, considered from an evolutionary perspective. How we measure and classify human variation often affects the conclusions we draw. This course considers the causes and maintenance of human variability and adaptability, including cultural and social factors in the genesis and maintenance of normal and abnormal traits. Semester Hours: 3. Prerequisite: Background in physical or biological anthropology and graduate standing. Cross-listed with: ANTH 4520.

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. Semester Hours: 3. Prerequisite: Undergraduate course work in biological anthropology or general genetics.

ANTH 5540 - Forensic Anthropology. The goals of this course are to provide detailed knowledge of the human skeleton, as well as the methods employed in determination of biological characteristics that can predict an individual's identity. The application of human osteological knowledge to forensic and anthropological problems and research are discussed in the context of a 'hands-on' session during each lecture period. Semester Hours: 3. Prerequisite: ANTH 1303 or equivalent. Cross-listed with: ANTH 4540.

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. Semester Hours: 3. Prerequisite: ANTH 1303 or equivalent. Cross-listed with: ANTH 4550.

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. Semester Hours: 3. Prerequisite: Background in biological or physical anthropology and graduate standing. Cross-listed with: ANTH 4560.

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. Semester Hours: 3. Prerequisite: ANTH 1302 or equivalent. Cross-listed with: ANTH 4570.

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' Homosapiens. 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. Semester Hours: 3. Prerequisite: ANTH 1303 or equivalent. Cross-listed with: ANTH 4580.

ANTH 5590 - Primate Behavior. Studies nonhuman primate behavior with emphasis on understanding social behavior, ecology and issues related to human evolution. Semester Hours: 3. Prerequisite: ANTH 1303 or equivalent. Cross-listed with: ANTH 4590.

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. Semester Hours: 3. Prerequisite: ANTH 1303. Cross-listed with: ANTH 4640.

ANTH 5730 - Peoples and Cultures of Sub-Saharan Africa. Covers various types of societies and civilizations that have existed in sub-Saharan Africa. Explores foragers, pastoralists, agricultural societies, chiefdoms, kingdoms and empires, as these emerged and interacted with each other. Details their ideas and social orders, including the following topics: race, ethnicity, kinship, politics, economics, religion, magic, witchcraft, sorcery, marriage, age, gender, stratification, art, literature and oral traditions. Also addresses the impact of colonialism, the rise of nations, changes in the post-colonial period, warfare, and the impact of globalism on Africa today. Semester Hours: 3. Prerequisite: Upper division standing. Cross-listed with: ANTH 4730, ETST 4730.

ANTH 5740 - Ethnography of Mexico and Central America. Geographic affiliations, culture, history, traditional ways of life and culture change in Mexico and Central America. Semester Hours: 3. Prerequisite: Graduate standing. Cross-listed with: ANTH 4740.

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. Semester Hours: 3. Cross-listed with: ANTH 4810. Note: Centers on the critical examination and discussion of presentations made by department faculty and graduate students.

ANTH 5840 - Independent Study. Directed study based on a specific subfield of anthropology. Semester Hours: 1 to 6. Prerequisite: Permission of instructor required.

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. Semester Hours: 3 to 6. Prerequisite: Background in archaeology and graduate standing. Cross-listed with: ANTH 4910.

ANTH 5939 - Internship/Cooperative Education. Semester Hours: 1 to 6.

ANTH 5995 - Travel Study. A flexible format that permits courses to be taught in various areas of the world. Cultures of the Himalayas. Concerned broadly with contemporary Himalayan culture. Focuses on Tibetan cultures and the Tibetan diaspora, and the Nepalese (Newari) culture of the Katmandu Valley. The goals for this course are: to acquaint the student with social, political and cultural features of this part of the world; to teach, through directed field experiences, how cultural anthropology is practiced; to understand how the process of tourism differs from the study of anthropology; how tourism, however it is practiced, changes in fundamental ways those subject to it. The Arts of Self and Society in Contemporary China. An intensive introduction to contemporary conditions and issues in the People's Republic of China, including social relations, popular culture, eating practices, religious practices and everyday life. Uses a combination of readings, lectures, field trips to local sites and ethnographic field projects. Usually situated in Kunming, Yunnan province, in southwest China, but the location

may vary. Semester Hours: 3 to 9. Prerequisite: Permission of instructor. Cross-listed with: ANTH 4995. Note: Students enroll additionally in Chinese language classes at levels from beginning to advanced. .

ANTH 6000 - Seminar in Current Research Topics. An inquiry into current research of critical and general interest to anthropologists. Variable format. Semester Hours: 1 to 3. Prerequisite: Permission of instructor.

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. Semester Hours: 1 to 4. Prerequisite: Permission of instructor. Note: Topics vary from semester to semester.

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. Semester Hours: 3. Prerequisite: Graduate standing. Cross-listed with: HBSC 6320 and 7320.

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. Semester Hours: 3. Cross-listed with: HBSC 7051.

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. Semester Hours: 3. Prerequisite: Undergraduate course work in cultural anthropology. Note: First course in a two-course required graduate sequence.

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 world-view; 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. Semester Hours: 3. Prerequisite: Undergraduate course work in cultural anthropology.

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. Semester Hours: 3. Prerequisite: Undergraduate course work in archaeology.

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. Semester Hours: 3. Prerequisite: ANTH 6307 or equivalent.

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. Semester Hours: 3. Prerequisite: Graduate standing.

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. Semester Hours: 3. Prerequisite: Graduate standing.

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. Semester Hours: 3. Prerequisite: Undergraduate work in biological/physical anthropology and graduate standing.

ANTH 6840 - Independent Study. Semester Hours: 1 to 3.

ANTH 6950 - Master's Thesis. Semester Hours: 1 to 6.

ARCH: Architecture (Architecture and Planning)

ARCH 5000 - Math and Physics for Architects. Provides the review of mathematics and physics this is a prerequisites for the graduate technology courses. Does not count toward the required credits for the MARCH degree. Semester Hours: 3.

ARCH 5110 - Design Studio I. This first of four core design studios introduces the basic strategies and techniques of architectural design. Focuses on the languages of design, as well as on traditional and digital methods of visualizing architectural ideas and forms. Semester Hours: 6. Prerequisite: Must have completed the College's woodshop training program. Corequisite: ARCH 5111.

ARCH 5111 - Introduction to Drawing. 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. Semester Hours: 3. Corequisite: ARCH 5110.

ARCH 5120 - Design Studio II. The second of the four core design studios focuses on concepts of small-scale building design, siting and climate. Through a number of design exercises, students learn how these factors help shape buildings. Semester Hours: 4. Prerequisite: ARCH 5110 and ARCH 5111. Corequisite: ARCH 5121.

ARCH 5121 - Design Seminar II. Supports fuller discussion of the key themes and concepts in ARCH 5120. Semester Hours: 2. Prerequisite: ARCH 5110 and 5111; coreq: ARCH 5120.

ARCH 5130 - Design Studio III. The third of the four core studios focuses on concepts of program, architectural meaning and human behavior in buildings. Through a number of design exercises, students learn how these factors help shape buildings. Semester Hours: 4. Prerequisite: ARCH 5120 and ARCH 5121. Corequisite: ARCH 5131.

ARCH 5131 - Design Seminar III. Supports fuller discussion of the key themes and concepts in ARCH 5130. Semester Hours: 2. Prerequisite: ARCH 5120 and ARCH 5121. Corequisite: ARCH 5130.

ARCH 5140 - Design Studio IV. The last of the four core design studios focuses on concepts of building technology, context and environmental sustainability. Through a number of design exercises, students learn how technology helps shape buildings. Semester Hours: 4. Prerequisite: ARCH 5130 and 5131. Corequisite: ARCH 5141.

ARCH 5141 - Design Seminar IV. Supports fuller discussion of the key themes and concepts in ARCH 5140. Semester Hours: 2. Prerequisite: ARCH 5130 and 5131; coreq: ARCH 5140.

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. Semester Hours: 3.

ARCH 5220 - History of 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. Semester Hours: 3. Prerequisite: ARCH 5210.

ARCH 5230 - History of 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. Semester Hours: 3. Prerequisite: ARCH 5220.

ARCH 5240 - Human Factors in Design. Focuses on the ethical, social, cultural and psychological principles, processes which people bring to the perception and design of the built environment. Its major topics include: ethical values; cultural patterns and values; privacy and community; social, cultural and personal ritual; the symbolic content of form and environment; and programming and post-occupancy evaluation. Semester Hours: 3.

ARCH 5310 - Introduction to Building Technology. 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, upon which subsequent technology courses are based. Semester Hours: 3.

ARCH 5320 - Building Construction and Methods. Discusses the principles and processes of building construction and introduces the major constructional systems. Stresses the relationship between architectural concepts and building technology and helps students understand how to choose building systems and materials. Semester Hours: 3. Prerequisite: ARCH 5310.

ARCH 5330 - Environmental Control Systems I. The first course in the environmental control systems sequence introducing the concepts and methods of environmental control in residential buildings. Discusses the 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. Semester Hours: 3. Prerequisite: ARCH 5320.

ARCH 5340 - Environmental Control Systems II. The second course in the environmental control systems sequence focusing on the environmental systems in commercial and other non-residential buildings. Discusses natural and artificial lighting, HVAC systems, acoustics, vertical transportation and fire protection. Semester Hours: 3. Prerequisite: ARCH 5330.

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. Semester Hours: 3. Corequisite: ARCH 5340.

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. Semester Hours: 3. Prerequisite: ARCH 5350.

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. Semester Hours: 3.

ARCH 6150 - Comprehensive Design Studio. A required studio focusing on an architectural project from schematic design through detailed development including structural, environmental systems, life safety, wall sections and building assemblies. A comprehensive program will inform the architectural project. Semester Hours: 4. Prerequisite: ARCH 5140 and ARCH 5141. Corequisite: ARCH 6151.

ARCH 6151 - Comprehensive Design Seminar. Supports fuller discussion of the key themes and concepts in ARCH 6150. Semester Hours: 2. Prerequisite: ARCH 5140 and ARCH 5141. Corequisite: ARCH 6150.

ARCH 6160 - Architectural Photography. Introduces the key concepts and techniques of photography in general and architectural photography in particular. Students learn basic principles of exposure,

focal length, composition and darkroom procedures and then undertake a number of photographic exercises. Semester Hours: 3.

ARCH 6161 - Precedents in Architecture. 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. Semester Hours: 3. Prerequisite: Completion of ARCH 5110.

ARCH 6162 - 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. Semester Hours: 3. Prerequisite: Must have completed the college's woodshop training program.

ARCH 6170 - Advanced Design Studio. Students enter the advanced design studio after successfully completing the four core design studios and comprehensive studio (ARCH 6150). Students must take two advanced studios (unless they wish to undertake a thesis; see ARCH 6950). Topics vary according to faculty interests. Semester Hours: 4. Prerequisite: ARCH 6150 and ARCH 6151. Corequisite: ARCH 6171.

ARCH 6171 - Advanced Design Seminar. Supports fuller discussion of key themes and concepts in ARCH 6170. Students must take two advanced design seminars (unless they wish to undertake a thesis; see ARCH 6950). Semester Hours: 2. Prerequisite: ARCH 6150, ARCH 6151. Corequisite: ARCH 6170.

ARCH 6190 - Special Topics in Design Studies. Various topics in design, according to current faculty and student interests. Semester Hours: 3. Prerequisite: Completion of ARCH 5110.

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. Semester Hours: 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. Semester Hours: 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. Semester Hours: 3.

ARCH 6221 - Post-Structuralist Architecture. Examines the ways in which architecture has responded to the philosophical changes introduced during the 1960s French post-structuralism. Evaluates how the new metaphysical outlooks have affected architectural theory and design methods. Semester Hours: 3.

ARCH 6290 - Special Topics in Cultural Studies. Various topics in cultural studies, according to current faculty and student interests. Semester Hours: 3. Prerequisite: ARCH 5210, ARCH 5220 and ARCH 5230.

ARCH 6370 - Introduction To Design Build. Introduces 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. Semester Hours: 3.

ARCH 6371 - Maintaining Quality and Managing Risks: Design Build. 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. Semester Hours: 3. Prerequisite: ARCH 6370.

ARCH 6372 - 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. Semester Hours: 3. Prerequisite: ARCH 6370.

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. Semester Hours: 3. Prerequisite: ARCH 6370.

ARCH 6390 - Special Topics in Technology. Various topics in technology, according to current faculty and student interests. Semester Hours: 3. Prerequisite: ARCH 5310 and ARCH 5320.

ARCH 6412 - Construction Documents. Introduces the concepts and techniques of construction documents. Semester Hours: 3.

ARCH 6490 - Special Topics in Professional Studies. Various topics in professional studies according to current faculty and student interests. Semester Hours: 3.

ARCH 6520 - Architecture in Other Cultures. Various studies of architecture and urbanism in foreign countries. Semester Hours: 1 to 9.

ARCH 6624 - 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. Semester Hours: 3. Cross-listed with: LA 6624.

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. Semester Hours: 1 to 3. Prerequisite: Permission of instructor.

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. Semester Hours: 3. Prerequisite: Permission of instructor.

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. Semester Hours: 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. Semester Hours: 3.

ARCH 6950 - Thesis Preparation. In place of the final advanced design studio, students may choose to develop a specialized thesis in some topic related to architecture. The thesis will normally take three semesters, starting with the three-credit hour ARCH 6490, Thesis Research Tools, in the spring semester, this course in the fall semester and finishing with a six-credit thesis class in the third semester. A thesis may culminate in a design or in a written report. A thesis is expected to advance the field in some way by offering new insights into aspects of design, technology, history or professional principles. Semester Hours: 6. Prerequisite: ARCH 6490 and completion of at least one advanced design studio (ARCH 6170 or ARCH 6171).

ARCH 6951 - Architecture Thesis. Development of a master's thesis (see ARCH 6950 above). Semester Hours: 6. Prerequisite: Completion of two advanced design studios ARCH 6150 and ARCH 6950.

ARCH 7840 - Independent Study. Semester Hours: 1 to 3.

ARTS: Arts (Arts & Media)

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. Semester Hours: 3.

ARTS 1111 - Freshman 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. Semester Hours: 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. Semester Hours: 1 to 3.

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. Semester Hours: 1 to 3.

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. Semester Hours: 1 to 3.

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. Semester Hours: 1 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. Semester Hours: 1 to 3.

BIOL: Biology (Liberal Arts and Sciences)

BIOL 1111 - Freshman Seminar. Semester Hours: 1 to 3.

BIOL 1115 - Biology Content. Covers content areas of undergraduate biology. Topics include cell chemistry, reproduction and structure; genetics and heredity; evolution and bio-diversity; bio-energetics; and human body systems. Semester Hours: 1 to 3.

BIOL 1136 - Human Biology. Topics include: basic human body chemistry, healthy internal body balance, new disease treatments, human inheritance and human beings as part of Earth's living systems. Semester Hours: 3. Note: For students who are not majoring in biology.

BIOL 1352 - Basics of Cancer Biology. Explores the biological nature of cancer, a disease that strikes one in three Americans. Offers an overview of what recent research has revealed about the causes of cancer, about how it can be treated and how it might be prevented. This overview is based on a foundation of knowledge gained from basic research into the behavior and activities of cells, both normal and cancerous. The emphasis is on the biology of cancer at the cellular and molecular level. Semester Hours: 3. Note: For students who are not majoring in biology.

BIOL 1550 - Basic Biology: Ecology and the Diversity of Life: SC1. Lecture, laboratory. Introduces important biological concepts, including: the process of science, biological diversity, evolution, basic ecological principles and environmental issues. Lectures emphasize current issues. Semester Hours: 4. Note: For students who are not majoring in biology. Biology and health career majors should not take this course.

BIOL 1560 - Basic Biology: From Cells to Organisms: SC1. Lecture, laboratory. Introduces students to cell structure and function, survey of representative human systems, genetics and applications of biotechnology. Immune systems featured with an emphasis on AIDS, cancer and other human diseases prevalent in today's world. Semester Hours: 4. Note: For

students who are not majoring in biology. Biology and health career majors should not take this course.

BIOL 2051 - General Biology I: SC1. Lecture. 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). Semester Hours: 3. Prerequisite: CHEM 1000 or high school chemistry required. Note: Biology and health science (pre-med, pre-vet, pre-physical therapy, etc.) majors must also take the accompanying laboratory - BIOL 2071.

BIOL 2061 - General Biology II: SC1. Lecture. 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. Semester Hours: 3. Prerequisite: BIOL 2051 or equivalent with a grade of 'C' (2.0) or higher. Note: Biology and health science (pre-med, pre-vet, nursing, etc.) majors must also take the accompanying laboratory - BIOL 2081.

BIOL 2071 - General Biology Laboratory I: SC1. Laboratory. Introduces the basic scientific approach and report preparation through exercises and experiments in cell biology, basic biochemical techniques, genetics, molecular genetics and applications of biotechnology. Semester Hours: 1 Corequisite: BIOL 2051. Note: Exercises corresponding to topics in BIOL 2051.

BIOL 2081 - General Biology Laboratory II: SC1. Laboratory. Study of evolution, plant and animal anatomy, developmental biology; includes two off-campus ecology field trips. Semester Hours: 1. Prerequisite: BIOL 2071 or equivalent with a grade of 'C' (2.0) or higher. Corequisite: BIOL 2061. Note: Exercises corresponding to topics in BIOL 2061.

BIOL 2750 - Introduction to Molecular Research Techniques. Designed to give background knowledge and hands-on experience for a person wanting to work in a molecular-research laboratory. Introduction to basic molecular techniques including micropipetting, making media, DNA and RNA isolation, restriction digest, RT-PCR, and gel electrophoresis. Semester Hours: 2.

BIOL 2840 - Independent Study. Semester Hours: 1 to 3. Prerequisite: One semester of general biology with a grade of 'C' (2.0) or higher and permission of instructor. Note: Registration by special processing form only.

BIOL 2939 - Internship/Cooperative Education. Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: 15 hours of 2.75 GPA.

BIOL 3104 - Behavioral Genetics. Interdisciplinary course on relationships between behavior and heredity, with emphasis on human behavioral genetics. Semester Hours: 3. Prerequisite: General biology or general psychology. Cross-listed with: PSY 3104.

BIOL 3122 - Natural History of Colorado. Lecture. The ecosystems of the plains, mountains and plateaus of Colorado, including topography, climate, habitats, plants and animals, are studied. Plant and animal adaptations to their environments are discussed. Glacial and geomorphic processes that have shaped the mountains are considered. Intended for non-majors. Semester Hours: 3. Note: Will not fulfill biology major requirements.

BIOL 3124 - Introduction to Molecular Biology. Provides an understanding of the structure and function of genetic material, DNA replication and recombination, and regulation of gene expression and protein synthesis. Emphasizes eukaryotic systems, while providing an overview of prokaryotic systems. Semester Hours: 3. Prerequisite: One year of general biology with a grade of 'C' or higher and one year of general chemistry.

BIOL 3134 - Advanced Topics. Periodic examination of current topics in the field of biology. (See Schedule Planner for current topics). Semester Hours: 1 to 8.

BIOL 3225 - Human Physiology. Lecture, laboratory. 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. Semester Hours: 4. Prerequisite: One year of general biology, general cell biology and one year of chemistry with grades of 'C' (2.0) or higher.

BIOL 3244 - Human Anatomy. Lecture, laboratory. Introduces the structural aspects of the human body. Anatomical models, microscope slides and dissections, including human cadavers are used in the lab. Semester Hours: 4. Prerequisite: One year of general biology with a grade of 'C' (2.0) or higher.

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. Semester Hours: 3. Prerequisite: One year of general biology with a grade of 'C' (2.0) or higher.

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. Semester Hours: 3. Prerequisite: One year of general biology with a grade of 'C' (2.0) or higher. Note: Satisfies core ecology requirement for biology major. May not be used as upper division biology elective. No co-credit with BIOL 3412.

BIOL 3412 - Fundamentals of Applied Ecology. Ecology is the science of interrelationships between organisms, including humans and their environment. This lecture course examines applications of ecological principles to human needs and environmental protection. Covers the ecology of humans and managed systems. Semester Hours: 3. Prerequisite: One year of general biology with a grade of 'C' (2.0) or higher. Note: Satisfies core ecology requirement for biology major. May not be used as upper division biology elective. No co-credit with BIOL 3411.

BIOL 3413 - Ecology Laboratory. Provides hands-on experiences in ecology and appreciation for using research tools to study ecological systems. Students will learn a wide range of techniques and concepts related to population, community, ecosystem, urban, and physiological ecology. Semester Hours: 2. Prerequisite: Introductory Ecology with a grade of 'C' (2.0) or higher; concurrent registration in ecology accepted.

BIOL 3520 - Invertebrate Zoology. Most species on earth are invertebrate animals that, by definition, lack backbones. This course examines the biology, taxonomy, anatomy, ecology and evolution of these important creatures, which occupy a diversity of terrestrial, freshwater and marine habitats. Semester Hours: 3. Prerequisite: One year of general biology with a grade of 'C' (2.0) or higher.

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 geological record, evolution, taxonomy, anatomy, physiology, ecology and conservation of these organisms. Semester Hours: 3. Prerequisite: One year of general biology with a grade of 'C' (2.0) or higher.

BIOL 3611 - General Cell Biology. Covers the structure and function of the cell including bioenergetics, membranes, secretion, respiration and the cell cycle. Semester Hours: 3. Prerequisite: One year of general biology with a grade of 'C' (2.0) or higher and one year of general chemistry.

BIOL 3612 - Cell Biology Laboratory. Laboratory course covering topics in cell and molecular biology, such as protein folding, membrane potential, organelle function, cell signaling and fertilization; as well as associated methods, including microscopy, cell culture and PCR. Basic skills are emphasized in recitation and laboratory. Semester Hours: 3. Prerequisite: General cell biology with a grade of 'C' (2.0) or higher or permission of instructor.

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. Semester Hours: 3. Prerequisite: One year of general biology with a grade of 'C' or higher.

BIOL 3654 - General Microbiology. Lecture, laboratory. 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. Semester Hours: 4. Prerequisite: One year of general biology and one year of general chemistry with grades of 'C' (2.0) or higher. Note: General cell biology or general genetics is recommended.

BIOL 3832 - General Genetics. Lecture, recitation. Introduces molecular, classical, developmental and population genetics. Semester Hours: 4. Prerequisite: One year of general biology with a grade of 'C' (2.0) or higher.

BIOL 3840 - Independent Study. Semester Hours: 1 to 3. Prerequisite: One year of general biology with a grade of 'C' (2.0) or higher and permission of instructor; registration by special processing form only. Note: Registration by special processing form only.

BIOL 3939 - Internship/Cooperative Education. Designed experience involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: Junior standing and 2.75 GPA.

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. Semester Hours: 3. Prerequisite: BIOL 4024: one year of general biology with a grade of 'C' (2.0) or higher. BIOL 5024: graduate standing or permission of instructor. Cross-listed with: BIOL 5024.

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. Semester Hours: 1 to 8. Prerequisite: One year of general biology with grades of 'C' (2.0) or higher. Cross-listed with: BIOL 5050.

BIOL 4051 - Advanced Topics In Microbiology. An in-depth study of microbial concepts, including prokaryotic and eukaryotic structure and function; properties of biological macromolecules; microbial growth kinetics; and microbial diversity. Emphasis is on one of the following: virology, microbial physiology, environmental microbiology, microbial biotechnology and nucleic acids. Semester Hours: 3. Prerequisite: General microbiology with a grade of 'C' (2.0) or higher. Cross-listed with: BIOL 5051.

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. Semester Hours: 3. Prerequisite: Introductory ecology with a grade of 'C' (2.0) or higher (BIOL 3411 or BIOL 3412 or equivalent). Cross-listed with: BIOL 5052.

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. Semester Hours: 3. Prerequisite: Introductory Ecology with a grade of 'C' (2.0) or higher. Cross-listed with: BIOL 5053.

BIOL 4054 - Developmental Biology. Covers gametogenesis, fertilization, cleavage and development of the embryo with an emphasis on the biochemical and biophysical aspects. Semester Hours: 3. Prerequisite: General cell biology with a grade of 'C' (2.0) or higher. Cross-listed with: BIOL 5054.

BIOL 4064 - Advanced Cell Biology. Builds on the foundations laid in the prerequisite courses. Major topics include the functions of cell membranes, energy transduction and regulation of metabolic pathways. A major emphasis is the control and integration of cellular activities.

Semester Hours: 3. Prerequisite: General cell biology and one semester of biochemistry with grades of 'C' or higher. Cross-listed with: BIOL 5064.

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. Semester Hours: 3. Prerequisite: One year of general biology with a grade of 'C' (2.0) or higher. Cross-listed with: BIOL 5074.

BIOL 4125 - 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, mutagenesis and protein purification techniques. Experimental design and the theories underlying the techniques are also discussed. Semester Hours: 3. Prerequisite: General microbiology with a grade of 'C' or higher and molecular biology, either introductory or advanced, with a grade of 'C' (2.0) or higher; concurrent registration in molecular biology accepted. Cross-listed with: BIOL 5125.

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. Semester Hours: 3. Prerequisite: General genetics and one year of organic chemistry (or equivalent) with grades of 'C' (2.0) or higher; biochemistry strongly recommended. Cross-listed with: BIOL 5126.

BIOL 4128 - 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. Semester Hours: 3. Prerequisite: General cell biology and general genetics with a grade of 'C' (2.0) or higher; biochemistry strongly recommended. Cross-listed with: BIOL 5128.

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. Semester Hours: 3. Prerequisite: General genetics with a grade of 'C' (2.0) or higher. Cross-listed with: 5134.

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. Semester Hours: 3. Prerequisite: General microbiology with a grade of 'C' (2.0) or higher. Cross-listed with: BIOL 5144.

BIOL 4154 - 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. Semester Hours: 3. Prerequisite: Introductory ecology (BIOL 3411, 3412 or equivalent) with a grade of 'C' (2.0) or higher. Cross-listed with: BIOL 5154.

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. Semester Hours: 3. Prerequisite: One year of general biology and general cell biology with grades of 'C' (2.0) or higher. Cross-listed with: BIOL 5165.

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. Semester Hours: 3. Prerequisite: One year of general biology with a grade of 'C' (2.0) or higher. Genetics and human physiology are recommended. Cross-listed with: BIOL 5250.

BIOL 4315 - 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. Semester Hours: 4. Prerequisite: One year of general biology with a grade of 'C' (2.0) or higher. Cross-listed with: BIOL 5315.

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. Semester Hours: 4. Prerequisite: One year of general biology with a grade of 'C' (2.0) or higher. Cross-listed with: BIOL 5335.

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. Semester Hours: 4. Prerequisite: One year of general biology with a grade of 'C' (2.0) or higher. Cross-listed with: BIOL 5345.

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. Semester Hours: 3. Prerequisite: General microbiology with a grade of 'C' (2.0) or higher. Cross-listed with: BIOL 5415.

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. Semester Hours: 3. Prerequisite: Introductory ecology (BIOL 3411, 3412 or equivalent) with a grade of 'C' (2.0) or higher. Cross-listed with: BIOL 5416.

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. Semester Hours: 3. Prerequisite: One year of general biology with a grade of 'C' (2.0) or higher. Cross-listed with: BIOL 5425.

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. Semester Hours: 3. Prerequisite: One year of general biology with a grade of 'C' (2.0) or higher. Cross-listed with: BIOL 5450.

BIOL 4455 - 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. Semester Hours: 3. Prerequisite: Human or animal physiology with a grade of 'C' (2.0) or higher. Cross-listed with: BIOL 5455.

BIOL 4465 - Cardiovascular Physiology. Explores the structure and physiological function of the cardiovascular system. The emphasis is on human physiology, with comparative and pathophysiological aspects presented to enhance principles. Semester Hours: 3. Prerequisite: Human physiology with a grade of 'C' (2.0) or higher. Cross-listed with: BIOL 5465.

BIOL 4474 - 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. Semester Hours: 3. Prerequisite: Introductory ecology (BIOL 3411, 3412 or equivalent) with a grade of 'C' (2.0) or higher. Cross-listed with: BIOL 5474.

BIOL 4475 - Mechanisms of Human Pathology. Studies physiological, cellular and biochemical processes in human diseases, with particular focus on non-communicable diseases such as diabetes, cardiovascular disease and diseases of aging such as osteoporosis and macular degeneration. Semester Hours: 3. Prerequisite: Human physiology with a grade of 'C' (2.0) or higher; general cell biology or general microbiology strongly recommended. Cross-listed with: BIOL 5475.

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. Semester Hours: 3. Prerequisite: One year of general biology and general genetics with grades of 'C' (2.0) or higher. Cross-listed with: BIOL 5494.

BIOL 4550 - Cell Signaling. Lecture by faculty and student presentations cover mechanism of hormones and regulation of various cellular processes through second messenger systems. Semester Hours: 3. Prerequisite: General cell biology with a grade of 'C' (2.0) or higher; one semester of biochemistry recommended. Cross-listed with: BIOL 5550.

BIOL 4560 - Seminar: Nervous System Disorders. Opening lectures cover the scientific process and how to review original scientific literature. Students present seminars on original research focusing on the neural bases of diseases such as Parkinson's, Alzheimer's and schizophrenia. Semester Hours: 3. Prerequisite: General cell biology with a grade of 'C' (2.0) or higher; neurobiology strongly recommended. Cross-listed with: BIOL 5560.

BIOL 4621 - Immunology. Studies antibody-antigen interactions, the immune system, inflammation, hypersensitivity, autoimmunity, and recovery from infection. Semester Hours: 3. Prerequisite: One year of general biology and general cell biology with grades of 'C' (2.0) or higher; general genetics strongly recommended. Cross-listed with: BIOL 5621.

BIOL 4622 - 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. Semester Hours: 3. Prerequisite: One year of general biology with a grade of 'C' or higher; general cell biology and general genetics are recommended. Cross-listed with: BIOL 5622.

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. Semester Hours: 3. Prerequisite: General cell biology with a grade of 'C' (2.0) or higher; general genetics strongly recommended. Cross-listed with: BIOL 5634.

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. Semester Hours: 4. Prerequisite: One year of general biology with grades of 'C' (2.0) or higher and completion of the structure/function core requirement with a grade of 'C' (2.0) or higher. Cross-listed with: BIOL 5640.

BIOL 4674 - 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. Semester Hours: 3. Prerequisite: Human physiology with a grade of 'C' (2.0) or higher. Cross-listed with: BIOL 5674.

BIOL 4705 - Introduction to Research. An overview of all aspects of scientific research. Topics covered include the scientific method, experimental design, the role of statistics, scientific writing, publication

and sources of funding. Several guest faculty lectures are scheduled. Semester Hours: 3. Prerequisite: One year of general biology with a grade of 'C' (2.0) or higher; junior or senior standing. Cross-listed with: BIOL 5705.

BIOL 4750 - Technology Transfer and Biotechnology. An innovative hybrid course combining traditional classroom presentations with discussions and assignments on a web-based classroom management system. Covers the process from academic discovery to commercialization of a product, including clinical trials, patent law, entrepreneurship, ethics, venture capital funding, marketing and product development. Semester Hours: 2 Cross-listed with: BIOL 5750. Note: Will not fulfill biology major requirements.

BIOL 4764 - Introductory Biostatistics. Covers the quantitative aspects of data collection, organization, and analysis in the biological sciences. Emphasizes understanding of relationships among probability theory, parameter estimation, test statistics, scope of inference, and interpretation. Provides 'hands-on' experience with data analysis. Semester Hours: 3. Prerequisite: One year of general biology with a 'C' (2.0) or higher, college-level algebra with 'B' (3.0) or higher, or permission of instructor. Cross-listed with: BIOL 5764.

BIOL 4840 - Independent Study. Semester Hours: 1 to 6. Prerequisite: One year of general biology with a grade of 'C' (2.0) or higher and permission of instructor. Note: Registration by special processing form only.

BIOL 4910 - 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. Semester Hours: 3. Prerequisite: One year of general biology and ecology with grades of 'C' (2.0) or higher; permission of instructor. Cross-listed with: BIOL 5910. Note: Lectures and a week-long field trip.

BIOL 4974 - 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. Semester Hours: 3. Prerequisite: One year of general biology and general genetics with grades of 'C' (2.0) or higher; junior or senior standing strongly recommended. Cross-listed with: BIOL 5974.

BIOL 4990 - Undergraduate Research Seminar. Introduces research in the biological sciences. Students read current scientific literature, attend related seminars and participate in discussions. This course offers students a chance to interact with visiting scientists, who will present state-of-the-field biological research in a seminar setting. Semester Hours: 1. Prerequisite: Senior standing, satisfactory completion of all biology core courses, overall GPA of 3.0 or higher and permission of instructor. Cross-listed with: BIOL 6655.

BIOL 5001 - RM-MSMSP: Cells, Human Systems and Heredity. Systematic study of key concepts in cell structure and function; energy transformations in living systems, functioning of human systems in health or disease, patterns or process of human inheritance and biotechnology impacts on human society. 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. Semester Hours: 4. Prerequisite: Permission of project director.

BIOL 5002 - RM-MSMSP: Ecology, Biodiversity and Adaptation. Systematic study of biological concepts including ecosystems, population dynamics, food chains, biodiversity and evolutionary processes. Instruction is inquiry-based and interactive. 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. Semester Hours: 4. Prerequisite: Permission of instructor (project director).

BIOL 5003 - RM-MSMSP: The Biology of Life: Integrated Perspectives. Uses an integrated approach to investigate current biological, ecological and environmental issues including biofuels, climate change, red tides, coral bleaching, biomagnifications of toxins,

acid rain and population growth. Semester Hours: 4. Prerequisite: BIOL 5001 and BIOL 5002 or permission of instructor. Note: This course is not applicable toward any degree in the College of Liberal Arts and Sciences.

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. Semester Hours: 3. Prerequisite: BIOL 4024: one year of general biology with a grade of 'C' (2.0) or higher. BIOL 5024: graduate standing or permission of instructor. Cross-listed with: BIOL 4024.

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. Semester Hours: 1 to 8. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4050.

BIOL 5051 - Advanced Topics In Microbiology. An in-depth study of microbial concepts, including prokaryotic and eukaryotic structure and function; properties of biological macromolecules; microbial growth kinetics; and microbial diversity. Emphasis is on one of the following: virology, microbial physiology, environmental microbiology, microbial biotechnology and nucleic acids. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4051.

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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4052.

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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4053.

BIOL 5054 - Developmental Biology. Covers gametogenesis, fertilization, cleavage and development of the embryo with an emphasis on the biochemical and biophysical aspects. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4054.

BIOL 5064 - Advanced Cell Biology. Builds on the foundations laid in the prerequisite courses. Major topics include the functions of cell membranes, energy transduction and regulation of metabolic pathways. A major emphasis is the control and integration of cellular activities. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4064.

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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4074.

BIOL 5099 - Biology For Computer Scientists, Engineers and Mathematicians. Designed to give a foundation in molecular biology for work in the field of computational biology or bioinformatics. The goal of this new field is to provide predictive capability for diagnosing disease and discovering therapeutics. Semester Hours: 3. Prerequisite: B.S. in computer science, engineering, mathematics or a related discipline.

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, mutagenesis and protein purification techniques. Experimental design and the theories underlying the techniques are also discussed.

Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4125.

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. Semester Hours: 3. Prerequisite: General genetics and one year of organic chemistry (or equivalent) with grades of 'C' (2.0) or higher; biochemistry strongly recommended. Cross-listed with: BIOL 4126.

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. Semester Hours: 3. Prerequisite: General cell biology and general genetics with a grade of 'C' (2.0) or higher; biochemistry strongly recommended. Cross-listed with: BIOL 4128.

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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4134.

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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4144.

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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4154.

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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4165.

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. Semester Hours: 3. Prerequisite: One year of general biology with a grade of 'C' (2.0) or higher. Genetics and human physiology are recommended. Cross-listed with: BIOL 4250.

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. Semester Hours: 4. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4315.

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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor.

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. Semester Hours: 4. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4335.

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. Semester Hours: 4. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4345.

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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4415.

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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4416.

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. Semester Hours: 3. Prerequisite: One year of general biology with a grade of 'C' (2.0) or higher. Cross-listed with: BIOL 4425.

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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor; one year of general biology and one year of general chemistry; introductory ecology recommended.

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. Semester Hours: 3. Prerequisite: One year of general biology. Cross-listed with: BIOL 4450.

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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4455.

BIOL 5465 - Cardiovascular Physiology. Explores the structure and physiological function of the cardiovascular system. The emphasis is on human physiology, with comparative and pathophysiological aspects presented to enhance principles. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4465.

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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4474.

BIOL 5475 - Mechanisms of Human Pathology. Studies physiological, cellular and biochemical processes in human diseases, with particular focus on non-communicable diseases such as diabetes, cardiovascular disease and diseases of aging such as osteoporosis and macular degeneration. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4475.

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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4494.

BIOL 5550 - Cell Signaling. Lecture by faculty and student presentations cover mechanism of hormones and regulation of various cellular processes through second messenger systems. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4550.

BIOL 5560 - Seminar: Nervous System Disorders. Opening lectures cover the scientific process and how to review original scientific literature. Students present seminars on original research focusing on the neural bases of diseases such as Parkinson's, Alzheimer's and schizophrenia. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. BIOL 5165 or 4165 is strongly recommended. Cross-listed with: BIOL 4560.

BIOL 5621 - Immunology. Studies antibody-antigen interactions, the immune system, inflammation, hypersensitivity, autoimmunity, and recovery from infection. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4621.

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. Semester Hours: 3. Prerequisite: One year of general biology with a grade of 'C' or higher; general cell biology and general genetics are recommended. Cross-listed with: BIOL 4622.

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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4634.

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. Semester Hours: 4. Prerequisite: One year of general biology with grades of 'C' (2.0) or higher and completion of the structure/ function core requirement with a grade of 'C' (2.0) or higher. Cross-listed with: BIOL 4640.

BIOL 5674 - 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4674.

BIOL 5705 - Introduction to Research. An overview of all aspects of scientific research. Topics covered include the scientific method, experimental design, the role of statistics, scientific writing, publication and sources of funding. Several guest faculty lectures are scheduled. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4705.

BIOL 5750 - Technology Transfer and Biotechnology. An innovative hybrid course combining traditional classroom presentations with discussions and assignments on a web-based classroom management system. Covers the process from academic discovery to commercialization of a product, including clinical trials, patent law, entrepreneurship, ethics, venture capital funding, marketing and product development. Semester Hours: 2 Cross-listed with: BIOL 4750. Note: Will not fulfill biology major requirements.

BIOL 5764 - Introductory Biostatistics. Covers the quantitative aspects of data collection, organization, and analysis in the biological

sciences. Emphasizes understanding of relationships among probability theory, parameter estimation, test statistics, scope of inference, and interpretation. Provides 'hands-on' experience with data analysis. Semester Hours: 3. Prerequisite: One year of general biology with a 'C' (2.0) or higher, college-level algebra with 'B' (3.0) or higher, or permission of instructor. Cross-listed with: BIOL 4764.

BIOL 5840 - Independent Study. Semester Hours: 1 to 3. Prerequisite: Permission of instructor. Note: Registration by special processing form only.

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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4910. Note: Lectures and a week-long field trip.

BIOL 5939 - Internship/Cooperative Education. Designed experience involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 6. Prerequisite: Graduate standing.

BIOL 5974 - 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4974.

BIOL 6655 - Seminar. Semester Hours: 1. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: BIOL 4990.

BIOL 6950 - Master's Thesis. Semester Hours: 1 to 8.

BLAW: Business Law (Business)

BLAW 3000 - Legal and Ethical Environments of Business I.

Addresses the ways the legal and ethical environments of business affect managers. Students are taught to identify legal issues, make ethical judgments about business conduct and understand the ways ethical and social issues are developed. Topics include actual analysis of legal and ethical issues; ethical theory and its application; law-making processes; contracts (and related topics); torts; product liability; criminal law and constitutional law. This is a business core course therefore a grade of 'C' or better must be earned to satisfy Business graduation requirements and prerequisites for other business courses. Semester Hours: 3. When Offered: *Fall, Spring, Summer*. Prerequisite: Junior standing.

BLAW 4120 - Legal Issues for Entrepreneurs. Skills in legal and factual analysis and the application of ethical theories are addressed with an emphasis on applicability for entrepreneurs. The cases are drawn from a variety of functional areas such as accounting, information systems, finance, management, marketing and production. Topics include: agency law, business organizations, securities, venture capital, employment law, real property, entrepreneurial aspects of intellectual property law, consumer law and international law. Semester Hours: 3. Cross-listed with: ENTP 3120.

BLAW 6500 - Legal Issues for CPAs. 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. Semester Hours: 3. Prerequisite: BLAW 3000 or BUSN 6540 (or equivalent). Note: This class is rarely offered.

BUSN: Business (Business)

BUSN 5939 - Cooperative Education. Semester Hours: 1 to 3.

BUSN 6520 - Managing 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. Semester Hours: 3.

BUSN 6521 - Managing Individuals and Teams (Health Section). 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. Semester Hours: 3.

BUSN 6530 - Data Analysis 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. Semester Hours: 3. When Offered: *Fall, Spring, Summer*. Note: Students cannot receive credit for both BUSN 6530 and FNCE 6290.

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. Semester Hours: 3. When Offered: *Fall, Spring, Summer*. Note: Students can substitute ENTP 6822 but credit cannot be received for both. Health Administration students must take BUSN 6541.

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. Semester Hours: 3. When Offered: *Spring*.

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. Semester Hours: 3. When Offered: *Fall, Spring, Summer*.

BUSN 6560 - Marketing Management. 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. Semester Hours: 3. When Offered: *Fall, Spring, Summer*. Prerequisite: BUSN 6530 and BUSN 6550 - strictly enforced. (May be taken concurrently).

BUSN 6610 - Information Systems Management and Strategy. Examines the strategic, technological, financial and organizational issues involved with the effective management of information technology. Topics include: (1) role and importance of IT in modern organizations (e.g., IT impact on competitiveness, alignment of corporate and IT strategies, IT infrastructures and IT-enabled organizational processes), (2) alternative methods to develop, acquire and implement information systems (e.g.) evaluation of IT investments, implementing and managing complex IT projects), (3) nature of IT management (e.g., the evolving roles of enterprise IT management, IT sourcing and contractual relationships) and (4) ethical and security issues associated with IT. Semester Hours: 3. Cross-listed with: ISMG 6180. Note: Students cannot receive credit if they have taken BUSN 6810 or ISMG 6180. .

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 firm's 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. Semester Hours: 3. Prerequisite: BUSN 6530 or FNCE 6290 and BUSN 6550, both may be taken concurrently.

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. Semester Hours: 3. When Offered: *Spring*. Prerequisite: BUSN 6530 and BUSN 6550, both may be taken may concurrently.

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 key Operation Management issues including scheduling, capacity determination, facility location and layout, distribution and related topics. The use of model- assisted decision making is emphasized. Semester Hours: 3. When Offered: *Fall, Spring, Summer*.

BUSN 6631 - Management of Operations (Health Section). This course focuses on managing and evaluating the processes that produce and deliver health services. Particular emphasis is on quantitative techniques to support healthcare operations including Monte Carlo simulation, decision analysis, quality improvement methods, forecasting, capacity planning, project management and inventory and supply chain management. While this course is intended for healthcare students, it is open to all. Semester Hours: 3. When Offered: *Spring*.

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. Semester Hours: 3. Prerequisite: BUSN 6530 or FNCE 6290, BUSN 6620 (both may be taken concurrently) and BUSN 6550 completed prior and strictly enforced.

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. Semester Hours: 3. When Offered: *Fall, Spring, Summer*. Prerequisite: BUSN 6560 and BUSN 6640 - strictly enforced; BUSN 6630 strongly recommended and may be taken concurrently. Note: This course is intended as a final semester Capstone course.

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. Semester Hours: 3. When Offered: *Spring*. Prerequisite: BUSN 6560 and 6640 - strictly enforced; BUSN 6630 strongly recommended and may be taken concurrently. Note: This course is intended as a final semester course. Required of Health Administration majors; open to others.

BUSN 6800 - Topics In Business. Current topics in business are occasionally offered. Semester Hours: 3. Prerequisite: Prerequisites vary depending on the material covered. Consult the current 'schedule planner' for specific offerings and prerequisites.

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. Semester Hours: 3. Prerequisite: Permission of instructor.

BUSN 6820 - 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. Application to various industries will be included. Semester Hours: 3. Cross-listed with: DSCI 6820. Note: Cannot receive credit for both BUSN 6820 and DSCI 6820.

BUSN 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 coverage. In addition, simulation is introduced as a technique for studying service industries. Semester Hours: 3. Prerequisite: BUSN 6530 or permission of instructor. Cross-listed with: DSCI 6822. Note: Cannot receive credit for both BUSN 6822 and DSCI 6822.

BUSN 6824 - Business Forecasting. Modern businesses use forecasts in marketing, finance, accounting, human resources management and supply chain and production management decision making. This course focuses on practical application of forecasting techniques, choosing and comparing appropriate methods and applying the results to the business application. Semester Hours: 3. Prerequisite: BUSN 6530 or FNCE 6290. Cross-listed with: DSCI 6230 and FNCE 6372. Note: Can only receive credit for one of the cross listed courses.

BUSN 6826 - Supply Chain Management. Introduces the application of purchasing, operations, and logistics to the entire supply chain of an organization. Because of globalization and the rapid advancement of information technology, emphasis is placed on integration management of processes and systems, relationship management of upstream and downstream players and strategies that incorporate current and future trends. Semester Hours: 3. Cross-listed with: DSCI 6826. Note: Cannot receive credit for both BUSN 6826 and DSCI 6826.

BUSN 6828 - Business Applications of Data Mining. Addresses statistical approaches to the very large data sets increasingly common in business applications such as internet-based business, fraud detection, credit scoring and market segmentation. Topics include limitations of classical statistical when applied to large data sets, alternative approaches and applications of key data mining algorithms such as logistic regression, decision trees and cluster analysis. Emphasis is placed on proper choice of method, interpretation of the results and understanding of the strengths and limitations of the methods. Students are expected to analyze and report on a variety of data sets drawn from business applications areas. Semester Hours: 3. Prerequisite: BUSN 6530 or permission of instructor. Cross-listed with: DSCI 6828. Note: Cannot receive credit for both BUSN 6828 and DSCI 6828.

BUSN 6830 - Business and the Natural Environment. Class considers the impact of economic activity on the natural environment and the regulatory, market and corporate voluntary responses to reducing this impact. Topics include externalities, life cycle assessment, environmental accounting, corporate environmental reporting, ISO 14000 certification and sustainability. Semester Hours: 3.

BUSN 6832 - 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 Sigma, work design and measurement and process flow and design. Semester Hours: 3. Prerequisite: BUSN 6530 or permission of instructor. Cross-listed with: DSCI 6440. Note: Cannot receive credit for both BUSN 6832 and DSCI 6440.

BUSN 6834 - Simulation Modeling. Students learn to model and analyze complex dynamic systems using state-of-the-art software such as ARENA. 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 projects where students define, model and analyze a significant system of their choosing. Semester Hours: 3. Prerequisite: Permission of instructor. Cross-listed with: DSCI 6480. Note: Cannot receive credit for both BUSN 6834 and DSCI 6480.

BUSN 6836 - Decision Analysis. Examines business decision making under conditions of risk and uncertainty using quantitative decision analysis methods such as utility theory, value of information, decisions with conflicting objectives and hierarchical structured models. Applications include decisions commonly encountered in capital acquisitions, financial investments, quality control, project selection, strategic planning, production control and human resource management. Student computer-assisted projects are conducted. Semester Hours: 3. Cross-listed with: DSCI 6460. Note: Cannot receive credit for both BUSN 6836 and DSCI 6460.

BUSN 6840 - Independent Study. Semester Hours: 1 to 3.

BUSN 6850 - Accounting and Finance for Sustainability. Helping companies and communities become more socially and environmentally sustainable requires information and investment. This class introduces internal accounting techniques that aid companies in becoming more eco-efficient and external reporting to help investors value a company along social and environmental dimensions. How and when to report potential environmental liabilities and different models of sustainability reporting are also discussed. At the national level we examine alternative measures of GDP that better represent social and environmental aspects of the country. Markets can be powerful tools for change. We look at emissions trading, microfinance and socially responsible investing. Semester Hours: 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. Semester Hours: 3.

Business Law: BLAW (Business)

C E: Civil Engineering (Engineering)

C E 1800-183X - Special Topics. Semester Hours: 1 to 6.

C E 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. Semester Hours: 1 to 6.

C E 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. Semester Hours: 3. Prerequisite: PHYS 2311. Corequisite: ENGR 1025, MATH 2422. Cross-listed with: M E 2023.

C E 2200 - Computing Methods in Civil Engineering. Introduces Fortran computer programming and advanced spreadsheet methods of solving civil engineering problems. Semester Hours: 3. Prerequisite: ENGR 1025 and MATH 2411.

C E 2212 - Plane Surveying. Observation, analysis and presentations of basic linear, angular, area and volume field measurements common to civil engineering endeavors. Semester Hours: 3. Corequisite: MATH 1401. **C E 2800-283X - Special Topics.** Semester Hours: 1 to 6.

C E 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. Semester Hours: 1 to 6.

C E 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. Semester Hours: 3. Prerequisite: C E 2121. Cross-listed with: M E 2033.

C E 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. Semester Hours: 3. Prerequisite: C E 2121. Cross-listed with: M E 3043.

C E 3131 - Applied Mechanics. A limited study of particle and rigid body mechanics. Subject coverage introduces vector concepts of force, moment and equilibrium, then concentrates on kinematics and kinetics of particles in motion, including oscillatory and orbital and finally discusses rigid body motion with emphasis on energy and momentum methods. Semester Hours: 3. Prerequisite: MATH 2422 and PHYS 2311. (Not for Civil Engineer or Mechanical Engineer majors.).

C E 3141 - Introduction to Structural Materials. Introduces the production, properties, and behavior of common engineering materials. Emphasis is placed on concrete, steel, and wood. Includes the techniques used to determine material properties. Semester Hours: 2 Corequisite: C E 3121.

C E 3154 - Water Quality Laboratory. Lecture and lab weekly, discussing techniques and making measurements of water purity parameters. Semester Hours: 2. Prerequisite: CHEM 1130/2031 and 2038; prereq or coreq: MATH 2411.

C E 3313 - Theoretical Fluid Mechanics. Introduces the fundamentals of fluid mechanics. Subject matter includes fluid properties, hydrostatics, the continuity principle, the energy principle, the momentum principle, similitude and dimensional analysis, forces on immersed bodies and laminar and turbulent flow in a closed conduit. Semester Hours: 3. Prerequisite: C E 2121.

C E 3323 - Applied Fluid Mechanics. Applies the principles of fluid mechanics to analysis and design of hydraulic systems involving pressurized pipelines, open channels and pumps. Introduces fluid measurements which includes laboratory demonstrations and experiments. Semester Hours: 3. Prerequisite: C E 2200 and C E 3313.

C E 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 sub-surface systems. Laboratory exercises provide direct experiential learning of key concepts. Semester Hours: 3. Prerequisite: CHEM 1130 or equivalent. Cross-listed with: C E 5401.

C E 3414 - Design of Water and Wastewater Systems. Covers the design of water distribution and wastewater collection systems. Topics include the design process, estimation of water demand and sewage flows, analysis of pipe networks and sewer systems, cost estimating, and design selection. Field trips are required. Semester Hours: 3. Prerequisite: Prereq/Coreq: C E 3323.

C E 3505 - Structural Analysis. Principles of structural analysis applied to statically determinate and indeterminate structures. Semester Hours: 3. Prerequisite: C E 3121.

C E 3602 - Transportation Engineering. Introduces the technology, operating characteristics and relative merits of highway, airway, waterway, railway, pipeline and conveyor transportation systems. Recent

transportation systems innovations. Semester Hours: 3. Prerequisite: Junior standing or permission of instructor.

C E 3708 - Introduction to Geotechnical Engineering. Index properties of soils, soil classification, clay minerals, compaction and other soil improvement methods; shrinkage, swelling and frost action; permeability and seepage analysis, consolidation settlement and time rate of consolidation, shear strength of soils, bearing capacity and lateral earth pressure. Semester Hours: 3. Prerequisite: C E 3121. Corequisite: C E 3313.

C E 3800-383X - Special Topics. Semester Hours: 1 to 6.

C E 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. Semester Hours: 1 to 8.

C E 4000 - Senior Seminar. Offered each fall and spring semester. Required of all Civil Engineering majors. Each student shall take the state-administered Fundamentals of Engineering (F.E.) examination. This course must be taken prior to the semester of graduation. Semester Hours: 0. Prerequisite: C E 3111, ENGR 3012, E E 3030, senior standing and approved 30 credit hour check.

C E 4067 - Senior Design Project. 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. Semester Hours: 3. Prerequisite: An approved graduation agreement.

C E 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. Semester Hours: 3. Prerequisite: Junior standing. Cross-listed with: M E 4147.

C E 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. Semester Hours: 3. Prerequisite: Senior standing.

C E 4115 - Introduction to Structural Dynamics. Single degree-of-freedom systems, two degree-of-freedom systems. Complex representation, step and impulse loads, many degrees of freedom, influence coefficients, matrix methods, stability of solution, vibration of strings, beams and membranes, approximate methods. Semester Hours: 3. Prerequisite: C E 3111, MATH 3191 and 3200.

C E 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. Semester Hours: 3. Prerequisite: C E 3323 and senior standing. Cross-listed with: C E 5427.

C E 4537 - Numerical Methods for Engineers. Introduces numerical analysis. Solution of linear and nonlinear equation systems. Numerical methods for ordinary and partial differential equations. Engineering applications. Semester Hours: 3. Prerequisite: C SC 1100/1410, MATH 3191 and 3200.

C E 4565 - Timber Structure Design. Design of wood floor systems, beams, columns, trusses, diaphragms and form work. Connection design, glued-laminated members, plywood. Semester Hours: 3. Prerequisite: C E 3505 and C E 3141.

C E 4575 - Structural Steel Design. Design of structural steel members and their connections. Semester Hours: 3. Prerequisite: C E 3505 and C E 3141.

C E 4585 - Reinforced Concrete Design. Ultimate strength methods for design of reinforced concrete structures. Semester Hours: 3. Prerequisite: C E 3505 and C E 3141.

C E 4602 - Highway Engineering. Evaluates alternate highway routes. Discusses highway drainage, finance, maintenance, pavement design,

traffic operations and principles of economic analysis. Analyses the impact of the highway on the environment. Semester Hours: 3. Prerequisite: C E 3602 and C E 3708.

C E 4718 - Intermediate Soils Engineering. Continuation of C E 3708 into selected topics in soils engineering. Laboratory experiments are performed to assess index properties of soils including gradation, soil consistency and specific gravity; moisture/density relations; soil classification, permeability, compressibility; and shear strength of soils. These soil parameters are then used in a design project required for the course. Semester Hours: 2. Prerequisite: Prereq/Coreq: C E 3708.

C E 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. Semester Hours: 3. Prerequisite: C E 3708 and C E 3141. Corequisite: C E 4718.

C E 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. Semester Hours: 3. Prerequisite: MATH 2411 and C E 2121. Cross-listed with: C E 5780 and GEOL 4780, 5780.

C E 4800-483X - Special Topics. Supervised study of special topics of interest to students under guidance of instructor. Semester Hours: 1 to 6. Prerequisite: Permission of instructor.

C E 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. Semester Hours: 1 to 6.

C E 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. Semester Hours: 3. Prerequisite: C E 3505 and C E 4115.

C E 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. Semester Hours: 3. Prerequisite: C E 3121, MATH 3191 and 3200.

C E 5333 - Applied Hydrology. Engineering application of principles of hydrology. Subject matter includes precipitation measurement and data analysis, stream flow measurement and water budget analysis, evaporation and evapotranspiration, infiltration and rainfall-runoff relationships, hydrograph properties and unit hydrograph analysis, flood frequency, analysis and flood routing. Semester Hours: 3. Prerequisite: Permission of instructor.

C E 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor.

C E 5336 - Storm Water Modeling. This course covers rainfall/runoff data base, rain gage under-catch, statistical models for frequency analysis, Unitgraph 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. Semester Hours: 3. Prerequisite: C E 5333 and graduate standing.

C E 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. Semester Hours: 3. Prerequisite: C E 3323 or permission of instructor.

C E 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. Semester Hours: 3. Prerequisite: C E 5343 and C E 5333 or permission of instructor.

C E 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. Semester Hours: 3. Prerequisite: C E 3323.

C E 5381 - Introduction to Geographic Information Systems. Provides an over-view 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. Semester Hours: 3. Prerequisite: Graduate and/or upper division standing.

C E 5382 - GIS Spatial Database 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. Semester Hours: 3. Prerequisite: Graduate and/or upper division standing; completion of C E 5381 (or equivalent) and MEng-GIS program prerequisites (especially surveying, mapping and computing); background in algebra, calculus fundamentals and facility to compute DOS/UNIX, spreadsheet, and FORTRAN; familiarity with various CAD (e.g. AutoCAD) and GIS (e.g. ArcInfo, GRASS) software is also required.

C E 5383 - GIS Analyses—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. Semester Hours: 3. Prerequisite: Graduate and/or upper division standing; completion of C E 5381 (or equivalent) and completion of MEng-GIS prerequisites (especially applied Statistics); background in algebra, calculus fundamentals, facility to compute DOS/UNIX, OS/UNIX, spreadsheet, and FORTRAN; familiarity with various CAD (e.g., AutoCad) and GIS (e.g., ArcInfo, GRASS), software is also required.

C E 5384 - GIS Management and Policies. This fourth course addresses aspects of GIS planning and development. These include topics of benefit-cost and financial analysis, scheduling, project management, internal and external marketing. 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, administrative structure which enhances efficiency of use, and legal considerations involved with development and use of such databases. Semester Hours: 3. Prerequisite: Graduate and/or upper division standing; completion of C E 5381 (or equivalent); familiarity with various CAD (e.g. AutoCAD) and GIS (e.g. ArcInfo, GRASS) software is also required.

C E 5385 - GIS Relational Database Systems. Introduces database concepts with emphasis on GIS. Includes 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. Semester Hours: 3. Prerequisite: Graduate and/or upper division standing; completion of C E 5381 or equivalent and completion of the MEng-GIS program prerequisites; background in algebra, calculus fundamentals and facility to compute DOS/UNIX, spreadsheet and FORTRAN; familiarity with various CAD (e.g., AutoCAD) and GIS (e.g., ArcInfo, GRASS) software is also required.

C E 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. Semester Hours: 3. Prerequisite: Computing and Introduction to GIS or their equivalent.

C E 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. Semester Hours: 3. Prerequisite: Calculus II, Statistics, Surveying and Mapping, Introduction to GIS, GIS Spatial Data Development (C E 5382) or Introduction to Remote Sensing.

C E 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. Semester Hours: 3.

C E 5394 - Water Resources Systems. Addresses the concepts, general processes, and quantification methods used in planning and analysis of water resource system planning and operations problems and goals, analysis methods, computer simulation and optimization. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor.

C E 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 sub-surface systems. Semester Hours: 3. Prerequisite: Graduate standing in MSCE or MSES programs or permission of instructor. Cross-listed with: C E 3401.

C E 5402 - Environmental and Water Quality 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. Includes hands-on experience in modeling surface and ground water systems. Semester Hours: 3. Prerequisite: C E 5401.

C E 5403 - Environmental Regulations and Management Systems. Students will be introduced to legal concepts used to develop environmental laws and will receive an overview and understanding of major environmental laws. In addition, students will learn about environmental management systems and their application. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor.

C E 5404 - Chemical Processes in Environmental Engineering. Design and analysis of chemical processes in environmental systems—air, water and subsurface. Incorporates equilibrium, coordination, and

oxidation-reduction chemistry concepts. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor.

C E 5414 - Physical Processes in Environmental Engineering.

Design and analysis of physical processes in environmental systems—air, water and subsurface. Topics include mixing models, volatilization, sedimentation, filtration, adsorption and membrane processes. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor.

C E 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. Semester Hours: 3. Prerequisite: C E 3323. Cross-listed with: C E 4427.

C E 5434 - Biological Processes in Environmental Engineering.

Design and analysis of biological processes in environmental systems—air, water and subsurface. Topics include activated sludge, anaerobic digestion, in-situ bioremediation and phytoremediation. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor.

C E 5444 - Design of Solid Residuals and Natural Treatment

Systems. Solid residuals treatment topics include thickening, dewatering, digestion, land application and composting. Natural treatment systems topics include slow rate, rapid, and overland flow land treatment systems; and constructed wetlands. Field trip required. Semester Hours: 3. Prerequisite: Graduate standing, MATH 2411, PHYS 2311 and ability to use spreadsheets.

C E 5456 - Engineering Practice. Consulting engineering practice and management. Professional practice and organization. Marketing, ethics, personnel selection, and training. Planning, budgeting, work scheduling, resource allocation, and balancing. Oral and written communication, quality standards, and engineering management. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor.

C E 5457 - Administration of Public Works. A descriptive course concerned with the administration of engineering and planning aspects of urban public works. Semester Hours: 3. Prerequisite: Graduate standing in civil engineering or public administration, or permission of instructor.

C E 5460 - Intro Sustainable Urban Infrastructure. Focuses on developing uniform vocabulary on sustainable infrastructure across science and technology, architecture and planning, public policy, and health and behavioral sciences. Students learn concepts, principles/pathways and evaluation techniques for promoting the diffusion of sustainable urban infrastructures. Semester Hours: 3.

C E 5461 - 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. Semester Hours: 3.

C E 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-water pump-and-treat, soil vapor extraction, soil washing, and bioremediation. Semester Hours: 3. Prerequisite: C E 5402.

C E 5481 - Sustainable Urban Water Systems. Design of sustainable water systems. Defines sustainable water systems, then discusses sustainable aspects of water resources, water treatment, water distribution, wastewater treatment, and water policy. Also covers planning for climate change, and designing urban environments for decreased water usage. Semester Hours: 3.

C E 5494 - 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. Semester

Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: ENVS 6200, HBSC 7340.

C E 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. Semester Hours: 3. Prerequisite: C E 3505.

C E 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor.

C E 5537 - Numerical Methods in Civil Engineering. Introduces numerical analysis. Solution of linear and nonlinear equation systems. Numerical methods for ordinary and partial differential equations. Engineering applications. Differs from C E 4537 by the addition of individual student projects. Semester Hours: 3. Prerequisite: C SC 1100/1410, MATH 3191 and 3200. Cross-listed with: E E 5210, M E 5110.

C E 5575 - Advanced Topics in Structural Steel Design. Plate buckling, plate girder design and other topics determined by class interest. Semester Hours: 3. Prerequisite: C E 4575.

C E 5585 - Advanced Topics in Reinforced Concrete. Advanced topics relating to design and analysis of reinforced concrete structures. Semester Hours: 3. Prerequisite: C E 4585.

C E 5602 - Advanced Highway Design. Design and location of various classes of rural and urban highways. Development of theory as a rational basis of design for highway alignment, cross-section, intersections, and interchanges is stressed. Semester Hours: 3. Prerequisite: C E 4602.

C E 5611 - Traffic and Safety Data Analysis. 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor.

C E 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor.

C E 5613 - Traffic Flow Theory and Fundamentals. Emphasizes the mathematical and probabilistic aspects of traffic flows on interrupted (signalized) and uninterrupted (unsignalized) roadways. The course examines the properties of vehicle motion in traffic streams, and then examines the traffic interactions affected by the relationship between supply (signal timings and road designs) and demand (vehicle arrival rates and traffic patterns). Both macroscopic and microscopic models of traffic flow characteristics are presented, as well as queuing models and statistical distributions of headways. Semester Hours: 3. Prerequisite: C E 5611 and C E 5621 or permission of instructor.

C E 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor.

C E 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. Semester Hours: 3. Prerequisite: C E 5621 or permission of instructor.

C E 5631 - Transportation Planning Methods. Introduces the urban transportation planning process as conducted by metropolitan planning organizations throughout the U.S. Course covers the four-step modeling process (trip generation, trip distribution, mode split and assignment). Topics also include data needs, survey methods, and statistical models for origin-destination estimation and travel demand forecasting. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor.

C E 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. Semester Hours: 3. Prerequisite: C E 5631 or permission of instructor.

C E 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. Semester Hours: 3. Prerequisite: C E 3602 and graduate standing or permission of instructor.

C E 5662 - Transportation System Safety. Safety aspects of highway, railroad, and airway transportation systems. Accident analysis, accident prevention, economic consequences of accidents. Semester Hours: 3. Prerequisite: C E 3602 and graduate standing or permission of instructor.

C E 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. Semester Hours: 3. Prerequisite: C E 3602 and C E 4718.

C E 5692 - Urban Traffic Workshop. Selected laboratory problems related to urban traffic. Semester Hours: 3. Prerequisite: C E 5642 or equivalent.

C E 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. Semester Hours: 3. Prerequisite: C E 3708, C E 4718, and graduate standing or permission of instructor.

C E 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. Semester Hours: 3.

C E 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. Semester Hours: 3. Prerequisite: C E 3708, C E 4718, and graduate standing or permission of instructor.

C E 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. Semester Hours: 3. Prerequisite: C E 5708.

C E 5728 - Groundwater and Seepage. Principles governing flow of water through soils. Approximate methods for confined and unconfined seepage problems, including flow nets, analog models, numerical methods, and method of finite elements. Analytical solutions for unconfined flow problems. Drainage filter design. Seepage toward wells. Stability of earth structures due to seepage. Semester Hours: 3. Prerequisite: C E 3708, C E 4718, and graduate standing or permission of instructor.

C E 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. Semester Hours: 3. Prerequisite: C E 5708, C E 5718, and graduate standing or permission of instructor.

C E 5748 - Design of Earth Embankment Dams. Theory, design, and construction of earth embankments. Use of published data, field exploration, laboratory tests on soils and rock in investigating foundations, and construction materials. Principles of compaction and settlement. Slope stability analysis, landslide, recognition and control, use of benches and beams. Semester Hours: 3. Prerequisite: C E 3708, C E 4718, and graduate standing or permission of instructor.

C E 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. Semester Hours: 3. Prerequisite: C E 4738, B.S.C.E. or permission of instructor.

C E 5768 - Theoretical and Applied Rock Mechanics. Nature of rock masses, geological exploration, deformability and strength of rock and joint materials, slope stability in hard rocks, physical models in geological engineering, in-situ tests of deformability and strength, in-situ stresses and deformation, rock hydraulics. Semester Hours: 3. Prerequisite: C E 3708, C E 4718, and graduate standing or permission of instructor.

C E 5778 - Applied and Experimental Rock Mechanics. Surface exploration and characterization of rock masses, slope stability, analysis of rock masses; rock mass reinforcement; tunnel and shaft designs, design of underground rock chambers; foundations on rocks; and dam design. Semester Hours: 3. Prerequisite: C E 5768 or permission of instructor.

C E 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. Semester Hours: 3. Prerequisite: MATH 2411 and C E 2121. Cross-listed with: C E 4780 and GEOL 4780/5780.

C E 5788 - Design and Construction of Municipal Solid Waste Disposal Facilities. NIMBY (Not In My Back Yard) and environmental regulations demand that all landfills receive proper engineering design. This course covers regulations, management (reduction, collection, transportation, transformation, recycling, incineration, disposal), and disposal facility design. Semester Hours: 3. Prerequisite: Senior in C E, B.S.C.E. or permission of instructor.

C E 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. Semester Hours: 3. Prerequisite: C E 5708, 5718, and graduate standing or permission of instructor.

C E 5800-583X - 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, advanced steel design, hydraulic transients, foundations—expansive soils, sludge process design. Semester Hours: 1 to 6. Prerequisite: Variable.

C E 5840 - Independent Study. Available only through approval of the graduate advisor. Subjects arranged to fit needs of particular student. Semester Hours: 1 to 6.

C E 5950 - Master's Thesis. Semester Hours: 1 to 8.

C E 5960 - Master's Report. Semester Hours: 1 to 8.

C E 6110 - PhD Seminar. Introduces PhD students to the process of doctoral research, addresses important milestones and hurdles in the PhD process, and provides advanced doctoral students with the opportunity for presenting and discussing their research with peers. Semester Hours: 0. Prerequisite: Admission to the PhD program.

C E 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. Semester Hours: 3. Prerequisite: C E 5111.

C E 6131 - Theory of Elasticity. Mathematical theory of elasticity and its applications to engineering problems. Discussion of the basic analytical and numerical methods of solutions. Semester Hours: 3. Prerequisite: C E 5121.

C E 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. Semester Hours: 3. Prerequisite: C E 3121.

C E 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. Semester Hours: 3. Prerequisite: C E 5333, 5343 and graduate standing.

C E 6353 - Hydraulic Design. Design of small dams, including reservoir sizing, spillways, and energy dissipaters. Design of urban drainage and flood control facilities such as culvert transitions, roadside ditches, street inlets, detention/retention ponds, storm sewer systems, drainage channels, and channel erosion controls including vegetation, concrete, riprap protection. Design of floodplain encroachment, natural channel improvement, and bridge hydraulics. Semester Hours: 3. Prerequisite: C E 5333 and 5343.

C E 6515 - Advanced Theory of Structures. Generalized approaches to the analysis of civil engineering and continuous elastic structures (such as plates and plane stress bodies) by force and displacement methods. Emphasis is on formulation by finite elements and solution by matrix methods. Semester Hours: 3. Prerequisite: C E 5515 and basic knowledge of computer programming.

C E 6738 - Finite Element Method in Geotechnical Engineering. Semester Hours: 3.

C E 6840 - Independent Study. Semester Hours: 1 to 6.

C E 7800-783X - Special Topics. Credit and subject matter to be arranged. Semester Hours: 1 to 6. Prerequisite: Variable.

C E 7840 - Independent Study. Available only through approval of the graduate advisor. Subjects arranged to fit needs of particular student. Semester Hours: 1 to 3.

C E 7990 - Doctoral Dissertation. Semester Hours: 1 to 10.

C E 8990 - Doctoral Dissertation. Semester Hours: 1 to 10.

Chancellor's Scholars and Leaders: CSL

CHEM: Chemistry (Liberal Arts and Sciences)

CHEM 1000 - Foundations for General Chemistry. Lecture. This course prepares for CHEM 2031 or 1130. Semester Hours: 3. Prerequisite: MATH 1110 or high school equivalent. Note: For students with no previous chemistry or with inadequate background.

CHEM 1111 - Freshman Seminar. Semester Hours: 1 to 3.

CHEM 1115 - Chemistry Content. Covers content areas of undergraduate chemistry. Topics include periodicity; the mole and chemical bonding; the kinetic theory and states of matter; chemical reactions; solutions and chemical equilibria. Semester Hours: 1 to 3.

CHEM 1130 - Engineering General Chemistry. A one-semester non-laboratory version of general chemistry for engineers and those science majors who do not require laboratory credit and do not plan to take a second semester of chemistry. Semester Hours: 5. Prerequisite: One year of high school chemistry or CHEM 1000 and MATH 1110 (or high school equivalent).

CHEM 1474 - Core Chemistry: Chemistry For the Consumer: SC1. Focuses on the common household chemicals that affect us on a daily basis. Students learn the underlying chemistry of nuclear power, sunscreens, food, cleaning agents, etc. Home-based laboratory experiments with safe, common substances. Semester Hours: 4.

CHEM 2031 - General Chemistry I: SC1. Topics include chemical structure, atomic and molecular properties, molecular geometry and bonding, and gas laws. Prepares students to take upper division chemistry courses. Semester Hours: 3. Prerequisite: One year of high school chemistry or CHEM 1000 and MATH 1110 (or high school equivalent); Coreq: CHEM 2038. Note: A beginning course for science majors, medical technologists, pre-medical and pre-dental students.

CHEM 2038 - General Chemistry Laboratory I: SC1. Students perform laboratory experiments on topics covered in CHEM 2031 and gain experience in observing, recording, and interpreting physical and chemical phenomena. Semester Hours: 1 Corequisite: CHEM 2031. Note: Laboratory to accompany CHEM 2031.

CHEM 2061 - General Chemistry II: SC1. (Continuation of CHEM 2031.) Topics include kinetics, equilibria and thermodynamics. Semester Hours: 3. Prerequisite: CHEM 2031; Coreq: CHEM 2068.

CHEM 2068 - General Chemistry Laboratory II: SC1. Students gain experience with laboratory technique and elementary chemical instrumentation. Semester Hours: 2. Prerequisite: CHEM 2038; Coreq: CHEM 2061. Note: Laboratory to accompany CHEM 2061 and a continuation of CHEM 2038.

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. Semester Hours: 3. Prerequisite: CHEM 1000, 1474 or high school chemistry.

CHEM 2840 - Independent Study. Semester Hours: 1 to 3.

CHEM 2939 - Internship/Cooperative Education. Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: 15 hours of 2.75 GPA.

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. Semester Hours: 3. Prerequisite: Prereq or Coreq: CHEM 3421 or 3491.

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. Semester Hours: 2. Prerequisite: Prereq or Coreq: CHEM 3011.

CHEM 3111 - Analytical Chemistry. Topics include sampling, volumetric analyses, instrumental analyses and statistical treatment of data. Semester Hours: 3. When Offered: *Fall*. Prerequisite: CHEM 2061. Note: Lecture course for chemistry, biology, medical technology and environmental students.

CHEM 3118 - Analytical Chemistry Laboratory. Students gain experience with technique of sampling and analysis, including an introduction to instrumental methods. Semester Hours: 2. When Offered: *Fall*. Prerequisite: CHEM 2068; Coreq: CHEM 3111. Note: Laboratory course to be taken concurrently with CHEM 3111.

CHEM 3411 - Organic Chemistry I. Lecture course designed to introduce the study of structure, reactions, properties, and mechanisms of organic molecules. Semester Hours: 4. Prerequisite: CHEM 2061.

CHEM 3418 - Organic Chemistry Laboratory I. Laboratory course to augment concepts of CHEM 3411, illustrating the practical aspects of organic chemistry. Semester Hours: 1. Prerequisite: CHEM 2068; Prereq or Coreq: CHEM 3411.

CHEM 3421 - Organic Chemistry II. Lecture course designed to introduce the study of structure, reaction, properties and mechanisms of organic molecules. Semester Hours: 4. Prerequisite: CHEM 3411. Note: Continuation of CHEM 3411.

CHEM 3428 - Organic Chemistry Laboratory II. Laboratory course to augment concepts of CHEM 3421, illustrating the practical aspects of organic chemistry. Semester Hours: 1. Prerequisite: CHEM 3418; Prereq or Coreq: CHEM 3421.

CHEM 3491 - Honors Organic Chemistry II. Second semester organic chemistry. Theoretical concepts and practical aspects of organic structure, mechanism, synthesis and analysis. Semester Hours: 4. Prerequisite: CHEM 3411. Corequisite: CHEM 3498. Note: Required for chemistry majors and open to all students. No joint credit with CHEM 3421.

CHEM 3498 - Honors Organic Chemistry Laboratory II. In small groups, students use the chemical literature to devise multi-step syntheses and determine reaction mechanisms for organic compounds. Semester Hours: 2. Prerequisite: Prereq or Coreq: CHEM 3491. Note: Laboratory course required for chemistry majors. Open to non-majors on approval of the instructor.

CHEM 3810 - Biochemistry. Introduces the principles of biochemistry for science and health science-oriented majors. Designed to cover the important aspects of modern biochemistry. Semester Hours: 4. Prerequisite: BIOL 2061 and CHEM 3411.

CHEM 3840 - Independent Study. Semester Hours: 1 to 3.

CHEM 3939 - Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: Junior standing and at least a 2.75 GPA.

CHEM 4121 - Instrumental Analysis. Surveys instrumental methods of analysis. Emphasis on spectrophotometry, electrochemistry, chromatography and radiochemical techniques. Semester Hours: 3. When Offered: *Spring*. Prerequisite: CHEM 3111, 3421 or 3491, and PHYS 2331; Coreq for Chemistry majors: CHEM 4128.

CHEM 4128 - Instrumental Analysis Laboratory. Laboratory practice to accompany CHEM 4121. One hour of discussion and three hours of laboratory, with an emphasis on writing laboratory reports. Semester Hours: 2. When Offered: *Spring*. Corequisite: CHEM 4121. Note: Required of chemistry majors and open to other students in CHEM 4121.

CHEM 4511 - Physical Chemistry I. Includes study of the laws of thermodynamics, thermochemistry, chemical equilibria, solutions and statistical mechanics. Semester Hours: 3. When Offered: *Fall*. Prerequisite: PHYS 2331; Coreq: MATH 3511.

CHEM 4518 - Physical Chemistry I Laboratory. Instruction in the experimental techniques of physical chemistry with emphasis on the properties of gases, thermodynamics and chemical equilibrium. Semester Hours: 2. Prerequisite: CHEM 3118; Coreq: CHEM 4511.

CHEM 4521 - Physical Chemistry II. Continuation of CHEM 4511, with emphasis on chemical kinetics, quantum mechanics, molecular

structure and spectroscopy. Semester Hours: 3. When Offered: *Spring*. Prerequisite: CHEM 4511 and MATH 3511.

CHEM 4538 - Physical Chemistry II Laboratory. Instruction in the experimental techniques of physical chemistry with emphasis on quantum chemistry, spectroscopy and chemical kinetics. Semester Hours: 2. Prerequisite: CHEM 4518; Coreq: CHEM 4521.

CHEM 4700 - Environmental Chemistry. A discussion of the sources, reactions, transport, effects, and fates of chemical species in the water, soil, and air environments. Semester Hours: 3. Prerequisite: CHEM 3111 or 3411. Cross-listed with: CHEM 5700.

CHEM 4810 - General Biochemistry I. Topics include structure, conformation, and properties of proteins; enzymes, mechanisms and kinetics; carbohydrates, lipids and membranes, and energetics. Semester Hours: 3. Prerequisite: CHEM 3421 or 3491. Cross-listed with: CHEM 5810.

CHEM 4820 - General Biochemistry II. Topics include biosynthesis and metabolism of carbohydrates, lipids and amino acids, information processing. Semester Hours: 3. When Offered: *Spring*. Prerequisite: CHEM 4810. Cross-listed with: CHEM 5820. Note: Continuation of CHEM 4810.

CHEM 4828 - Biochemistry Lab. Focuses on modern laboratory techniques for biochemical research, with an emphasis on methods for protein isolation, purification, and identification. Students perform experiments involving (but not limited to) chromatography, electrophoresis, spectrophotometry, and protein activity assays. Semester Hours: 2. Prerequisite: CHEM 3810 or 4810.

CHEM 4835 - Biochemistry of Cancer. Explores the biochemical aspects of cancer causation and treatment. Topics include DNA and protein damage, oncogenes and tumor suppressors, the chemistry of chemotherapeutic agents, and the mechanisms of resistance to anticancer drugs. Semester Hours: 3. Prerequisite: CHEM 3810, 4810, or 5810. Cross-listed with: CHEM 5835.

CHEM 4840 - Independent Study. Semester Hours: 1 to 6. Prerequisite: Permission of instructor required.

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. Semester Hours: 4. Prerequisite: CHEM 3011 and CHEM 4521 or equivalent, or permission of instructor.

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. Semester Hours: 4. Prerequisite: Permission of project director.

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. Semester Hours: 4. Prerequisite: CHEM 5071 (or equivalent) and permission of project director.

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). Semester Hours: 4. Prerequisite: Undergraduate instrumental analysis or equivalent.

CHEM 5130 - Surface Analytical Techniques. Surveys widely used techniques for surface analysis, including thermal desorption, mass spectrometry, X-ray photoelectron spectroscopy, and surface electro-

chemistry. Applications to catalyst and organic or biological surfaces are included. Semester Hours: 3. Prerequisite: CHEM 4121 or equivalent.

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. Semester Hours: 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. Semester Hours: 4. Prerequisite: CHEM 3421 and 4521.

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. Semester Hours: 3. Prerequisite: CHEM 4521 or permission of instructor.

CHEM 5520 - Molecular Structure and Spectra. Applies quantum mechanics to the understanding of molecular structure and spectroscopy. Semester Hours: 3. Prerequisite: CHEM 4521.

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. Semester Hours: 4. Prerequisite: CHEM 4511, 4521 and 4538 or equivalent.

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 MOs for main-group and transition metal compounds, ligand field theory, molecular vibrations, and electron absorption spectroscopy. Semester Hours: 3. Prerequisite: CHEM 4521 or permission of instructor.

CHEM 5600 - Topics in Chemistry. Semester Hours: 1 to 6.

Prerequisite: Graduate standing. Note: Topics vary from year to year.

CHEM 5700 - Environmental Chemistry. A discussion of the sources, reactions, transport, effects, and fates of chemical species in the water, soil and air environments. Semester Hours: 3. Prerequisite: CHEM 3111, 3411, and graduate standing. Cross-listed with: CHEM 4700.

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. Semester Hours: 3. Prerequisite: CHEM 4521 or 4700.

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. Semester Hours: 3. Prerequisite: CHEM 4700 or CHEM 5710 or permission of instructor.

CHEM 5810 - General Biochemistry I. Topics include structure, conformation, and properties of proteins; enzymes, mechanisms and kinetics; carbohydrates, lipids and membranes, and energetics. Semester Hours: 3. Prerequisite: CHEM 3421 or 3491. Cross-listed with: CHEM 4810.

CHEM 5820 - General Biochemistry II. Topics include biosynthesis and metabolism of carbohydrates, lipids and amino acids, information processing. Semester Hours: 3. When Offered: *Spring*. Prerequisite: CHEM 5810. Cross-listed with: CHEM 4820. Note: Continuation of CHEM 5810.

CHEM 5835 - Biochemistry of Cancer. Explores the biochemical aspects of cancer causation and treatment. Topics include DNA and protein damage, oncogenes and tumor suppressors, the chemistry of chemotherapeutic agents, and the mechanisms of resistance to anticancer drugs. Semester Hours: 3. Prerequisite: CHEM 3810, 4810, or 5810. Cross-listed with: CHEM 4835.

CHEM 5840 - Independent Study. Semester Hours: 1 to 3.

CHEM 5950 - Master's Thesis. Semester Hours: 1 to 8.

CHEM 6000 - Chemistry Seminar. Faculty and student presentations of UC Denver research projects and other current chemistry topics. Semester Hours: 1 to 3. Prerequisite: Graduate standing. Note: All chemistry students are encouraged to attend, but credit is given only to those who present seminars.

CHEM 6001 - Master's Research Seminar. Students present a formal seminar to the department describing their master's research work. Semester Hours: 1. Prerequisite: Participation in master's thesis or project research; CHEM 6000. Note: Required for all students completing a thesis-based master's degree; optional for those completing master's projects.

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. Semester Hours: 1. Prerequisite: Graduate standing. Note: Seminar presentations by faculty, outside speakers, and advanced graduate students are analyzed by the students participating in the course.

CHEM 6003 - Chemistry Seminar II. Students prepare and give a chemical seminar based on a literature paper. Semester Hours: 1. Prerequisite: Graduate standing. Note: Seminar presentations by students and outside speakers are analyzed by students in the course.

CHEM 6840 - Independent Study. Semester Hours: 1 to 6.

CHEM 6950 - Master's Thesis. Semester Hours: 1 to 3.

CHEM 6960 - Master's Report. Semester Hours: 1 to 6.

CHIN: Chinese (Liberal Arts and Sciences)

CHIN 1010 - Beginning Chinese I. A basic introduction to Chinese language and culture. Students study pronunciation, vocabulary, grammar and simple writing techniques. Semester Hours: 5. 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.

CHIN 1020 - Beginning Chinese II. (Continuation of CHIN 1010.) Further practice of pronunciation, study of vocabulary, grammar, and simple writing techniques. Semester Hours: 5. Prerequisite: CHIN 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.

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. Semester Hours: 3. Note: Chinese 1071 cannot be taken to fulfill language requirements; nor can it be used to substitute for Chinese 1010.

CHIN 1111 - Freshman Seminar. Semester Hours: 1 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. Semester Hours: 5. Prerequisite: CHIN 1020. 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.

CHIN 2120 - Second Year Chinese II. (Continuation of CHIN 2110.) Satisfies the fourth semester language requirement at most

graduate schools. Semester Hours: 5. Prerequisite: CHIN 2110. 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.

CHIN 2840 - Independent Study. Semester Hours: 1 to 3.

CHIN 2939 - Internship/Cooperative Education. Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: 15 hours of 2.75 GPA.

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. Semester Hours: 3. Note: Taught in English. All films have English subtitles. No previous study of Chinese language or culture is required.

CHIN 3300 - Special Topics on Chinese Film. Studies the cultural, social and historical conditions that have shaped Chinese cinema. May focus on one Chinese speaking country or more than one (including but not limited to China, Taiwan and Hong Kong). May focus on a particular period (pre-Cultural revolution, for example) or a particular theme (urban cinema or martial arts films, for example). Semester Hours: 3.

CHIN 3840 - Independent Study. Semester Hours: 1 to 3.

CHIN 3995 - Travel Study. A travel study abroad course to one or more Chinese speaking countries. Topics of the course will vary depending on the instructor, sites visited and focus of the course. Topics may include intensive language training, film studies, contemporary issues, literary and cultural studies, etc. Semester Hours: 3.

Chinese Studies: CNST (Liberal Arts and Sciences)

Civil Engineering (Engineering and Applied Science)

CJ: Criminal Justice (Public Affairs)

CJ 1001 - Introduction to Criminal Justice. 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. Semester Hours: 3.

CJ 1111 - Law & Order: Anatomy of the CJS. This course explores contemporary issues and cases in the criminal justice system. Topical issues cover various forms of crime; including environmental hazards, mass murder, and sexual assault. The course also focuses on current controversies in policing, courts, corrections, and the juvenile justice system. Semester Hours: 3. Prerequisite: Open only to new Freshmen.

CJ 2041 - Crime Theory and Causes. This course provides a general survey of the nature and causes of crime and efforts of the criminal justice system to predict, prevent, modify and correct this behavior. This course involves a critical appraisal of various theories of crime causation, including an examination of biological, psychological, economic and sociological perspectives that explain crime and deviance. Semester Hours: 3.

CJ 2110 - Drugs, Alcohol and Crime. This course looks at the socially constructed nature of drugs and drug policy. The course explores the connection between drugs and crime within the socio- historical context of contemporary U.S. drug policy. Special emphasis is placed on the relationships between drugs and alcohol abuse and criminal offending, including the historical and contemporary criminal justice system responses to illegal substances. Semester Hours: 3.

CJ 2210 - 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. Particular attention is paid to evaluations research evidence on the success of probation and parole, factors that contribute to the successful completions of probation and parole and the role that the community and citizens play in the community corrections process. Semester Hours: 3.

CJ 2320 - 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. Semester Hours: 3.

CJ 2510 - Juvenile Justice Administration. 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 the nature of juvenile law and methods of dealing with youthful offenders. Semester Hours: 3.

CJ 3100 - Criminal Justice Research Methods. This course introduces students to the formulation of research questions covering crime and justice, research designs, data collection and the interpretation and reporting of these data in criminological and justice-system settings. Course content also includes experimental and non- experimental research designs, probability and non- probability sampling techniques and construction of scales and indexes for research purposes. Semester Hours: 3.

CJ 3150 - Statistics for Criminal Justice. This course serves as an introduction to descriptive and inferential statistics and the computer analysis of criminology and criminal justice data. Course content includes basic procedures of hypothesis testing, correlation and regression analysis and the analysis of continuous and binary dependent variables. Emphasis is placed on the examination of research problems and issues in the field of criminology and criminal justice. Semester Hours: 3.

CJ 3160 - White-Collar Crime. This course introduces students to a variety of topics and issues in white-collar crime including types, causes and the measurement of white-collar crime. The class examines the debate surrounding the definition of white-collar crime, provides an overview of the costs of white-collar crime and corporate crime to society, considers competing theories that explain white-collar criminality and explores the use of criminal sanctions to deter misconduct involving corporations and elite offenders. Semester Hours: 3.

CJ 3220 - Community-Based 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. Semester Hours: 3.

CJ 3250 - 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. Semester Hours: 3.

CJ 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. Semester Hours: 3.

CJ 3310 - Police in Contemporary Society. 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. Semester Hours: 3.

CJ 3420 - Pleas, Trials and Sentences. This course focuses on analysis of case materials involving pleas, trials and sentences. Course content includes an examination of the basic dimensions of criminality, the specific elements of major crimes, the use of confessions, fair trial procedures and the nature of criminal sanctions including cruel and unusual punishments. Semester Hours: 3.

CJ 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 aftercare—are explored in context of youth policy generally. Semester Hours: 3.

CJ 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, alternative correctional placements and empirical assessments of the short and long-term consequences of one's involvement in correctional programs. Semester Hours: 3.

CJ 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 police role in a sociolegal context. Semester Hours: 3.

CJ 4044 - Courts and Judicial Process. This course examines the basic functions, structure and organization of the federal and state court system, with special attention on the criminal court system. This course also 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. Semester Hours: 3.

CJ 4120 - Race, Class and Crime. This course examines the relationships between race, social class and crime. Attention is given to theoretical explanations, empirical research and patterns of criminal behavior and focuses on historical frameworks that are relevant to current perspectives on the impact and interactions of race, class and crime in the field. Semester Hours: 3. Prerequisite: CJ 3041.

CJ 4130 - Poverty and Crime. This course involves an economic analysis of crime and the criminal justice system. Topics include empirical and theoretical analysis of the economic causes of criminal behavior, the social costs of crime and its prevention and the design of crime enforcement policies. Semester Hours: 3.

CJ 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 the individual components of the criminal justice system (law enforcement and the judiciary). 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. Semester Hours: 3.

CJ 4170 - Victim Studies. This course involves the scientific study of crime victims and focuses on the physical, emotional and financial harm people suffer at the hands of criminals. Focus is placed on the victim-offender relationships, interactions between victims and the criminal justice system and connections between victims and other social groups and institutions. The theory, history, research, legislation and policy implications related to the social construction of 'the victim' are explored. Semester Hours: 3.

CJ 4180 - Comparative Study of Criminal Justice Systems. This course analyzes the dynamics of criminality and the social response to criminality across countries. Special emphasis is placed on the methods of comparative legal analysis utilized to examine international differences in crime and justice, international cooperation in criminal justice and crime and development. Semester Hours: 3. Prerequisite: CJ 1001.

CJ 4190 - Women and Crime. This course explores issues surrounding women as offenders and victims, and investigates explanations for the involvement of women in illegal activities. The course also examines the participations of women in criminal justice professions, including law enforcement, corrections, judicial processes, and law. Semester Hours: 3.

CJ 4230 - Corrections and Treatment. 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 variations in the practice of punishment. Semester Hours: 3.

CJ 4310 - Leadership Roles in Criminal Justice. The course is designed to enhance interest, experience and knowledge in leadership that promotes professionalism and ethical behavior. 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. Semester Hours: 3.

CJ 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 legal aspects of the investigation and arrest processes as well as the rules governing the admissibility of evidence in court. Semester Hours: 3.

CJ 4430 - Law and Society. This course introduces students to the scholarly study of law. Students will have an opportunity to become familiar with social science perspectives of the law, legal institutions, the legal process and the impact of law on behavior, with particular emphasis on the study of criminal behavior and the criminal justice process in American society. Additional topics include theories of law and legality, comparative legal systems, lawyers, judges and juries and the use of social science in the courts. Semester Hours: 3.

CJ 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. Semester Hours: 3.

CJ 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. Semester Hours: 3.

CJ 4530 - Families and Intergenerational Crime. This course focuses on the family as the primary institutional mechanism of social control. The course is structured around social learning theory and explores the relationships between exposure to childhood violence and violence in dating relationships during adolescence and later violent marital relationships. The 'cycle of violence' is also discussed in terms of the impact on early childhood violence on juvenile delinquency, adult criminality and violent behavior in general. Semester Hours: 3.

CJ 4600 - Special Topics in CJ. This highly specialized seminar addresses cutting-edge and emerging developments in the field of 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. Semester Hours: 3. Prerequisite: CJ 1001 and CJ 2041 or permission of instructor.

CJ 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. Semester Hours: 1 to 6.

CJ 4939 - Internship/Cooperative Education. Internships involve a career-related supervised experiential course in a criminal justice agency. Permission to enroll must be preceded by an application for an internship. Permission of instructor and advisor is required for undergraduate students. Semester Hours: 1 to 3.

CJ 5000 - Law and Social Control. Provides an overview of the theory and application of criminal law in the context of social control. The course reviews various theoretical perspectives on law and society,

focusing on the relationship between law and the structure and function of other social institutions. The course also examines aspects of the criminal law in action, assessing how legal definitions and sanctions are differentially interpreted and applied. Semester Hours: 3. Cross-listed with: C J 7000.

C J 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. Semester Hours: 3. Cross-listed with: C J 7100.

C J 5120 - Nature and Causes of Crime. Analyzes the social origins of criminal behavior and the impact of crime on society. Various categories of deviant, delinquent, and criminal behaviors are examined, and attempts to control such behavior are assessed. Connections between social institutions, social problems, and illegal activities, and the response of the public to the threat of crime are examined. Semester Hours: 3. Cross-listed with: C J 7120.

C J 5200 - Wrongful Convictions. This seminar examines the dark figure of the criminal justice system; wrongful convictions of innocent people. This course 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, to death row inmates who are erroneously executed. Semester Hours: 3. Cross-listed with: C J 7200.

C J 5210 - Prisoner Reentry. This seminar examines the harsh realities of prisoner reentry and offers solutions to prepare inmates for release, reduce recidivism, and restore them to adjustment once back in the community, while simultaneously meeting the demands of public safety. Semester Hours: 3. Cross-listed with: C J 7210.

C J 5220 - The American Jury System. The aim of this seminar is to raise most of the issues that have to be considered by anyone who wants to understand the American jury. This course attempts to determine what kind of complex matrix of legal functions, social symbols, practical reforms, political philosophy and human psychology the jury can be located. Semester Hours: 3. Cross-listed with: C J 7220.

C J 5230 - Gun Rights and Gun Control. This seminar provides an in-depth analysis of the contemporary issues - constitutional, legal, political, criminological, sociological - involved in developing criminal justice policy regarding gun control. Semester Hours: 3. Cross-listed with: C J 7230.

C J 5240 - Gang Patterns and Policies. The course uses scientific method and thought processes to think critically about the formation of gangs, gang effects on crime, the criminal gang element and gang victimization. This course traces the origins and historical developments of gang activity in the United States. Topics include gang migration, gang related crime and violence, and the effects of gang involvement on communities and families. Semester Hours: 3. Cross-listed with: C J 7240.

C J 5250 - Criminal Offenders. Crime can have a devastating effect on the lives of victims, families and communities with extraordinary costs to society as a whole. Documented evidence suggests that community safety is best achieved through promoting rehabilitation of offenders rather than relying solely on prisons and containment. This course 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. Semester Hours: 3. Cross-listed with: C J 7250.

C J 5260 - Crime and Literature. This seminar focuses on non-fiction literature as it relates to criminality and the Criminal Justice System. A substantial number of people in the United States form impressions and evaluate the effectiveness of the Criminal Justice System based on accounts presented within various types of nonfiction literature, either as social commentary or in biographical/autobiographical form. This course explores samples of these types of commentary, in order to more fully understand and appreciate their impact on shaping public opinion of the Criminal Justice System. Semester Hours: 3. Cross-listed with: C J 7260.

C J 5270 - Case Studies in CJ. This seminar attempts to examine the lives of people who live on the margins of a society that perceives them as outsiders. Ethnographic studies which utilized 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 on the constant edge of the law. Semester Hours: 3. Cross-listed with: C J 7270.

C J 5280 - Leadership in the Modern Criminal Justice System. The course is designed to enhance interest, experience and knowledge in leadership that promotes professionalism and ethical behavior. 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. Semester Hours: 3. Cross-listed with: C J 7280.

C J 5320 - Seminar: 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. Semester Hours: 3. Cross-listed with: C J 7320.

C J 5321 - Research Methods in Criminal Justice. Provides an assessment of research strategies in criminal justice through an examination of applied research designs and analytical models. The logic and rationale of these various strategies are contrasted, and their relative merits are critiqued. Selected research problems in the criminal justice system are utilized to illustrate the application and interpretation of alternative strategies. Semester Hours: 3. Cross-listed with: C J 7321.

C J 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. Semester Hours: 3. Cross-listed with: C J 7325.

C J 5410 - Victimology. This course examines victim-offender relationships, the interactions between victims and the criminal justice system and the connections between victims and other social groups and institutions among various populations. This course addresses the theory, history, research, legislation and policy implications related to the social construction of the victim. Semester Hours: 3. Cross-listed with: C J 7410.

C J 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. Semester Hours: 3. Cross-listed with: C J 7420.

C J 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 the criminal justice system response. The course explores the socially constructed nature of illegal substances and connections to U.S. drug policy. Semester Hours: 3. Cross-listed with: C J 7430.

C J 5510 - Seminar: 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. Semester Hours: 3. Cross-listed with: C J 7510.

C J 5520 - Seminar: Corrections. Provides a critical examination of the development and implementation of correctional systems in America. The course presents the origins of correctional efforts and the evolution of the prison; reviews punishment and rehabilitation rationales in the context of sentencing models; examines the social organization of the prison, including inmate subcultures and staff work strategies; and assesses the inmates' rights movement and the impact of judicial intervention in correctional settings. Semester Hours: 3. Cross-listed with: C J 7520.

CJ 5530 - Seminar: Community Corrections. Analyzes the 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. Semester Hours: 3. Cross-listed with: CJ 7530.

CJ 5540 - Seminar: Juvenile Justice Administration. Examines the 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. Semester Hours: 3. Cross-listed with: CJ 7540.

CJ 5550 - Seminar: Criminal Justice Policy Analysis. 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. Semester Hours: 3. Cross-listed with: CJ 7550.

CJ 5551 - Seminar: Judicial Administration. 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. Semester Hours: 3. Cross-listed with: CJ 7551.

CJ 5552 - Seminar: 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. Applied ethics forces a reflection not just on ethics, but also on the nature and operation of the criminal justice system itself. Semester Hours: 3. Cross-listed with: CJ 7552.

CJ 5553 - Seminar: Women and Criminal 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. Semester Hours: 3. Cross-listed with: CJ 7553.

CJ 5554 - Seminar: Criminal Justice Reform. Provides an overview of reform efforts in the criminal justice system. Selected theoretical approaches and policies are examined and assessed in light of their assumptions and programmatic applications. The rational and process underlying selected reform strategies are explored. The implications of the effects of reform in criminal justice policy making and decision making are analyzed. Semester Hours: 3. Cross-listed with: CJ 7554.

CJ 5561 - Advanced Seminar in Criminal Justice. In this seminar, students demonstrate their mastery of the knowledge and skills acquired in core courses, as applied to either their chosen program concentration or individualized program, through the conduct of a Program Integration Project. The PIP may be either an independent research project or client-oriented project. Students also make a juried oral presentation of the professional paper which reports project findings. This is the cumulative opportunity for students to apply concepts and theory to professional practice, and thus should be taken at or near the end of a student's program of study. Semester Hours: 3.

CJ 5571 - Advanced Seminar: The Social Organization of Crime. Explores the relationship of neighborhood social disorganization to the dynamics of 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. The course examines social, structural, and ecological characteristics of neighborhoods and communities in affecting crime. Semester Hours: 3. Cross-listed with: CJ 7571.

CJ 5572 - Advanced Seminar: Race, Crime and Justice. Examines the role of race in criminal justice processing. This course examines the research findings, interpretations, issues, and implications in assessing the impact of race in the administration of criminal justice. Explores the policy implications concerning the nature and extent of racial disparities in the criminal justice system and lays out a research agenda to more strategically address these issues within criminal justice policy making. Semester Hours: 3. Cross-listed with: CJ 7572.

CJ 5573 - Advanced Seminar: Organized Crime. Examines the issues involved in understanding those economic activities by which persons involved in 'organized crime' make money. Major topics include: the structure of drug trafficking; the operations of illegal gambling activities; the culture and functions of loan sharking; the economics of labor racketeering; and the role of criminal groups in fencing stolen goods and providing other services to hijackers and burglars. Semester Hours: 3. Cross-listed with: CJ 7573.

CJ 5574 - Advanced Seminar: White Collar Crime. Employs both the social science and legal approaches to examine crime committed by corporations as well as by individuals in white collar occupations. The course covers how such crimes are socially defined, who commits them, who is victimized by them, which social contexts promote them, and how society and the criminal justice system respond to them. Semester Hours: 3. Cross-listed with: CJ 7574.

CJ 5575 - Advanced Seminar: The Mentally Disordered Offender. Examines the offender who may be mentally disordered. A survey is made of 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 are addressed. Semester Hours: 3. Cross-listed with: CJ 7575.

CJ 5576 - Advanced Seminar: 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 to change law, both constitutional law (particularly the first, sixth, eighth, and fourteenth amendments) and common law, particularly the construction of procedural rules that govern the operations of the criminal justice system. Semester Hours: 3. Cross-listed with: CJ 7576.

CJ 5910 - Women and Violence: A Sociological Perspective. This course is a sociological, feminist analysis of violence against women and girls that addresses the intersection of sexism and other forms of oppression such as racism, classism and heterosexism within historical, cultural, social and institutional contexts. Topics covered focus on overt and covert forms of sexual coercion, harassment and assault, battering and stalking. Semester Hours: 3. Cross-listed with: CJ 7910, P AD 5910 and 7910.

CJ 5920 - Psychology of Violence Against Women. This class addresses the contributions and the limitations of current empirical and clinical psychological literatures about domestic violence. Topics covered include: distinguishing among mental health professionals regarding work with DV clients; the psychological impacts of domestic violence; services useful for responding to the needs of women and children; and an introduction to the psychology and treatment of batterers. Semester Hours: 3. Cross-listed with: CJ 5920, P AD 5920 and 7920.

CJ 5930 - Battered Women and the Legal System. This course provides a practical understanding of how the following relate to battered women and their children: a) major developments in federal, state, tribal, administrative, statutory and case law; b) the role and responses of the law enforcement, judges, attorneys, victim assistance providers and other legal system agents; and c) the role and process of victim advocacy. Semester Hours: 3. Cross-listed with: CJ 7930, P AD 5930 and 7930.

CJ 5940 - Domestic Violence Social Change and Advocacy. This course provides students information on the theories and strategies

behind contemporary social change movements and the skills necessary to organize and implement actions to influence public awareness and policy. The values of American society are complex and require advocates/activists to develop a heightened sense of self, community and an ethical framework while confronting sexism, racism and other forms of oppression. Semester Hours: 3. Cross-listed with: C J 7940, P AD 5940 and 7940.

C J 6600 - Special Topics in Criminal Justice. This highly specialized seminar addresses cutting-edge and emerging developments in the field of 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.

Course may be taken for credit more than once, provided subject matter is not repeated. Semester Hours: 3. Cross-listed with: C J 7600.

C J 6840 - 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 MCJ degree. Semester Hours: 1 to 3. Prerequisite: MCJ 12 semester hours of criminal justice course work and permission of instructor.

C J 6910 - Field Study in Criminal Justice. For students who have not had practitioner experience, a full- or part-time internship is required. Semester Hours: 3. Prerequisite: 18 hours of criminal justice course work and permission of instructor and/or advisor.

C J 6950 - Master's Thesis. Independent original research project supervised and evaluated by a thesis committee. Semester Hours: 3 to 6. Prerequisite: 33 semester hours of course work and permission of MCJ director, program advisor and thesis chair.

C J 7000 - Law and Social Control. Provides an overview of the theory and application of criminal law in the context of social control. The course reviews various theoretical perspectives on law and society, focusing on the relationship between law and the structure and function of other social institutions. The course also examines aspects of the criminal law in action, assessing how legal definitions and sanctions are differentially interpreted and applied. Semester Hours: 3. Cross-listed with: C J 5000.

C J 7100 - 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. Semester Hours: 3. Cross-listed with: C J 5100.

C J 7120 - Nature and Causes of Crime. Analyzes the social origins of criminal behavior and the impact of crime on society. Various categories of deviant, delinquent, and criminal behaviors are examined, and attempts to control such behavior are assessed. Connections between social institutions, social problems, and illegal activities, and the response of the public to the threat of crime are examined. Semester Hours: 3. Cross-listed with: C J 5120.

C J 7200 - Wrongful Convictions. This seminar examines the dark figure of the criminal justice system; wrongful convictions of innocent people. This course 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, to death row inmates who are erroneously executed. Semester Hours: 3. Cross-listed with: C J 5200.

C J 7210 - Prisoner Reentry. This seminar examines the harsh realities of prisoner reentry and offers solutions to prepare inmates for release, reduce recidivism, and restore them to adjustment once back in the community, while simultaneously meeting the demands of public safety. Semester Hours: 3. Cross-listed with: C J 5210.

C J 7220 - The American Jury System. The aim of this seminar is to raise most of the issues that have to be considered by anyone who wants to understand the American jury. This course attempts to determine what kind of complex matrix of legal functions, social symbols, practical reforms, political philosophy and human psychology the jury can be located. Semester Hours: 3. Cross-listed with: C J 5220.

C J 7230 - Gun Rights and Gun Control. This seminar provides an in-depth analysis of the contemporary issues - constitutional, legal,

political, criminological, sociological - involved in developing criminal justice policy regarding gun control. Semester Hours: 3. Cross-listed with: C J 5230.

C J 7240 - Gang Patterns and Policies. The course uses scientific method and thought processes to think critically about the formation of gangs, gang effects on crime, the criminal gang element and gang victimization. This course traces the origins and historical developments of gang activity in the United States. Topics include gang migration, gang related crime and violence, and the effects of gang involvement on communities and families. Semester Hours: 3. Cross-listed with: C J 5240.

C J 7250 - Criminal Offenders. Crime can have a devastating effect on the lives of victims, families and communities with extraordinary costs to society as a whole. Documented evidence suggests that community safety is best achieved through promoting rehabilitation of offenders rather than relying solely on prisons and containment. This course 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. Semester Hours: 3. Cross-listed with: C J 5250.

C J 7260 - Crime and Literature. This seminar focuses on non-fiction literature as it relates to criminality and the Criminal Justice System. A substantial number of people in the United States form impressions and evaluate the effectiveness of the Criminal Justice System based on accounts presented within various types of nonfiction literature, either as social commentary or in biographical/autobiographical form. This course explores samples of these types of commentary, in order to more fully understand and appreciate their impact on shaping public opinion of the Criminal Justice System. Semester Hours: 3. Cross-listed with: C J 5260.

C J 7270 - Case Studies in CJ. This seminar attempts to examine the lives of people who live on the margins of a society that perceives them as outsiders. Ethnographic studies which utilized 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 on the constant edge of the law. Semester Hours: 3. Cross-listed with: C J 5270.

C J 7280 - Leadership in the Modern Criminal Justice System.

The course is designed to enhance interest, experience and knowledge in leadership that promotes professionalism and ethical behavior. 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. Semester Hours: 3. Cross-listed with: C J 5280.

C J 7320 - Seminar: 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. Semester Hours: 3. Cross-listed with: C J 5320.

C J 7321 - Research Methods in Criminal Justice. Provides an assessment of research strategies in criminal justice through an examination of applied research designs and analytical models. The logic and rationale of these various strategies are contrasted, and their relative merits are critiqued. Selected research problems in the criminal justice system are utilized to illustrate the application and interpretation of alternative strategies. Semester Hours: 3. Cross-listed with: C J 5321.

C J 7325 - 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. Semester Hours: 3. Cross-listed with: C J 5325.

C J 7410 - Victimology. This course examines victim-offender relationships, the interactions between victims and the criminal justice system and the connections between victims and other social groups and

institutions among various populations. This course addresses the theory, history, research, legislation and policy implications related to the social construction of the victim. Semester Hours: 3. Cross-listed with: C J 5410.

C J 7420 - 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. Semester Hours: 3. Cross-listed with: C J 5420.

C J 7430 - 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 the criminal justice system response. The course explores the socially constructed nature of illegal substances and connections to U.S. drug policy. Semester Hours: 3. Cross-listed with: C J 5430.

C J 7510 - Seminar: 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. Semester Hours: 3. Cross-listed with: C J 5510.

C J 7520 - Seminar: Corrections. Provides a critical examination of the development and implementation of correctional systems in America. The course presents the origins of correctional efforts and the evolution of the prison; reviews punishment and rehabilitation rationales in the context of sentencing models; examines the social organization of the prison, including inmate subcultures and staff work strategies; and assesses the inmates' rights movement and the impact of judicial intervention in correctional settings. Semester Hours: 3. Cross-listed with: C J 5520.

C J 7530 - Seminar: Community Corrections. Analyzes the 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. Semester Hours: 3. Cross-listed with: C J 5530.

C J 7540 - Seminar: Juvenile Justice Administration. Examines the policies and practices of agencies in processing youthful offenders through the juvenile court system, reviews trends in juvenile justice policy making, and assesses changes in response to juvenile crime by both the juvenile justice and criminal justice systems. Semester Hours: 3. Cross-listed with: C J 5540.

C J 7550 - Seminar: Criminal Justice Policy Analysis. 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. Semester Hours: 3. Cross-listed with: C J 5550.

C J 7551 - Seminar: Judicial Administration. 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. Semester Hours: 3. Cross-listed with: C J 5551.

C J 7552 - Seminar: 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. Applied ethics forces a reflection not just on ethics, but also on the nature and operation of the criminal justice system itself. Semester Hours: 3. Cross-listed with: C J 5552.

C J 7553 - Seminar: Women and Criminal 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. Semester Hours: 3. Cross-listed with: C J 5553.

C J 7554 - Seminar: Criminal Justice Reform. Provides an overview of reform efforts in the criminal justice system. Selected theoretical approaches and policies are examined and assessed in light of their assumptions and programmatic applications. The rational and process underlying selected reform strategies are explored. The implications of the effects of reform in criminal justice policy making and decision making are analyzed. Semester Hours: 3. Cross-listed with: C J 5554.

C J 7571 - Advanced Seminar: The Social Organization of Crime. Explores the relationship of neighborhood social disorganization to the dynamics of 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. The course examines social, structural, and ecological characteristics of neighborhoods and communities in affecting crime. Semester Hours: 3. Cross-listed with: C J 5571.

C J 7572 - Advanced Seminar: Race, Crime and Justice. Examines the role of race in criminal justice processing. This course examines the research findings, interpretations, issues, and implications in assessing the impact of race in the administration of criminal justice. Explores the policy implications concerning the nature and extent of racial disparities in the criminal justice system and lays out a research agenda to more strategically address these issues within criminal justice policy making. Semester Hours: 3. Cross-listed with: C J 5572.

C J 7573 - Advanced Seminar: Organized Crime. Examines the issues involved in understanding those economic activities by which persons involved in 'organized crime' make money. Major topics include: the structure of drug trafficking; the operations of illegal gambling activities; the culture and functions of loan sharking; the economics of labor racketeering; and the role of criminal groups in fencing stolen goods and providing other services to hijackers and burglars. Semester Hours: 3. Cross-listed with: C J 5573.

C J 7574 - Advanced Seminar: White Collar Crime. Employs both the social science and legal approaches to examine crime committed by corporations as well as by individuals in white collar occupations. The course covers how such crimes are socially defined, who commits them, who is victimized by them, which social contexts promote them, and how society and the criminal justice system respond to them. Semester Hours: 3. Cross-listed with: C J 5574.

C J 7575 - Advanced Seminar: The Mentally Disordered Offender. Examines the offender who may be mentally disordered. A survey is made of 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 are addressed. Semester Hours: 3. Cross-listed with: C J 5575.

C J 7576 - Advanced Seminar: 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 to change law, both constitutional law (particularly the first, sixth, eighth and fourteenth amendments) and common law, particularly the construction of procedural rules that govern the operations of the criminal justice system. Semester Hours: 3. Cross-listed with: C J 5576.

C J 7600 - Special Topics in Criminal Justice. This highly specialized seminar addresses cutting-edge and emerging developments in the field of 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. Course may be taken for credit more than once, provided subject matter is not repeated. Semester Hours: 3. Cross-listed with: C J 6600.

C J 7910 - Women and Violence: A Sociological Perspective. This course is a sociological, feminist analysis of violence against women and girls that addresses the intersection of sexism and other forms of oppression such as racism, classism and heterosexism within historical, cultural, social and institutional contexts. Topics covered focus on overt and covert forms of sexual coercion, harassment and assault, battering and stalking. Semester Hours: 3. Cross-listed with: C J 5910, P AD 5910 and 7910.

C J 7920 - Psychology of Violence Against Women. This class addresses the contributions and the limitations of current empirical and clinical psychological literatures about domestic violence. Topics covered include: distinguishing among mental health professionals regarding work with DV clients; the psychological impacts of domestic violence; services useful for responding to the needs of women and children; and an introduction to the psychology and treatment of batterers. Semester Hours: 3. Cross-listed with: C J 5920, P AD 5920 and 7920.

C J 7930 - Battered Women and the Legal System. This course provides a practical understanding of how the following relate to battered women and their children; a) major developments in federal, state, tribal, administrative, statutory and case law; b) the role and responses of the law enforcement; judges, attorneys, victim assistance providers and other legal system agents; and c) the role and process of victim advocacy. Semester Hours: 3. Cross-listed with: C J 5930, P AD 5930 and 7930.

C J 7940 - Domestic Violence Social Change and Advocacy. This course provides students information on the theories and strategies behind contemporary social change movements and the skills necessary to organize and implement actions to influence public awareness and policy. The values of American society are complex and require advocates/activists to develop a heightened sense of self, community and an ethical framework while confronting sexism, racism and other forms of oppression. Semester Hours: 3. Cross-listed with: C J 5940, P AD 5940 and 7940.

C J 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. Semester Hours: 1 to 3. Prerequisite: 12 semester hours of criminal justice course work and permission of instructor.

C J 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. Semester Hours: 1 to 10.

CLAS: College of Liberal Arts and Sciences

CLAS 1020 - Introduction to Career Planning. Introduces an integrative career planning process that fosters an in-depth understanding of individual interests, personality, skills and values which serves as a foundation for choosing satisfying majors and careers. Students research career options and develop a career plan. Topics include changing workforce, employability skills and current workplace trends. Semester Hours: 1.

CLAS 1100 - American Ways: Communication, Culture, and the Classroom. Provides an introduction to U.S. cultural issues. Geared specifically for foreign students, this course serves to orient students to the social and historical milieu in which they will be functioning while pursuing their degree. Although the focus is on the U.S., the subject matter is to serve as a vehicle for cross-cultural analysis. Semester Hours: 2.

CLAS 1111 - Freshman Seminar. An academic course for entering freshmen, taught under a controlled enrollment environment to promote student faculty interaction and critical thinking skills. An

ancillary function is to provide students with academic proficiencies necessary for success in a liberal arts baccalaureate program. Semester Hours: 1 to 3.

CLAS 2939 - Cooperative Education. Semester Hours: 1 to 3.

CLAS 3020 - Education, Mentoring, and Leadership. Introduces challenges in and tools for addressing issues of mentoring and leadership in school settings. Students are required to think about various needs, origins, moral dilemmas, requirements, and techniques of mentoring and leadership with students and work to develop mentoring skills for application in schools. Semester Hours: 1 to 3.

CLAS 3100 - Perspectives on Teaching. Introduces major concepts in education; e.g., characteristics of schools, students, the roles of teachers, voices that influence education, innovations in education, and the teaching responsibilities that future teachers are expected to assume. Semester Hours: 2. Prerequisite: An education internship.

CLAS 3935 - Outward Bound. The University of Colorado at Denver offers college credit for Colorado Outward Bound School programs. COBS promotes education, service, and personal growth through wilderness experience. COBS offers courses in a variety of locations that span the canyons, rivers, and mountains of Colorado and the West. Semester Hours: 1 to 10.

CLAS 3939 - Cooperative Education. Semester Hours: 1 to 6.

CLAS 4840 - Independent Study. Semester Hours: 1 to 3.

CMMU: Communication (Liberal Arts and Sciences)

CMMU 1011 - Fundamentals of Communication: SS3. 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. Semester Hours: 3.

CMMU 1021 - Fundamentals of Mass Communication: SS3.

Studies relationships among television, radio, newspapers, magazines and society. Examines the effects of exposure to mass media, mass media ownership and control, mass media law, technical aspects of message and program production, and delivery. Semester Hours: 3.

CMMU 1051 - Topics in Communication. Special classes for faculty-directed experiences examining communication issues and problems not generally covered in the curriculum. Semester Hours: 1 to 3.

CMMU 1111 - Freshman Seminar. Semester Hours: 1 to 3.

CMMU 2020 - Communication and Citizenship. Offers an introduction to debates about, and the different means of practicing, citizenship in America. Semester Hours: 3.

CMMU 2041 - 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. Semester Hours: 3.

CMMU 2050 - Business and Professional Speaking. Development of communication skills often used in business and professional settings, with an emphasis on various kinds of presentations. Semester Hours: 3.

CMMU 2101 - 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. Semester Hours: 3.

CMMU 2800 - Technology for Workplace Communication.

Provides students with skills necessary to apply computer technologies that are currently used in the workplace. Topics include the Internet and software applications in advanced work processing, presentations, spreadsheets and databases. Semester Hours: 3.

CMMU 2939 - Cooperative Education. Semester Hours: 1 to 3.

CMMU 3120 - Technical Communication. Develops students' abilities to prepare and communicate information in diverse media, including written, spoken, graphic and electronic. Technical communication focuses on communication used on the job as opposed to communication in academic settings. Students prepare communications

in response to real-world cases and demonstrate the integration of communication through these different media. Semester Hours: 3. Prerequisite: ENGL 1020.

CMMU 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. Semester Hours: 3.

CMMU 3620 - Television Production. Introduces basic television production principles, practices, techniques and equipment. Semester Hours: 3.

CMMU 3650 - Mass Communication and Society. Examines the forms, extent, uses, effects, potentials, and problems of mass media and their relation to American society. Semester Hours: 3.

CMMU 3680 - Mass Communication Skills. Instruction in writing and editing skills associated with the production of print, radio, television and film. Semester Hours: 3.

CMMU 3840 - Independent Study. Semester Hours: 1 to 3.

CMMU 3939 - Internship/Cooperative Education. Applies communication or technical communication concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: Junior standing and 2.75 GPA.

CMMU 4011 - Research Methods: Quantitative. Examines quantitative techniques used by researchers in communication, including laboratory research, field and survey research, content analysis, and interaction analysis. Objective of the course is to give students enough background to read critically in the social sciences. Semester Hours: 3. Cross-listed with: CMMU 5011.

CMMU 4015 - Communication and Civility. Examines the central role of communication in the creation of a civil 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. Semester Hours: 3.

CMMU 4020 - 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. Semester Hours: 3. Cross-listed with: CMMU 5020.

CMMU 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. Semester Hours: 3. Cross-listed with: CMMU 5021.

CMMU 4022 - Critical Analysis of Communication. Surveys research methods used to analyze messages from rhetorical and critical perspectives. Semester Hours: 3. Cross-listed with: CMMU 5022.

CMMU 4031 - Perspectives on Communication. Overview of major theories and literature in the communication field that serve as the foundation for the study of communication. Semester Hours: 3.

CMMU 4041 - Theories and Methods in Interpersonal Communication. Examines theories and methods used in interpersonal communication and the role of communication in the development, maintenance, and deterioration of personal relationships. Attention is also given to major types of personal relationships, such as marriage and friendship, and how communication reflects and determines the dynamics of those relationships. Semester Hours: 3. Cross-listed with: CMMU 5041.

CMMU 4045 - Female-Male Friendships. Explores friendships between women and men across the life cycle and the role of communication in those friendships. Topics include how such friendships impact self-concepts, advantages of female-male friendships, and barriers to female-male friendships. Semester Hours: 3. Cross-listed with: CMMU 5045.

CMMU 4111 - 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. Semester Hours: 3. Cross-listed with: CMMU 5111.

CMMU 4120 - Writing Technical Reports. Studies various aspects of technical reports, including the theoretical applications behind making reports persuasive. Topics include informal and formal reports, progress reports, feasibility reports, empirical reports and recommendation reports. Semester Hours: 3. Prerequisite: CMMU 3120. Cross-listed with: CMMU 5120.

CMMU 4130 - User Interface Design and Analysis. Introduces graphical user interface design through analysis of empirical studies and hands-on application of human-computer interaction principles. Semester Hours: 3. Prerequisite: CMMU 3120. Cross-listed with: CMMU 5130.

CMMU 4140 - Argumentation. Examines classical through contemporary theories, with special attention to types of propositions, burden of proof, analysis of issues, evidence, reasoning, fallacies, case construction, refutation and ethics. Semester Hours: 3.

CMMU 4151 - Group Communication. Analysis of the impact of small groups on individual behavior in social and task settings. Focuses on the dynamics of small groups, including leadership, roles, norms, goals and cohesion. Semester Hours: 3.

CMMU 4200 - Persuasion. Examines influence and communication at individual, group, organizational and societal levels. A theoretical and applied analysis of persuasion, including examination of public opinion, individual attitudes, beliefs, values, sources, credibility, ethics, and certain message and audience variables. Semester Hours: 3.

CMMU 4210 - Communication and Discourse Analysis. Examines the structural and functional factors affecting the formation, comprehension, and retention of speech. Topics include language norms, speech acts, implicature and meaning, and the analysis of conversations. Semester Hours: 3. Cross-listed with: CMMU 5210.

CMMU 4212 - Software Documentation. Covers all aspects of software documentation, including project management, audience/use analysis, document design, organization, writing and interviewing techniques, editing, production, and diagnostic and usability testing. Semester Hours: 3. Prerequisite: Previous technical writing course, industry experience, or permission of instructor. Cross-listed with: CMMU 5212.

CMMU 4215 - 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. Semester Hours: 3. Cross-listed with: CMMU 5215.

CMMU 4220 - Human Information Processing. Considers the formation of attitude, mental set, and perception as a response to discourse organization. Examines several methods to analyze human responses to linguistic, graphic, and mathematical/statistical representations. Semester Hours: 3.

CMMU 4221 - 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. Semester Hours: 3. Cross-listed with: CMMU 5221.

CMMU 4222 - Professional Communication. Provides strategies for analyzing workplace situations, constructing clear and persuasive arguments and narratives to bring about positive change in organizations, and assessing the effectiveness of communication. Semester Hours: 3. Prerequisite: CMMU 3120, industry experience or permission of instructor. Cross-listed with: CMMU 5222.

CMMU 4230 - 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. Semester Hours: 3. Cross-listed with: CMMU 5230.

CMMU 4240 - Organizational Communication. Relationships among such communication factors as flow, media, channel, diversity, information delivery and organization functioning, morale, and productivity. Semester Hours: 3. Cross-listed with: CMMU 5240.

CMMU 4245 - 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. Semester Hours: 3. Cross-listed with: CMMU 5245.

CMMU 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. Semester Hours: 3. Cross-listed with: CMMU 5255.

CMMU 4260 - Communication and Conflict. Studies the influence of communication on intrapersonal, interpersonal, intragroup and intergroup conflict situations. Semester Hours: 3.

CMMU 4262 - Mediation. Explores theoretical and practical aspects of mediation in a variety of contexts ranging from divorce mediation to labor-management disputes. Semester Hours: 3. Cross-listed with: CMMU 5262.

CMMU 4265 - Gender and Communication. Explores the relationship between gender and communication, including how language treats women and men differently and verbal and nonverbal differences in women's and men's communication. Semester Hours: 3. Cross-listed with: CMMU 5265.

CMMU 4268 - 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. Semester Hours: 3. Cross-listed with: CMMU 5268.

CMMU 4270 - Intercultural Communication. Examines the philosophy, process, problems, and potentials unique to communication across cultural boundaries. Semester Hours: 3.

CMMU 4275 - 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 decision-making, and practical guidelines for improved communication in families. Semester Hours: 3.

CMMU 4280 - Communication and Change. Examines the role of communication in change processes of various kinds, including social change and diffusion of innovations. Semester Hours: 3.

CMMU 4282 - Environmental Communication. Studies the communication processes involved in policies and practices affecting natural and human environments. Semester Hours: 3. Cross-listed with: CMMU 5282.

CMMU 4285 - Communication Processes in Technology Transfer. Surveys research addressing technology transfer processes. Students examine and critique models of technology transfers and the role of individuals, artifacts, and small teams in technology transfers. Semester Hours: 3. Cross-listed with: CMMU 5285.

CMMU 4290 - 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. Semester Hours: 3. Prerequisite: CMMU 3120 or permission of instructor. Cross-listed with: CMMU 5290.

CMMU 4300 - Multimedia Authoring. Analysis and evaluation of components of multimedia development and hands-on instruction featuring computer animation for advertising, training, and educational projects. Semester Hours: 3. Cross-listed with: CMMU 5300.

CMMU 4310 - Advanced Multimedia Authoring. Builds upon the fundamentals of multimedia authoring to develop advanced skills and theory. Students concentrate on developing advanced multimedia applications for education or industry. Semester Hours: 3. Prerequisite: CMMU 4300, CMMU 5300, previous multimedia experience, or permission of instructor. Cross-listed with: CMMU 5310.

CMMU 4320 - Content Management. Centers on large-scale documentation development using XML. Students learn 'single-source' documentation management, a cost-effective way to centralize

information and extend it across different platforms and different audiences. Semester Hours: 3. Prerequisite: CMMU 4290, CMMU 5290 or permission of instructor. Cross-listed with: CMMU 5320.

CMMU 4330 - Dynamic Web Design Workshop. Introduces large-scale website development using XML and PHP. Students learn 'single-source' documentation management, a cost-effective way to centralize information and extend it across different platforms (wireless, browsers, help files) and audiences (specialists, managers, customers). Semester Hours: 1. Prerequisite: CMMU 4290, 5290 or knowledge of HTML, CSS, and Photoshop. Cross-listed with: CMMU 5330. Note: Independently taught modules may be taken separately or concurrently.

CMMU 4340 - Advanced Web Design. Focuses on user interface design for the World Wide Web using Dynamic HTML, pre-designed CGI scripts downloadable from the Web, animated vector and bitmapped graphics. Semester Hours: 3. Prerequisite: CMMU 4290, 5290 or knowledge of HTML, CSS, and Photoshop. Cross-listed with: CMMU 5340. Note: Continuation of CMMU 4290, 5290.

CMMU 4410 - Science Writing. An intensive practice in composing for diverse science publication genres and venues and practice in analyzing the ways consumers obtain and process information about scientific developments and controversies. Semester Hours: 3. Prerequisite: At least one writing or composition course at the 3000 level or above. Cross-listed with: CMMU 5410.

CMMU 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. Semester Hours: 3. Cross-listed with: CMMU 5500.

CMMU 4510 - Usability Testing. Teaches students how to evaluate technical documentation testing needs, evaluate testing options for their feasibility and costs/benefits, design and carry out a usability testing plan, evaluate and write up test results for actual client documents and products. Semester Hours: 3. Prerequisite: CMMU 3120 or permission of instructor. Cross-listed with: CMMU 5510.

CMMU 4605 - Rhetorical Theory for Technical Communication. Examines the principles of rhetorical theory and its relationship to technical communication. Students analyze traditional and contemporary rhetorical theories and apply them to contemporary issues of document design. Semester Hours: 3. Prerequisite: CMMU 3120, CMMU 3650, CMMU 4021, CMMU 4120, CMMU 4200, CMMU 4240, CMMU 4215, or permission of instructor. Cross-listed with: CMMU 5605.

CMMU 4620 - Health Risk Communication. Acquaints students with contemporary theory, research, and practice in health risk communication. Semester Hours: 3. Prerequisite: CMMU 3120, CMMU 4011, CMMU 4200, CMMU 4500, or permission of instructor. Cross-listed with: CMMU 5620, HBSC 4620, HBSC 5620, and ENVS 5620.

CMMU 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. Semester Hours: 3. Cross-listed with: CMMU 5621.

CMMU 4635 - Principles of Public Relations. Introduces theory and practice in the field of public relations, including topics such as effects upon society, public opinion, target audiences, adaptation to the media, uses, laws and ethics. Semester Hours: 3. Cross-listed with: CMMU 5635.

CMMU 4640 - Advanced Public Relations. Examines key public relations practices in private, not-for-profit and public sectors. Strategic planning processes, research methods, evaluation, reports, and collateral development are addressed, with an emphasis on the intersection of theory and practice. Semester Hours: 3. Prerequisite: CMMU 4635. Cross-listed with: CMMU 5640.

CMMU 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. Semester Hours: 3. Cross-listed with: CMMU 5665.

CMMU 4680 - 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. Semester Hours: 3. Cross-listed with: CMMU 5680.

CMMU 4681 - 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. Semester Hours: 3. Prerequisite: ENGL 2030 or equivalent. Cross-listed with: CMMU 5681.

CMMU 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. Semester Hours: 3.

CMMU 4683 - Media in the Courtroom. Critically examines the complex issues raised by media involvement in criminal court cases, including effects of pre-trial publicity, cameras in the courtroom, participants who argue their stories to the media, the CSI effect, and other phenomena relevant to media influence. Semester Hours: 3.

CMMU 4688 - Senior Seminar: Transitioning from College to Career. Synthesis experience for communication majors designed to prepare students to enter the job market and to integrate and reflect on their experience in communication. Semester Hours: 3. Prerequisite: Communication major status.

CMMU 4710 - Topics in Communication. Special classes for faculty-directed experiences examining communication issues and problems not generally covered in the curriculum. Semester Hours: 1 to 3. Cross-listed with: CMMU 5710.

CMMU 4750 - 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. Semester Hours: 3. Prerequisite: ENGL 1020, 2030, and any one 3000-level English/writing course or CMMU 3120. Cross-listed with: CMMU 5750, P SC 4757, 5747.

CMMU 4755 - Universal Internet Usability. Beginning web design course that introduces students to writing websites for non-native English speakers and for users with disabilities. Students learn HTML, style sheets, basic Photoshop, layout, navigability, and usability for these groups. Semester Hours: 3. Prerequisite: CMMU 3120 (or equivalent) or permission of instructor. Cross-listed with: CMMU 5755.

CMMU 4760 - Computer-Mediated Communication. Analysis and discussion of the nature, use, and effects of computer-mediated communication in interpersonal, work, educational, societal and international contexts. Focus is on the social aspects of computer-mediated communication rather than on specific software or hardware technologies. Semester Hours: 3. Prerequisite: CMMU 2800 or permission of instructor. Cross-listed with: CMMU 5760.

CMMU 4805 - Graphics. Instructs technical communicators in designing information that communicates visually as well as verbally. Students focus on document design; illustration; information retrieval; desktop publishing using Quark Xpress; and working with typesetters, printers and graphic artists. Semester Hours: 3. Prerequisite: CMMU 3120. Cross-listed with: CMMU 5805.

CMMU 4830 - Visual Principles in Technical Communication. Explores the rhetoric and usability of typography and text displays, tables and charts, data graphics, technical pictorials, page and screen layout, and other visual elements of technical communication. The course focuses on principles and research, not software training. Semester Hours: 3. Prerequisite: CMMU 3120. Cross-listed with: CMMU 5830.

CMMU 4840 - Independent Study. Semester Hours: 1 to 3. Prerequisite: Permission of instructor.

Check for updates at <http://courses.cudenver.edu>.

CMMU 4995 - Travel Study Topics. Students study various topics in a foreign country led by a UC Denver instructor; register through the Office of International Education. Semester Hours: 1 to 15 Cross-listed with: CMMU 5995.

CMMU 5011 - Research Methods: Quantitative. Examines quantitative techniques used by researchers in communication, including laboratory research, field and survey research, content analysis, and interaction analysis. Objective of the course is to give students enough background to read critically in the social sciences. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4011.

CMMU 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. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor.

CMMU 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. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4020.

CMMU 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. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4021.

CMMU 5022 - Critical Analysis of Communication. Surveys research methods used to analyze messages from rhetorical and critical perspectives. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4022.

CMMU 5025 - Philosophy of Communication. Surveys critical, epistemological, social, scientific, pedagogical, philosophical, and legal perspectives on communication, exploring the constitutive relationship between communication and knowledge formation. Students engage communication scholarship as a social activity and become acclimated to the function of a discipline in creating a professional identity. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor.

CMMU 5041 - Theories and Methods in Interpersonal Communication. Examines theories and methods used in interpersonal communication and the role of communication in the development, maintenance, and deterioration of personal relationships. Attention is also given to major types of personal relationships, such as marriage and friendship, and how communication reflects and determines the dynamics of those relationships. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4041.

CMMU 5045 - Female-Male Friendships. Explores friendships between women and men across the life cycle and the role of communication in those friendships. Topics include how such friendships impact self-concepts, advantages of female-male friendships, and barriers to female-male friendships. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4045.

CMMU 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. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4111.

CMMU 5120 - Writing Technical Reports. Studies various aspects of technical reports, including the theoretical applications behind making reports persuasive. Topics include informal and formal reports, progress reports, feasibility reports, empirical reports and recommendation reports. Semester Hours: 3. Prerequisite: CMMU 5405. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4120.

CMMU 5130 - User Interface Design and Analysis. Introduces graphical user interface design through analysis of empirical studies and hands-on application of human-computer interaction principles. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4130.

CMMU 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. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor.

CMMU 5151 - Group Communication. Analysis of the impact of small groups on individual behavior in social and task settings. Focuses on the dynamics of small groups, including leadership, roles, norms, goals and cohesion. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor.

CMMU 5210 - Communication and Discourse Analysis. Examines the structural and functional factors affecting the formation, comprehension, and retention of speech. Topics include language norms, speech acts, implicature and meaning, and the analysis of conversations. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4210.

CMMU 5212 - Software Documentation. Covers all aspects of software documentation, including project management, audience/use analysis, document design, organization, writing and interviewing techniques, editing, production, and diagnostic and usability testing. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Previous technical writing course or industry experience. Cross-listed with: CMMU 4212.

CMMU 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. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4215.

CMMU 5220 - Human Information Processing. Examines the formation of attitude, mental set, and perception as a response to discourse organization. Examines several methods to analyze human responses to linguistic, graphic, and mathematical or statistical representations. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor.

CMMU 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. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4221.

CMMU 5222 - Professional Communication. Provides strategies for analyzing workplace situations, constructing clear and persuasive arguments and narratives to bring about positive change in organizations, and assessing the effectiveness of communication. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4222.

CMMU 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. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4230.

CMMU 5240 - Organizational Communication. Relationships among such communication factors as flow, media, channel, diversity, information delivery and organization functioning, morale, and productivity. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4240.

CMMU 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. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4245.

CMMU 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). Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor.

CMMU 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. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4255.

CMMU 5260 - Communication and Conflict. Studies the influence of communication on intrapersonal, interpersonal, intragroup and intergroup conflict situations. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor.

CMMU 5262 - Mediation. Explores theoretical and practical aspects of mediation in a variety of contexts ranging from divorce mediation to labor-management disputes. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4262.

CMMU 5265 - Gender and Communication. Explores the relationship between gender and communication, including how language treats women and men differently and verbal and nonverbal differences in women's and men's communication. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4265.

CMMU 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. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4268.

CMMU 5270 - Intercultural Communication. Examines the philosophy, process, problems, and potentials unique to communication across cultural boundaries. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor.

CMMU 5275 - Family Communication. Explores family communication processes in traditional and nontraditional families through examination of theories and research on the family. Topics covered include conflict, family secrets, decision making, and practical guidelines for improved communication in families. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor.

CMMU 5280 - Communication and Change. Examines the role of communication in change processes of various kinds, including social change and diffusion of innovations. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor.

CMMU 5282 - Environmental Communication. Studies the communication processes involved in policies and practices affecting natural and human environments. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4282.

CMMU 5285 - Communication Processes in Technology Transfer.

Surveys research addressing technology transfer processes. Students examine and critique models of technology transfers and the role of individuals, artifacts, and small teams in technology transfers. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4285.

CMMU 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. Semester Hours: 3. Prerequisite: CMMU 5405, CMMU 5505, CMMU 5805. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4290.

CMMU 5300 - Multimedia Authoring. Analysis and evaluation of components of multimedia development and hands-on instruction featuring computer animation for advertising, training, and educational projects. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4300.

CMMU 5310 - Advanced Multimedia Authoring. Builds upon the fundamentals of multimedia authoring to develop advanced skills and theory. Students concentrate on developing advanced multimedia applications for education or industry. Semester Hours: 3. Prerequisite: CMMU 5300, CMMU 4300, previous multimedia experience. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4310.

CMMU 5320 - Content Management. Centers on large-scale documentation development using XML. Students learn 'single-source' documentation management, a cost-effective way to centralize information and extend it across different platforms and different audiences. Semester Hours: 3. Prerequisite: CMMU 5290, CMMU 4290. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4320.

CMMU 5330 - Dynamic Web Design Workshop. Introduces large-scale website development using XML and PHP. Students learn 'single-source' documentation management, a cost-effective way to centralize information and extend it across different platforms (wireless, browsers, help files) and audiences (specialists, managers, customers). Semester Hours: 1. Prerequisite: CMMU 5290, CMMU 4290 or knowledge of HTML, CSS, and Photoshop. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4330. Note: Independently taught modules may be taken separately or concurrently.

CMMU 5340 - Advanced Web Design. Focuses on user interface design for the World Wide Web using Dynamic HTML, pre-designed CGI scripts downloadable from the Web, animated vector and bitmapped graphics. Semester Hours: 3. Prerequisite: CMMU 5290, CMMU 4290 or knowledge of HTML, and CSS, and Photoshop. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4340. Note: Continuation of CMMU 5290, 4290.

CMMU 5405 - Technical Communication: Writing. Provides intensive practice in technical writing using simulations of professional writing situations. Students analyze diverse audience and communication problems, including those with challenging technical content. Special emphasis is placed on the document-design process and techniques of self-editing. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor.

CMMU 5410 - Science Writing. An intensive practice in composing for diverse science publication genres and venues and practice in analyzing the ways consumers obtain and process information about scientific developments and controversies. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4410.

CMMU 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. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4500.

CMMU 5505 - Technical Communication: Editing. Provides intensive practice in editing technical documents. Emphasis is on contextual editing (i.e., editing parts of a document as they relate to the whole document and the communication purpose). Students discuss the editor's role, review editing strategies, and examine methods of increasing document usability and readability. Semester Hours: 3. Prerequisite: CMMU 5405. Undergraduates with senior standing may enroll with permission of instructor.

CMMU 5510 - Usability Testing. Teaches students how to evaluate technical documentation testing needs, evaluate testing options for their feasibility and costs/benefits, design and carry out a usability testing plan, evaluate and write up test results for actual client documents and products. Semester Hours: 3. Prerequisite: CMMU 5405. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4510.

CMMU 5605 - Rhetorical Theory for Technical Communication. Examines the principles of rhetorical theory and its relationship to technical communication. Students analyze traditional and contemporary rhetorical theories and apply them to contemporary issues of document design. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4605.

CMMU 5620 - Health Risk Communication. Acquaints students with contemporary theory, research, and practice in health risk communication. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4620, HBSC 5620, HBSC 4620, and ENVS 5620.

CMMU 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. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4621.

CMMU 5635 - Principles of Public Relations. Introduces theory and practice in the field of public relations, including topics such as effects upon society, public opinion, target audiences, adaptation to the media, uses, laws and ethics. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4635.

CMMU 5640 - Advanced Public Relations. Examines key public relations practices in private, not-for-profit and public sectors. Strategic planning processes, research methods, evaluation, reports, and collateral development are addressed, with an emphasis on the intersection of theory and practice. Semester Hours: 3. Prerequisite: CMMU 4635 or CMMU 5635. Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4640.

CMMU 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. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll with permission of instructor. Cross-listed with: CMMU 4665.

CMMU 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. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll by permission of instructor. Cross-listed with: CMMU 4680.

CMMU 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. Semester Hours: 3. Prerequisite: Undergraduates with

senior standing may enroll by permission of instructor. Cross-listed with: CMMU 4681.

CMMU 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. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll by permission of instructor.

CMMU 5710 - Topics in Communication. Special classes for faculty-directed experiences examining communication issues and problems not generally covered in the curriculum. Semester Hours: 1 to 3. Prerequisite: Undergraduates with senior standing may enroll by permission of instructor. Cross-listed with: CMMU 4710.

CMMU 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. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll by permission of instructor. Cross-listed with: CMMU 4750, P SC 4757, 5747.

CMMU 5755 - Universal Internet Usability. Beginning web design course that introduces students to writing websites for non-native English speakers and for users with disabilities. Students learn HTML, style sheets, basic Photoshop, layout, navigability, and usability for these groups. Semester Hours: 3. Prerequisite: CMMU 3120 (or equivalent). Undergraduates with senior standing may enroll by permission of instructor. Cross-listed with: CMMU 4755.

CMMU 5760 - Computer-Mediated Communication. Analysis and discussion of the nature, use, and effects of computer-mediated communication in interpersonal, work, educational, societal and international contexts. Focus is on the social aspects of computer-mediated communication rather than on specific software or hardware technologies. Semester Hours: 3. Prerequisite: Undergraduates with senior standing may enroll by permission of instructor. Cross-listed with: CMMU 4760.

CMMU 5805 - Graphics. Instructs technical communicators in designing information that communicates visually as well as verbally. Students focus on document design; illustration; information retrieval; desktop publishing using Quark Xpress; and working with typesetters, printers and graphic artists. Semester Hours: 3. Prerequisite: CMMU 5405. Undergraduates with senior standing may enroll by permission of instructor. Cross-listed with: CMMU 4805.

CMMU 5830 - Visual Principles in Technical Communication. Explores the rhetoric and usability of typography and text displays, tables and charts, data graphics, technical pictorials, page and screen layout, and other visual elements of technical communication. The course focuses on principles and research, not software training. Semester Hours: 3. Prerequisite: CMMU 5405. Undergraduates with senior standing may enroll by permission of instructor. Cross-listed with: CMMU 4830.

CMMU 5840 - Independent Study. Semester Hours: 1 to 3. Prerequisite: Permission of instructor.

CMMU 5939 - Internship/Cooperative Education. Applies communication or technical communication concepts and skills in supervised employment situations. Semester Hours: 1 to 6.

CMMU 5995 - Travel Study Topics. Students study various topics in a foreign country led by a UC Denver instructor; register through the Office of International Education. Semester Hours: 1 to 15. Prerequisite: Undergraduates with senior standing may enroll by permission of instructor. Cross-listed with: CMMU 4995.

CMMU 6013 - Introduction to Graduate Work in Communication. Designed to familiarize students with the philosophical, ideological, and methodological bases of study in communication. Semester Hours: 3. Note: Required of all graduate students in M.A. program in communication.

CMMU 6205 - Empirical Research Methods for Communication and Technical Communication. Provides exposure to empirical research methods involved in communication and technical communication

research: surveys, experimental design, meta-analysis, case study, ethnography, textual analysis, and process tracing. Basic quantitative data analysis methods (correlation, chi-square, t-tests, and analysis of variance) are introduced. Semester Hours: 3. Prerequisite: CMMU 5405 and 5505 or permission of instructor.

CMMU 6300 - Educational Perspectives on Communication. Explores various relationships between education and communication. Semester Hours: 3. Note: May repeat this course up to three times with differing topics.

CMMU 6410 - Usability Test Design Project. Students collaborate with faculty and client to design and implement a usability test and evaluate its results, focusing upon an actual computer interface, or instructional documentation (in online form, hard copy, or both). Semester Hours: 3 to 6. Prerequisite: CMMU 5510 and CMMU 6205.

CMMU 6950 - Master's Thesis. Semester Hours: 1 to 6.

CMMU 6960 - Master's Project. Semester Hours: 1 to 3.

CNST: Chinese Studies (Liberal Arts and Sciences)

CNST 1000 - China and the Chinese: AH1. 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. Semester Hours: 3. Note: This course is taught in English.

CNST 4000 - Senior Seminar in Chinese Studies. Capstone course in the Chinese studies program in which students design and carry out independent research projects on topics of their choice. Semester Hours: 3. Prerequisite: CNST 1000 and 15 hours in Chinese studies.

Communication: CMMU (Liberal Arts and Sciences)

Computer Science: C SC (Engineering)

CPCE: Counseling Psychology and Counselor Education (Education)

CPCE 5010 - Counseling Theories. Examines the helping profession. Overview of the field. History, philosophy, and introduction to theory. Legal and ethical considerations, special problems, and professional outlook. Role and function of counselors in agency and school settings. Semester Hours: 3.

CPCE 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. Semester Hours: 3. Prerequisite: CPCE 5010.

CPCE 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. Semester Hours: 3. Prerequisite: CPCE 5010 and CPCE 5100.

CPCE 5150 - Family Therapy Theory. Introduces couple and family theories and intervention strategies. Emphasis on historical development of systems theory. Semester Hours: 3. Prerequisite: CPCE 5010.

CPCE 5160 - Techniques in Family Therapy. Intervention strategies with families. Emphasis on application of techniques evolving from treatment models. Semester Hours: 3. Prerequisite: CPCE 5150.

CPCE 5170 - Issues In Family Studies. A systemic overview of current issues families face in today's society, including gender, domestic violence, step-families, grief loss, homelessness and others. The course includes life cycle approaches and normal family processes. Students will be asked to examine their own biases through journaling and other methods. Semester Hours: 3. Prerequisite: CPCE 5010 and CPCE 5150.

CPCE 5180 - Counseling Couples. A didactic and experiential course dealing with techniques of couples counseling. Emphasis is on assessment, diagnosis and treatment of couples' problems. Special topics include gay and lesbian couples, cross-cultural couples, remarried couples, cohabiting couples and the effectiveness of couple therapy. Semester Hours: 3. Prerequisite: CPCE 5010, 5100, 5150 and 5160.

CPCE 5280 - Addictions Counseling. Includes treatment strategies for clinicians in addressing varieties of addictive behaviors including substance abuse, eating disorders, gambling and sexual addiction. Semester Hours: 3.

CPCE 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. Semester Hours: 3.

Prerequisite: CPCE 5010 and CPCE 5100.

CPCE 5400 - Career Development. Development of competencies in career development counseling. Theories of work systems, psychological dynamics, information systems, and decision making systems are covered. Interacting work or family systems and other subsystems are emphasized. Semester Hours: 3.

CPCE 5420 - Organizational Development. Organizational development and theory. The development and implementation of counseling and EAP programs in school settings, business and government program development, implementation, consultation, and evaluation. Individual projects required for course completion. Semester Hours: 3. Prerequisite: CPCE 5010 or permission of instructor.

CPCE 5810 - Multicultural Counseling Issues for Individuals and Families. Students engage in an in-depth analysis of arguments for revision of traditional counseling models and assumptions, as applied to ethnic-racial populations, and discuss alternative approaches to working with African Americans, Asian Americans, Latin Americans, American Indians, women, gays and lesbians in counseling. Semester Hours: 3.

CPCE 5815 - Intro 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 comprehensive developmental school counseling activities, and focus on practical resources for counseling students in diverse school settings. Semester Hours: 3. Prerequisite: CPCE 5010.

CPCE 5820 - Strategies of Agency Counseling. Role and function of the counselor in agency settings. Intervention strategies, consultation, use of DSM IV with agency clientele. Semester Hours: 3-6. Prerequisite: CPCE 5010 and CPCE 6250.

CPCE 5830-5839 - 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. Semester Hours: 1 to 6.

CPCE 5840 - Independent Study. Individually directed research activity on special topics not covered by course offerings. Degree students only, with advance approval by major, professor and department. Semester Hours: 1 to 4.

CPCE 5910 - Practicum in CPCE. Supervised counseling practice in the counseling lab and appropriate settings (150 clock hours). Emphasis on individual and group counseling techniques and therapeutic intervention strategies. Semester Hours: 6. Prerequisite: All counseling course work must be completed.

CPCE 5915 - Fieldwork in School Counseling. This class will provide students with 3 credits of fieldwork at a developmental level of their choice. The course will require students to work with a school counselor doing all the 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 CPCE 5400, CPCE 5420, CPCE 5810, CPCE 5815, CPCE 6220.

CPCE 5930 - Internship in Counseling Psychology and Counselor Education. Supervised internship of 600 clock hours. Intern performs activities of a regularly employed professional in designated setting. Semester Hours: 1 to 6. Prerequisite: Satisfactory completion of CPCE 5910.

CPCE 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 diagnosis and treatment of issues related to human sexuality are addressed. Semester Hours: 3. Prerequisite: CPCE 5010, CPCE 5100, CPCE 5150 and CPCE 5160. Note: This course is a component in the couple and family program and required for MFT licensure.

CPCE 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. Semester Hours: 3.

CPCE 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. Semester Hours: 3. Prerequisite: CPCE 5010, CPCE 5100, CPCE 5150 and EPSY 6200.

CPCE 6160 - Advanced Assessment: Theory and Treatment in Family Systems. Emphasis is on diagnosis or assessment and treatment and psychological processes. Major family therapy assessment methods and instruments are covered, as well as experiential application of advanced intervention strategies. Semester Hours: 3. Prerequisite: CPCE 5010, 5100, 5150, 5160 and REM 5300.

CPCE 6220 - Youth Challenges and Resiliency. Provides the student with theory and practical exposure to contemporary youth at risk. Focuses on prevention and intervention with youth at risk from a counseling perspective. Semester Hours: 3. Prerequisite: CPCE 5010 and 5100.

CPCE 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. Semester Hours: 3. Prerequisite: CPCE 5010 or permission of instructor.

CPCE 6250 - Mental Health Diagnosis. Students develop a professional level of understanding of the major disorders commonly subsumed under the term 'psychopathology'. Classification of disorders in the DSM IV is utilized. Treatment alternatives are discussed. Semester Hours: 3. Prerequisite: CPCE 5010 and CPCE 5100 or permission of instructor. Cross-listed with: EPSY 6250.

CPCE 6330 - Advanced Seminar in Counseling and Psychotherapy. Professional analysis of major trends in counseling and psychotherapy. Specific emphasis topics identified. Semester Hours: 3. Prerequisite: CPCE 5010, 5100 and 5330.

CPCE 6350 - Theories of Personality Development and Change. An advanced course in personality theory with a focus on assumptions of each theory and each as a mechanism for change. Implications of each theory for personal growth and therapy's addressed. Semester Hours: 3. Cross-listed with: EPSY 6350.

CPCE 6810 - Advanced Multicultural Counseling. Offers essential preparation for competent multicultural counseling practice with racially diverse clients in an urban setting. Students learn, build and practice effective multicultural counseling skills. Explores the impact of race and ethnicity on individual behavior, interpersonal relationships and learn techniques for addressing these issues in counseling. Semester Hours: 3. Prerequisite: CPCE 5810.

CPCE 6840 - Independent Study. Semester Hours: 1 to 4.

CPCE 6910 - Advanced Practicum in Counseling. Semester Hours: 3 to 6

CPCE 6950 - Master's Thesis. Semester Hours: 4.

CPCE 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. Semester Hours: 3. Prerequisite: CPCE 5010, 5100, 5820 and 6250.

CPCE 7800 - Supervision in Counseling and Psychotherapy.

Examines training principles, processes, and practices in clinical supervision. Emphasis on individual and family therapy supervision. Semester Hours: 3. Prerequisite: CPCE 5010, 5100, 5910 and 5930.

Criminal Justice: C J (Public Affairs)

C SC: Computer Science (Engineering)

C SC 1320 - Introduction to Computing. A course in programming for students in all disciplines who are non-computer science majors. Learning essential programming skills using a modern language like Ruby or Python, both of which are easier to learn than traditional programming languages such as C++ and Java. The student is introduced to the flow of control: selection, iteration, subprograms. Data structures: strings, arrays, records, lists, tables. Introduction to testing and debugging. Semester Hours: 3. Prerequisite: MATH 1120.

C SC 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. Semester Hours: 3. Corequisite: MATH 1401.

C SC 1510 - Logic Design. The design of combinatorial and sequential switching circuits. Topics include boolean algebra, boolean, function minimization techniques, combinatorial circuit analysis and synthesis, synchronous sequential circuit analysis and synthesis, algorithmic state machine design, asynchronous sequential circuit analysis and synthesis. Semester Hours: 3. Prerequisite: MATH 1120 or equivalent. Cross-listed with: E E 1510.

C SC 1800-1839 - Special Topics. Semester Hours: 3.

C SC 2132 - Circuit Analysis I. Basic theorems of circuit analysis. Transient solution of circuits by classical techniques. Ideal operational amplifier analysis techniques and applications. Semester Hours: 3. Prerequisite: MATH 2421 and PHYS 2331. Cross-listed with: E E 2132.

C SC 2142 - Circuit Analysis II. Solution of circuits using Laplace transforms, frequency domain analysis, additional steady-state solutions, Bode plots, active filters, pulses, impulses, and computer-aided analysis. Semester Hours: 3. Prerequisite: MATH 2421, PHYS 2331, ENGL 1020 and E E 2132 or C SC 2132. Cross-listed with: E E 2142.

C SC 2312 - Intermediate 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. Semester Hours: 3. Prerequisite: C SC 1410.

C SC 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. Semester Hours: 3. Prerequisite: C SC 1410 and ENGL 1020. Corequisite: C SC 2312.

C SC 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. Semester Hours: 3. Prerequisite: MATH 1401. Cross-listed with: MATH 2511.

C SC 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. Semester Hours: 3. Prerequisite: C SC 1410 and 1510.

C SC 2531 - Logic Laboratory. Experiments in digital logic utilizing both computer simulation and actual analysis using integrated circuits. Initially, combinational logic circuits are studied, including circuits such as binary adders and multipliers, followed by sequential circuits, including counters. Some basic instrumentation using meters and oscilloscopes will also be completed. Use of computer-aided design tools facilitating design, simulation, and implementation of digital systems using field-programmable logic devices in an integral part of the entire course. Semester Hours: 1. Prerequisite: MATH 1120 or equivalent. Cross-listed with: E E 2531.

C SC 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. Semester Hours: 3. Prerequisite: Familiarity with operating systems and/or a programming course.

C SC 3320 - Advanced Programming. A continuation of programming and problem solving methodologies. Topics will include top-down design, object-oriented, and generic programming. Programming and scripting languages that will be used to include C++, Perl, Bash, SED, and AWK. Semester Hours: 3. Prerequisite: C SC 2421.

C SC 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. Semester Hours: 3. Prerequisite: C SC 2421 and C SC 2511.

C SC 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. Semester Hours: 3. Prerequisite: C SC 2421 and 2525.

C SC 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. Semester Hours: 3. Prerequisite: C SC 3412 and 3415.

C SC 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. Semester Hours: 3. Prerequisite: C SC 2525. Note: Cannot be taken for Electrical Engineering Major credit.

C SC 3560 - Probability and Computing. Events and probability. Discrete random variables and expectation. Moments and deviations. Chernoff bounds. The probabilistic method. Markov chains and random walks. Continuous distributions and the Poisson process. Entropy, randomness and information. The Monte Carlo method. Martingales. Pairwise independence and universal hash functions. Statistical inference. Bayesian methods. Semester Hours: 3. Prerequisite: MATH 2421.

C SC 3645 - Discrete Linear Systems. Analysis of discrete time signals and systems. Impulse response, convolution, difference equations, Fourier analysis, z-transforms, linear time-invariant systems, sampling, computer simulation and modeling; applications in computer science and engineering. Emphasizes both analytical and computer-based solutions to a broad spectrum of problems. Semester Hours: 3. Prerequisite: MATH 3195 and C SC 2142.

C SC 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. Semester Hours: 3. Prerequisite: C SC 2531 and 2525. Cross-listed with: E E 3651.

C SC 3840 - Independent Study: C SC. Semester Hours: 1 to 3.

C SC 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. Semester Hours: 3. Prerequisite: C SC 3412 and 3415.

C SC 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. Semester Hours: 3. Prerequisite: C SC 3412.

C SC 4287 - 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. Semester Hours: 3. Prerequisite: C SC 2511; Coreq: C SC 3453.

C SC 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. Semester Hours: 3. Prerequisite: MATH 3000 or C SC 2511. Cross-listed with: MATH 4408.

C SC 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. Semester Hours: 3. Prerequisite: C SC 3412. Cross-listed with: C SC 5411.

C SC 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. Semester Hours: 3. Prerequisite: C SC 2421.

C SC 4508 - 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. Semester Hours: 3. Prerequisite: ENGL 1020 and C SC 3412.

C SC 4535 - Probability and Statistics. Axiomatic definition of probability. Sample spaces, discrete and continuous random variables, expectation, conditional distribution and conditional expectation, independence, limit theorems, characteristic functions and moments. Elementary stochastic processes, time series, Markov chains, increment processes, queues. Statistical inference, regression, correlation, analysis of variance, confidence intervals. Semester Hours: 3. Corequisite: MATH 2411.

C SC 4555 - Compiler Design. Introduces the basic techniques used in translating programming languages: scanning, parsing, symbol table management, code generation, code optimization and error recovery. Semester Hours: 3. Prerequisite: C SC 3412 and 3415.

C SC 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. Semester Hours: 3. Prerequisite: C SC 3412 and MATH 3191 or 3195. Cross-listed with: C SC 5565.

C SC 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. Semester Hours: 3. Prerequisite: C SC 2525 or E E 2651.

C SC 4630 - Linguistic Geometry. A new type of game theory in Artificial Intelligence for solving abstract board games (ABG). A number of real world systems including military combat, transportation, and internet cyberwar can be modeled as ABG. Semester Hours: 3. Prerequisite: C SC 3412. Cross-listed with: C SC 5630.

C SC 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. Semester Hours: 3. Cross-listed with: C SC 5640.

C SC 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. Semester Hours: 3. Prerequisite: MATH 2411, MATH 3191 or MATH 3195, and programming experience. Cross-listed with: C SC 5660, MATH 4650, and MATH 5660.

C SC 4660 - Numerical Analysis II. Numerical differentiation and integration, numerical solution of ordinary differential equations, and numerical solutions of partial differential equations as time allows. Semester Hours: 3. When Offered: *Spring*. Prerequisite: MATH 3195 or both 3191 and 3200; MATH or C SC 4650 or 5660; or programming experience. Cross-listed with: C SC 5661, MATH 4660 and 5661.

C SC 4735 - Computers, Society and Ethics. Analysis of social and ethical issues arising from the development and use of computers. Representative topics: professional responsibility, intellectual property, privacy; computer-related crime, freedom of expression, individual rights versus societal needs, encryption, risks and reliability of computer systems. Extensive readings and class discussions. Semester Hours: 3. Prerequisite: ENGL 2030 or 3154.

C SC 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 lifecycle. Semester Hours: 3.

C SC 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. Semester Hours: 3.

C SC 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. Semester Hours: 3. Prerequisite: MATH 1120.

C SC 4761 - Introduction To Computer Networks. Introduction and overview of computer networks. Topics include protocols, quality of services and performance issues. Semester Hours: 3.

C SC 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. Semester Hours: 3. Prerequisite: C SC 3453 and 4761. Cross-listed with: C SC 5771.

C SC 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. Semester Hours: 3. Prerequisite: C SC 1410 and MATH 3195 or 3191. Cross-listed with: MATH 4788, PHYS 4788.

C SC 4800-4839 - Special Topics. Credit and subject matter to be arranged. Semester Hours: 3. Prerequisite: As determined by instructor.

C SC 4840 - Independent Study. For seniors majoring in computer science. Semester Hours: 3.

C SC 4939 - Cooperative Education. 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. Semester Hours: 1 to 3. Prerequisite: C SC 3415.

C SC 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. Semester Hours: 3. Prerequisite: Working knowledge of programming language (e.g., Java).

C SC 5144 - Applied Combinatorics. Major emphasis is on applied combinatorics and graph and combinatoric algorithms with applications in computer science and operations research. Topics include general counting methods, generating functions, recurrence relations, inclusion-exclusion, Polyá's enumeration theory and network algorithms. Semester Hours: 3. Prerequisite: MATH 3800 and 3191/3195. Cross-listed with: MATH 6409.

C SC 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. Semester Hours: 3. Prerequisite: C SC 4535. Cross-listed with: E E 5250.

C SC 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. Semester Hours: 3.

C SC 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. Semester Hours: 3. Prerequisite: MATH 3000 or C SC 2511. Cross-listed with: MATH 4408.

C SC 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. Semester Hours: 3. Prerequisite: C SC 3412, C SC 4408, C SC 5451 or MATH 4408 or permission of instructor.

C SC 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. Semester Hours: 3. Prerequisite: C SC 3412. Cross-listed with: C SC 4411.

C SC 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. Semester Hours: 3. Prerequisite: C SC 3412. Cross-listed with: MATH 5446.

C SC 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. Semester Hours: 3. Prerequisite: C SC 3412.

C SC 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. Semester Hours: 3. Prerequisite: C SC 3412.

C SC 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. Semester Hours: 3. Prerequisite: Graduate Standing. Cross-listed with: C SC 7551.

C SC 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. Semester Hours: 3. Prerequisite: C SC 5551. Cross-listed with: C SC 7552.

C SC 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. Semester Hours: 3. Prerequisite: C SC 4287.

C SC 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. Semester Hours: 3. Prerequisite: C SC 3412 and MATH 3191/3195. Cross-listed with: C SC 4565.

C SC 5573 - Operating Systems. Students study the principles of computer operating systems and their essential components. Team projects expose students to 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 and review of some related articles in the literature. Semester Hours: 3. Prerequisite: C SC 3412 and 3415.

C SC 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. Semester Hours: 3. Prerequisite: C SC 3453 or C SC 5573. Cross-listed with: C SC 7574.

C SC 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. Semester Hours: 3. Cross-listed with: C SC 7582.

C SC 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. Semester Hours: 3. Prerequisite: C SC 5565 or 4565.

C SC 5593 - Advanced Computer Architectures. 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. Semester Hours: 3.

C SC 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. Semester Hours: 3. Prerequisite: C SC 2421.

C SC 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. Semester Hours: 3. Prerequisite: C SC 4202, 5582 or 5690.

C SC 5630 - Linguistic Geometry. A new type of game theory in Artificial Intelligence for solving abstract board games (ABG). A number of real world systems including military combat, transportation, and internet cyberwar can be modeled as ABG. Semester Hours: 3. Prerequisite: C SC 4202, 5582 or 5690. Cross-listed with: C SC 4630.

C SC 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. Semester Hours: 3. Cross-listed with: C SC 4640.

C SC 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. Semester Hours: 3. Prerequisite: C SC 3412. Cross-listed with: C SC 7654.

C SC 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. Semester Hours: 3. Prerequisite: MATH 2411, MATH 3191 or MATH 3195, and programming experience. Cross-listed with: C SC 4650, MATH 4650, and MATH 5660.

C SC 5661 - Numerical Analysis II. Numerical differentiation and integration, numerical solution of ordinary differential equations, and numerical solutions of partial differential equations as time allows. Semester Hours: 3. When Offered: *Spring*. Prerequisite: MATH 3195 or both 3191 and 3200; MATH or C SC 4650 or 5660; or programming experience. Cross-listed with: C SC 4660, MATH 4660 and 5661.

C SC 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. Semester Hours: 3. Prerequisite: MATH 4320.

C SC 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. Semester Hours: 3. Prerequisite: C SC 3412.

C SC 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. Semester Hours: 3. Prerequisite: C SC 3412.

C SC 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. Semester Hours: 3. Prerequisite: C SC 4761 or 5761.

C SC 5702 - Data Mining. Introduces data mining and knowledge discovery. Topics include: preprocessing, clustering, machine learning, neural networks, fuzzy sets, evolutionary computation. Semester Hours: 3. Prerequisite: C SC 3412 and MATH 3191/3195.

C SC 5704 - Introduction to Distributed Systems. Studies design, implementation and management of distributed systems, including communication issues, security reliability, resource sharing, and remote execution. Semester Hours: 3. Prerequisite: C SC 3453 and 4591.

C SC 5728 - Software Engineering. Groups of students plan, analyze and design large software projects. Semester Hours: 3. Prerequisite: C SC 3412 and 3415.

C SC 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. Semester Hours: 3. Prerequisite: Graduate Standing. Cross-listed with: C SC 7765.

C SC 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. Semester Hours: 3. Prerequisite: C SC 3453 and 4761. Cross-listed with: C SC 4771.

C SC 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). Semester Hours: 3. Prerequisite: C SC 3412.

C SC 5799 - High Performance Network-based Computing. Topics in network-based computing such as Meta, Cluster, and Grid computing. Additional topics include: network-based computing architecture, efficient user-level communication software, global security and resource management, global file systems, and high performance distributed applications. Semester Hours: 3. Prerequisite: C SC 3453.

C SC 5800-5839 - Special Topics. These special topics courses cover recent developments in an aspect of computer science. Semester Hours: 1 to 3. Prerequisite: As determined by instructor.

C SC 5840 - Independent Study. For graduate computer science students. Semester Hours: 1 to 3.

C SC 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. Semester Hours: 3. Prerequisite: C SC 5451 and C SC 5610.

C SC 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. Semester Hours: 3. Prerequisite: MATH 4320, MATH 5718.

C SC 6664 - Numerical Linear Algebra. Solution of linear equations, eigenvector and eigenvalue calculation, matrix error analysis, orthogonal transformation, iterative methods. Semester Hours: 3. When Offered: *Offered every other year*. Prerequisite: MATH 5660 and 5718.

C SC 6840 - Independent Study. For doctoral computer science students. Semester Hours: 1 to 6.

C SC 6950 - Master's Thesis. Semester Hours: 1 to 9.

C SC 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. Semester Hours: 3.

C SC 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. Semester Hours: 3. Prerequisite: C SC 5451. Cross-listed with: ISMG 7002.

C SC 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. Semester Hours: 3. Prerequisite: PhD standing. Cross-listed with: ISMG 7200.

C SC 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. Semester Hours: 3. Prerequisite: Admission to the CSIS PhD program. Cross-listed with: ISMG 7210.

C SC 7211 - Topics In Behavioral and 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. Semester Hours: 3. Prerequisite: Admission to the CSIS PhD program. Cross-listed with: ISMG 7211.

C SC 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. Semester Hours: 3. Prerequisite: Ph.D. student standing or permission of instructor for MS students who are writing a thesis.

C SC 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. Semester Hours: 3. Prerequisite: Graduate Standing. Cross-listed with: C SC 5551.

C SC 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. Semester Hours: 3. Cross-listed with: C SC 5552.

C SC 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. Semester Hours: 3. Prerequisite: C SC 3453 or C SC 5573. Cross-listed with: C SC 5574.

C SC 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. Semester Hours: 3. Cross-listed with: C SC 5582.

C SC 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. Semester Hours: 3. Prerequisite: Permission of instructor. Cross-listed with: C SC 5654.

C SC 7711 - Bioinformatics I. (BIOI 7711-Offered on a semester basis from H.S.C.) Offered in the fall term. 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? Semester Hours: 4. Prerequisite: Permission of instructor.

C SC 7712 - Bioinformatics II. (BIOI 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. Semester Hours: 4. When Offered: *Offered in Spring semester.* Prerequisite: C SC 7711.

C SC 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. Semester Hours: 3. Prerequisite: Graduate Standing. Cross-listed with: C SC 5765.

C SC 7800 thru 7839 - Special Topics. These special topics courses cover recent developments in an aspect of computer science. Semester Hours: 1 to 9. Prerequisite: As determined by instructor.

C SC 8990 thru 8999 - Doctoral Dissertation. Semester Hours: 1 to 9.

CSL: Chancellor's Scholars and Leaders

CSL 1551 - Effective Problem Solving: Data, Information and Knowledge. The first of a two-semester course sequence that equips students with new paradigms, skills, and experiences with which to approach problem solving and learning. The core of the course experience is individual empowerment by developing skills and discovery learning, generalization of experiential knowledge to recognize generic paradigms, alternative reasoning methods, and techniques for more effective thinking and problem solving. The application of these cognitive, behavioral, and computer-based tools are not limited to any particular subject matter. Participants build a highly useful level of skills that they can apply to their academic, career, social and personal activities. Semester Hours: 3.

CSL 1552 - Effective Problem Solving: Beyond Knowledge. The second of a two-semester course sequence that equips students with new paradigms, skills, and experiences with which to approach problem solving and learning. The core of the course experience is individual empowerment by developing skills and discovery learning, generalization of experiential knowledge to recognize generic paradigms, alternative reasoning methods, and techniques for more effective thinking and problem solving. The application of these cognitive, behavioral, and computer-based tools are not limited to any particular subject matter. Participants build a highly useful level of skills that they can apply to their academic, career, social and personal activities. Semester Hours: 3.

CSL 2939 - Cooperative Education. Parallels internship or cooperative education courses in other colleges. Primary emphasis is placed on internships focusing on leadership education, problem-based learning, team learning, and interdisciplinary learning relevant to the Chancellor's Scholars and Leaders curriculum and the individually Structured major. Semester Hours: 1 to 3. Prerequisite: Permission of instructor.

CSL 3110 - Leadership Styles, Cultural Diversity, and Ethical Responsibility. The Chancellor's Scholars and Leaders (CSL) program starts with a seminar exploring the relation between different leadership styles, ethical responsibility, and cultural values. This seminar lays the foundation for students to explore the central role of ethics and personal values in their own actions Semester Hours: 3. Prerequisite: Permission of instructor.

CSL 3120 - Interdisciplinary Scholarship and Life-Long Learning. Students are introduced to a highly condensed survey of the most important recent developments in science, technology, the arts and humanities. Co-taught by experts from these fields and formatted to arouse the interest of students in pursuing further studies on their own. Semester Hours: 3. Prerequisite: Permission of instructor.

CSL 3210 - Practical Leadership Skills. While theoretical knowledge is an important background to effective action, students in the CSL program are trained in the most essential skills leaders need in order to function. These basic skills include financial management, problem solving techniques, negotiation, public speaking, computer and writing skills, effective research techniques, and psychological skills. Students are given enough practical training to excite them to seek out further development. Semester Hours: 3. Prerequisite: Permission of instructor.

CSL 3220 - Service Through Action and Internships. Participants in the CSL program will have to become accustomed to establishing the bridge between theoretical knowledge and leadership in action. As their final task in the CSL, students design and implement a project which will be of practical value to the communities surrounding UCDHSC. These projects apply the knowledge and skills students have adopted during their previous learning experiences. Semester Hours: 3. Prerequisite: Permission of instructor.

CSL 3221 - Service Through Action and Internships. A pilot CSL course in service through action. Open to all registered participants of the Leadership Portfolio Program as well as to selected students interested in learning about service through action. By working with professionals from the community and the non-profit sector, students learn how to create a permanent service program in the community. Semester Hours: 1. Prerequisite: Permission of instructor.

CSL 3510 - Understanding Systems I. Designed as an introduction and survey of systems theory and practical applications of systems theory. The course is divided into two sections: a) understanding systems and b) an interdisciplinary approach to systems. In the second part of the course, experts in the systems approach to various disciplines guide the discussion and work. Semester Hours: 3. Prerequisite: Permission of instructor.

CSL 4101 - Proseminar: New Paradigms in Higher Education. Explores current issues and trends in higher education with emphasis on problems, opportunities, and imperatives faced by urban universities such as UCDHSC. CSL is built around a problem-oriented multidisciplinary agenda which serves as focal point and example. Seminar/workshop format is open and interactive; students are expected to be active participants. (Term Project). Semester Hours: 1.

CSL 4242 - Topics in Technology. Team-facilitated. Emphasis on technologies that have significant societal impact. Semester Hours: 3.

CSL 4286 - Cognitive Science: An Invitation. Introduces students to the multidisciplinary field of cognitive science, its new perspectives and paradigms. Cognitive science is a new field that studies 'how we think' by drawing on the resources of multiple disciplines (e.g., philosophy, computer science, psychology, engineering, linguistics, neuroscience and anthropology). Semester Hours: 3.

CSL 4800 - Special Topics. Credit and subject matter are to be arranged. Semester Hours: 1 to 3. Prerequisite: Varies according to the subject matter.

CSL 4900 - Applied Learning. Directed research or service project employing multidisciplinary perspectives and methods. Semester Hours: 1 to 6. Prerequisite: Permission of instructor.

Design and Planning: DSPL (Architecture and Planning)

DSCI: Decision Sciences (Business)

DSCI 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. Semester Hours: 3. Prerequisite: MATH 1070, MATH 1080, and computer literacy (working knowledge of basic operating system and file manipulation commands, email, the world-wide web, a word processing package and spreadsheets).

DSCI 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. Semester Hours: 3. When Offered: *Fall, Spring, Summer*. Prerequisite: ACCT 2200, DSCI 2010, and MATH 1080. It is important to take this course junior year.

DSCI 3780 - Supply Chain Management. Over the last decade businesses have started to understand how the design and operation of their supplier network can actually 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. Semester Hours: 3. Prerequisite: DSCI 2010.

DSCI 4840 - Independent Study. Semester Hours: 3.

DSCI 4950 - Special Topics in Decision Sciences. Courses offered on an irregular basis for the purpose of presenting new subject matter in Decision Sciences. Semester Hours: 3. Prerequisite: Will vary depending upon the particular topic and instructor.

DSCI 5939 - Cooperative Education. Semester Hours: 1 to 3.

DSCI 6010 - Deterministic Models. Linear programming and its application, network analysis, including scheduling models, dynamic programming, integer programming, non-linear programming. Semester Hours: 3. When Offered: *Seldom offered*. Prerequisite: BUSN 6530 and 6630.

DSCI 6020 - Stochastic Models. A variety of stochastic models and their application are discussed. Simulation modeling and analysis is emphasized as an approach for addressing such problems. Semester Hours: 3. When Offered: *Seldom offered*. Prerequisite: BUSN 6530 and 6630.

DSCI 6220 - 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 PhD 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. Semester Hours: 3. Prerequisite: BUSN 6530 (may be taken concurrently with permission of instructor) and either PhD student status or permission of instructor. Cross-listed with: ISMG 7220. Note: Cannot receive credit for both ISMG 7220 and DSCI 6220.

DSCI 6230 - Business Forecasting. Modern businesses use forecasts in marketing, finance, accounting, human resources management and supply chain and production management decision-making. This course focuses on practical application of forecasting techniques, choosing and comparing appropriate methods and applying the results to the business application. Semester Hours: 3. Prerequisite: BUSN 6530 or FNCE 6290. Cross-listed with: BUSN 6824 and FNCE 6372. Note: Can only receive credit for either DSCI 6230, BUSN 6530, or FNCE 6290.

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. Semester Hours: 3. Prerequisite: BUSN 6530 or permission of instructor. Cross-listed with: BUSN 6832. Note: Cannot receive credit for both DSCI 6440 and BUSN 6832.

DSCI 6460 - Decision Analysis. Examines business decision making under conditions of risk and uncertainty using quantitative decision analysis methods such as utility theory, value of information, decisions with conflicting objectives and hierarchical structured models. Applications include decisions commonly encountered in capital acquisitions, financial investments, quality control, project selection, strategic planning, production control and human resource management. Student computer-assisted projects are conducted. Semester Hours: 3. Cross-listed with: BUSN 6836. Note: Cannot receive credit for both DSCI 6460 and BUSN 6836.

DSCI 6480 - Simulation Modeling. Students learn to model and analyze complex dynamic systems using state-of-the-art software such as ARENA. 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 projects where students define, model and analyze a significant system of their choosing. Semester Hours: 3. Prerequisite: Permission of instructor. Cross-listed with: BUSN 6834. Note: Cannot receive credit for both DSCI 6480 and BUSN 6834.

DSCI 6600 - Purchasing, Materials Management and Negotiation. Studies the purchasing function in manufacturing, service and public organizations. Topics include course selection, make-buy analysis, material quality standards and specifications, value analysis, negotiations, and legal aspects. Semester Hours: 3. When Offered: *Seldom offered*. Prerequisite: BUSN 6630.

DSCI 6800 - Special Topics. A number of different current topics in decision sciences are discussed in this course. Consult the current 'Schedule Planner' for semester offerings. Semester Hours: 3. When Offered: *Seldom offered*. Prerequisite: Permission of instructor.

DSCI 6820 - 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. Application to various industries will be included. Semester Hours: 3. Cross-listed with: BUSN 6820. Note: Cannot receive credit for both DSCI 6820 and BUSN 6820.

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. Semester Hours: 3. Prerequisite: BUSN 6530 or permission of instructor. Cross-listed with: BUSN 6822. Note: Cannot receive credit for both BUSN 6822 and DSCI 6822.

DSCI 6826 - Supply Chain Management. Introduces the application of purchasing, operations, and logistics to the entire supply chain of an organization. Because of globalization and the rapid advancement of information technology, emphasis is placed on integration management of processes and systems, relationship management of upstream and downstream players, and strategies that incorporate current and future trends. Semester Hours: 3. Cross-listed with: BUSN 6826. Note: Cannot receive credit for both BUSN 6826 and DSCI 6826.

DSCI 6828 - Business Applications of Data Mining. Addresses statistical approaches to the very large data sets increasingly common in business applications such as internet-based business, fraud detection, credit scoring and market segmentation. Topics include limitations of classical statistical when applied to large data sets, alternative approaches and applications of key data mining algorithms such as logistic regression, decision trees and cluster analysis. Emphasis is placed on proper choice of method, interpretation of the results and understanding of the strengths and limitations of the methods. Students are expected to analyze and report on a variety of data sets drawn from business application areas. Semester Hours: 3. Prerequisite: BUSN 6530 or permission of instructor. Cross-listed with: BUSN 6828. Note: Cannot receive credit for both BUSN 6828 and DSCI 6828.

DSCI 6840 - Independent Study. Instructor approval is required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Semester Hours: 1 to 8.

DSCI 6910 - Decision Sciences Practicum. Students apply decision science methodologies to a real-life business problem in cooperation with a local Denver 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. Semester Hours: 3. Prerequisite: Permission of instructor.

DSPL: Design and Planning (Architecture and 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. Semester Hours: 3. Prerequisite: Admission to the PhD program in Design and Planning or permission of instructor.

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. Semester Hours: 3. Prerequisite: Admission to the PhD program in Design and Planning or permission of instructor.

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. Semester Hours: 3. Prerequisite: Admission to the PhD program in Design and Planning or permission of instructor.

DSPL 7014 - Colloquium. Presentations of research projects by students, college faculty members and visitors. Semester Hours: 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. Semester Hours: 1 to 3.

DSPL 7840 - Independent Study. Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to design and planning. Semester Hours: 1 to 3. Prerequisite: Permission of instructor.

DSPL 7950 - Doctoral Thesis Research. Conducting research for doctoral dissertation, including data collection, analysis and presentation of findings. Semester Hours: 3 to 10. Prerequisite: Completion of core of PhD program.

ECE: Early Childhood Education (Education)

ECE 5000 - The Early Childhood Profession. The first in the required sequence of early childhood courses. It provides an overview of the early childhood profession and philosophical, historical, and legal foundations of services to young children and their families. State and national standards for early childhood education and professional code of ethical conduct are examined. Semester Hours: 1.

ECE 5010 - Curriculum and Program Development 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, pre-academics, motor, social-emotional, science, social studies and creativity. Semester Hours: 3.

ECE 5020 - Approaches to Young Children's Learning. Review of approaches for facilitating the learning and development of young children. Examined are programs for children from infancy through age eight. Approaches are considered in terms of (1) their differing views of intellectual, social, and physical development of young children; (2) their operation, activities and procedures; and (3) their effects on children's learning. Semester Hours: 3.

ECE 5030 - Directing Programs for Young Children. Analysis of organizational factors and instructional events in the classroom, facilitation of teacher effectiveness through supervisory feedback and in-service development. Special attention is given to supervisor or teacher relationships, parent-school-community relationships, and processes for feedback. Semester Hours: 3.

ECE 5040 - Administrative Seminar. Emphasis on those topics required of administrators and collaborator or consultants for early childhood socially inclusive classrooms or programs, such as philosophy, finance, programming, management, community or parent relations, supervision, ethical issues, teaming, professionalism, public policy and legislation, in service development and service coordination. Semester Hours: 3.

ECE 5060 - Working with Parents and Families. Review of historical factors and research related to current trends in working with parents and families of children with or without disabilities. The course presents content concerning family systems theory, various community services available to families, abused and neglected children, and an overview of successful programs that serve parents and families in the educational setting. Semester Hours: 3.

ECE 5070 - Cognitive, Social, Emotional Development and Disorders in Young Children. Focuses on the cognitive and social development of infants and young children and problems that may occur during the process. Emphasizes intervention approaches for preschool children with cognitive and social-emotional disabilities. Implications for intervention from current research are considered. Semester Hours: 3.

ECE 5080 - Language and Literacy in Young Children. Overview of normal language and literacy development through age 5, language components and pertinent research relating to language and literacy acquisition. Emphasis is placed on language only disorders commonly demonstrated by young children with disabilities and appropriate intervention strategies. Semester Hours: 3.

ECE 5090 - Neuromotor Development and Disorders in Young Children. Provides an overview of normal and abnormal motor and neurological development in the infant and young child. Current treatment approaches for children with neuromotor disorders are examined, with emphasis on sensory integration and neuro-developmental treatment. Also reviewed are sensory deficits; hearing and visual impairment. Semester Hours: 3.

ECE 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. Semester Hours: 1 to 3.

ECE 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. Semester Hours: 1 to 3. Prerequisite: ECE 5102.

ECE 5140 - Measurement and Evaluation in Early Childhood Education. Provides classroom experience in basic measurement concepts and in the screening and assessment of young children's cognitive, affective, language, and psychomotor capabilities and characteristics. Traditional measurement techniques as well as non-reactive measures, human and video-observational methods, and authentic assessment are included. Evaluation of programs and persons in early childhood education settings is examined. Semester Hours: 3.

ECE 5200 - Screening and Assessment of Young Children. Provides a field-based experience in the administration and scoring of a sampling of the most widely used screening and assessment instruments designed for use with infants and in preschool classrooms. Students have the opportunity to administer a variety of formal and informal measures including screening, evaluation, play-based and curriculum-based measures. Semester Hours: 3.

ECE 5202 - Stress, Violence, and Behavior Challenges in Young Children's Lives. Prepares early childhood educators to work with young children and their families to counteract the negative effects of stress and violence. Students are introduced to the effects of stress and violence on young children, the emotional needs of children in the

classroom and the use of specific intervention strategies to promote positive social skills, prevent behavior problems, and teach social problem solving to young children. Semester Hours: 3.

ECE 5204 - Early Childhood Mental Health. Addresses the role of the early childhood practitioner in supporting young children emotional well-being and mental health. Topics include mental health disturbances or disorders of infancy or childhood, assessment of social or emotional development and behaviors related to mental health, relationship-based strategies for working with children with emotional and behavioral needs, and identification of community resources and services. Semester Hours: 3. Prerequisite: Students are encouraged to take ECE 5202 prior to this course for a specialization in early childhood mental health, however this is not an absolute prerequisite.

ECE 5800 - Workshop: Topics in Early Childhood Education. Topics and credit hours vary from semester to semester. Semester Hours: 1 to 4.

ECE 5840 - Independent Study. Semester Hours: 1 to 4.

ECE 5911 - Educational and Observational Practicum in Early Childhood Education. Includes planned experiences built around the clinic and ECE classroom in operation. Students observe in public schools, Head Start, childcare, and private preschool programs. The practicum requires 30 to 40 clock hours of field placement experience with concurrent classroom meetings. Opportunities for observation in a variety of classroom types are provided. Semester Hours: 3.

ECE 5920 - Readings in Early Childhood Education. Semester Hours: 1 to 4.

ECE 6010 - Literacy and Mathematics K-2. Principles of early reading and mathematical development for grades K-2. Approaches to reading and mathematics are reviewed in relationship to Colorado Model Content Standards and the Colorado and Literacy Act. Diverse instructional strategies and differentiation for children with disabilities and the roles of early childhood special education specialists in K-2 are described and critiqued. Semester Hours: 3.

ECE 6100 - Medical and Physiological Aspects of Developmental Disabilities. Presents neurological or physiological development and disorders, as well as appropriate intervention techniques for the young child. Also considered are developmental issues and concerns related to medically fragile young children. Semester Hours: 3.

ECE 6110 - Intervention Strategies for Children with Disabilities and At-risk Infants. An in-depth study of intervention strategies, curricula, and program models for young children, birth to three years. Topics include selection, implementation, and evaluation of the different techniques. The course has an interdisciplinary focus. Semester Hours: 3.

ECE 6200 - Early Intervention Strategies. Explores current research, knowledge, and skills related to early intervention policies, teaching strategies, and service delivery focusing on the young child with disabilities. Infant and preschool service delivery options such as home or center or community-based programming, and social integration programming techniques are emphasized. Semester Hours: 3.

ECE 6600 - Seminar: Early Childhood Education Practices and Issues. Current practices and issues in early childhood and primary education are reviewed, then certain topics are considered in-depth. Emphasis is on issues and problems of practice and care setting in early childhood education and primary grades. Semester Hours: 3.

ECE 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. Semester Hours: 3.

ECE 6910 - Practicum in Infancy. Field-based experiences in settings for children with disabilities and at-risk infants, toddlers, and their families. Semester Hours: 1 to 6.

ECE 6911 - Practicum in Early Childhood Education. Field-based experiences in settings for young children (preschool administration, day-care center management, community college teaching, parent program directorship, etc.) that are closely linked to the students' professional goals.

Requires a minimum of 75, 150, 225, or 300 clock hours under supervision (for 1, 2, 3, or 4 credit hours, respectively). Semester Hours: 1 to 4. Prerequisite: Considerable course work in early childhood education.

ECE 6912 - Practicum: Early Childhood Special Education. Field-based experiences in settings for young children with disabilities and their families, including diagnostic clinics, project Child Find, hospital, and/or classroom. The practicum requires a minimum of 85, 170, 255, or 340 clock hours under supervision (for 1, 2, 3, or 4 credit hours, respectively). Semester Hours: 1 to 4.

ECE 6913 - Practicum in Working with Parents and Families.

Provides in-depth, field-based experience in working with families of handicapped and at-risk young children. Settings may include schools, community agencies and hospitals. Requires minimum of 255 clock hours under supervision. Semester Hours: 3. Prerequisite: Permission of instructor.

ECE 6914 - Primary Practicum in Early Childhood Special Education. Field-based experiences in kindergarten through second grade settings with typically developing children, children with special needs and special education teams. Requires a minimum of 85, 170, 255 or 340 clock hours under supervision (for 1, 2, 3, or 4 credit hours, respectively). Semester Hours: 2. Prerequisite: ECE 6010.

ECE 6950 - Master's Thesis. Semester Hours: 4. Prerequisite: REM 5100, REM 5200 and credits in the Early Childhood Education program.

ECON: Economics (Liberal Arts and Sciences)

ECON 1111 - Freshman Seminar. Semester Hours: 1 to 3.

ECON 2012 - Principles of Economics: Macroeconomics: SS1.

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. Semester Hours: 3.

ECON 2022 - Principles of Economics: Microeconomics: SS1.

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. Semester Hours: 3. Note: Complementary to and normally taken following ECON 2012. ECON 2012 is not a prerequisite for ECON 2022.

ECON 2939 - Internship/Cooperative Education. Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: 15 hours of 2.75 GPA.

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. Semester Hours: 3. Prerequisite: ECON 2022.

ECON 3300 - Economics Of Crime and Punishment. Presents the economic approach to crime. Teaches economic reasoning in the analysis of the determinants of criminal activity, provides an in-depth analysis of the importance of socioeconomic factors in determining crime. Investigates the relative importance of labor market conditions, deterrence, and other factors in the level of criminal activity. Also covers topics to reduce crime such as, the death penalty, issues around victimless crime and public choices. Semester Hours: 3. Prerequisite: ECON 2022.

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. Semester Hours: 3. Prerequisite: ECON 2012 and 2022.

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. Semester Hours: 3. Prerequisite: ECON 2022.

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. Semester Hours: 3. Prerequisite: MATH 1070, 1080 (or equivalent), ECON 2012 and 2022.

ECON 3811 - Statistics with Computer Applications. Introduces statistical methods and their application to quantitative problems in economics and social sciences. Semester Hours: 4. Prerequisite: College algebra, ECON 2012 and 2022. Note: Recitation is required.

ECON 3939 - Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: Junior standing and 2.75 GPA.

ECON 4001 - Topics in Economics. Studies special topics in economics to be selected by the instructor. Semester Hours: 3. Note: May be repeated for credit when topics vary.

ECON 4050 - 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. Semester Hours: 1 to 8. Prerequisite: ECON 2012 and ECON 2022. Cross-listed with: ECON 5050. Note: ECON 4050 for majors in economics, others by permission of instructor.

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. Semester Hours: 3. Prerequisite: ECON 2012, 2022 and 3801.

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. Semester Hours: 3. Prerequisite: ECON 2012, 2022 and 3801.

ECON 4091 - 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. Semester Hours: 3. Prerequisite: ECON 2012 and ECON 2022. Cross-listed with: ECON 5090.

ECON 4101 - Applied Statistics Using SAS and SPSS I. Teaches the practical statistical tools social scientists use to analyze real-world problems. Split into four modules, each taught by a different instructor. The first module introduces SAS and SPSS; modules 2-4 are problem-based and cover topics such as ANOVA, multivariate regression, and cluster analysis. Semester Hours: 3. Prerequisite: Any statistics course.

ECON 4102 - Applied Statistics Using SAS and SPSS II. (continuation of ECON 4101.) Students use the skills they learned in the previous semester to analyze a social issue of their choosing and present their findings. Semester Hours: 3. Prerequisite: ECON 4101. Note: In addition to lectures, weekly one-on-one meetings between faculty and students are required.

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. Semester Hours: 3. Prerequisite: ECON 2012.

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. Semester Hours: 3. Prerequisite: Undergraduate statistics or permission of instructor. Cross-listed with: ECON 5150.

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. Semester Hours: 3. Prerequisite: ECON 2022.

ECON 4230 - Law and Economics. Applies economic theory to legal decision making. Topics include property law, tort law, contract law, the common law, crime and punishment, comparisons to traditional forms of legal decision making and the economic approach to politics. Semester Hours: 3. Prerequisite: ECON 2022.

ECON 4240 - Economic Policy Analysis. Deals with the application of economic analysis to the government policy-making process. Topics include public goods provision, externalities, cost-benefit analysis, judicial decision making, the economic analysis of the political process, government regulation of business, and tax incidence. Semester Hours: 3. Prerequisite: ECON 2012, 2022 and 3801.

ECON 4310 - 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. Semester Hours: 3. Cross-listed with: ECON 5310.

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. Semester Hours: 3. Prerequisite: ECON 2022. Cross-listed with: ECON 5410.

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. Semester Hours: 3. Prerequisite: ECON 2012.

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. Semester Hours: 3. Prerequisite: ECON 2022 and ECON 3811.

ECON 4530 - 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. Semester Hours: 3. Prerequisite: ECON 2022. Cross-listed with: ECON 5530.

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. Semester Hours: 3. Prerequisite: ECON 2022. Cross-listed with: ECON 5540.

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 wages, returns to schooling, immigration, labor market discrimination, and trade unions. Semester Hours: 3. Prerequisite: ECON 2012, 2022 and any statistics course.

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. Semester Hours: 3. Prerequisite: ECON 2022.

ECON 4716 - Comparative Economic Systems. Critical examination of capitalism, socialism, communism and alternative systems. Focuses

on the comparative study of various countries and the implementation and management of their economic systems. Semester Hours: 3.

Prerequisite: ECON 2022.

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. Semester Hours: 3. Prerequisite: ECON 4071. Cross-listed with: ECON 5740.

ECON 4770 - Economic Development—Theory and Problems. Introduces theory and practice of economic development. Topics include development and growth models, economic planning, income distribution, human and capital resources, foreign investment and the multinationals, technology transfer, trade and development. Discussions of current issues regarding world debt, economic stabilization, the new protectionism, empirical studies, and examples of development in various countries. Semester Hours: 3. Prerequisite: ECON 2012 or ECON 2022.

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. Semester Hours: 3. Prerequisite: ECON 3811 or equivalent.

ECON 4840 - Independent Study. Semester Hours: 1 to 3.

ECON 4850 - Honors Independent Study. Semester Hours: 1 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. Semester Hours: 1 to 8. Prerequisite: Permission of instructor. Cross-listed with: ECON 4050.

ECON 5051 - Data Analysis and Research Methodology. Consists of a series of lectures on the nature of conducting research, and discussions of the ways professional economists approach research problems. A review of spreadsheet applications and statistical packages are conducted. Semester Hours: 1.5. Prerequisite: ECON 4071 and 4811 or permission of instructor.

ECON 5052 - Data Analysis and Research Methodology II. Develops student skills in data analysis and applications to economic issues and policy evaluation. Hands-on demonstration and student participation in empirical strategies using statistical packages in the social sciences (i.e. SAS). Emphasis on programming, research strategies and interpretation of results. Semester Hours: 1.5. Prerequisite: ECON 5051 or permission of instructor.

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. Semester Hours: 3. Prerequisite: ECON 5803.

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. Semester Hours: 3. Prerequisite: ECON 5803 or permission of the instructor.

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. Semester Hours: 3. Prerequisite: ECON 2012 and ECON 2022. Cross-listed with: ECON 4091.

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. Semester Hours: 3. Prerequisite: ECON 3811. Cross-listed with: ECON 4150.

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. Semester Hours: 3. Cross-listed with: ECON 4310.

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. Semester Hours: 3. Prerequisite: ECON 5073 or permission of instructor.

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. Semester Hours: 3. Prerequisite: ECON 2022. Cross-listed with: ECON 4410.

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. Semester Hours: 3. Prerequisite: ECON 5073. Cross-listed with: ECON 4530.

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. Semester Hours: 3. Prerequisite: ECON 5073. Cross-listed with: ECON 4540.

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. Semester Hours: 3. Prerequisite: Permission of instructor.

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. Semester Hours: 3. Prerequisite: Permission of instructor. Cross-listed with: ECON 4740.

ECON 5800 - Special Topics. Current economics topics to be determined by the instructor. Semester Hours: 1 to 3. Prerequisite: ECON 3801 or MATH 1401.

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. Semester Hours: 3. Prerequisite: ECON 4071 and 4081.

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. Semester Hours: 3. Prerequisite: ECON 4811 or equivalent.

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. Semester Hours: 3. Prerequisite: ECON 5083 and 5813.

ECON 5840 - Independent Study. Semester Hours: 1 to 3.

ECON 5939 - Internship/Cooperative Education. Semester Hours: 1 to 6.

ECON 5950 - Master's Thesis. 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. Semester Hours: 3. Prerequisite: ECON 5073.

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. Semester Hours: 3. Prerequisite: ECON 5083.

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. Semester Hours: 1.5. Prerequisite: ECON 5813, 5073, 5083 at the instructor's discretion.

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. Semester Hours: 1.5. Prerequisite: ECON 5813, 5073, 5083 at the instructor's discretion. Note: Topics vary with the instructor.

ECON 6060 - Special Topics. Special topics in advanced microeconomics. Consideration of value theory based upon methodology, theory of demand, and theory of distribution. Semester Hours: 1 to 3. Prerequisite: ECON 3801.

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. Semester Hours: 3. Prerequisite: ECON 5823 and 6053. Note: Students attend lectures and also meet regularly with the instructor in the process of doing a sophisticated research project.

ECON 6110 - Money and Central Banking. Monetary and financial institutions, with focus on relationships among domestic monetary policy, interactional credit and balance of payments. Semester Hours: 3. Prerequisite: ECON 5083.

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. Semester Hours: 3. Prerequisite: ECON 5073.

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. Semester Hours: 3. Prerequisite: ECON 5073.

ECON 6420 - International Finance. Topics in international finance, including exchange rate determination, the adjustment process, international financial markets and the international monetary system. Semester Hours: 3. Prerequisite: ECON 5073.

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. Semester Hours: 3. Prerequisite: ECON 5073 and 5813.

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. Semester Hours: 3. Prerequisite: ECON 5073 and 5803.

ECON 6801 - Advanced Mathematical Economics. Addresses economic dynamics, formal mathematical modeling in economics, and optimization in economic theory. Semester Hours: 3. Prerequisite: ECON 5803 or permission of instructor.

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. Semester Hours: 3. Prerequisite: ECON 5813 and 5823.

ECON 6840 - Independent Study. Semester Hours: 1 to 3.

ECON 6950 - Master's Thesis. Semester Hours: 1 to 6.

EDLI: Educational Leadership and Innovation (Education)

EDLI 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. Semester Hours: 1. Prerequisite: Admission to doctoral program.

EDLI 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. Semester Hours: 1. Prerequisite: Admission to the doctoral program.

EDLI 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. Semester Hours: 1. Prerequisite: EDLI 6000 or permission of instructor.

EDLI 6994 - Introduction to Academic Discourse. Designed to be taken prior to beginning the doctoral program. Discusses the process of writing-emphasizing reading research articles critically with a focus on selecting and organizing sources into a review, developing a conceptual framework, and identifying the connectivity between frameworks and conclusions. Covers principles involved in critically reviewing the literature, including an examination of the purpose of the literature review, its structures and an analysis of examples. Furthers the development of a scholarly writing culture, and set expectations for the type of writing necessary to be successful in the doctoral program and to be contributing members of the academic community of practice. Semester Hours: 3.

EDLI 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. Semester Hours: 3. Prerequisite: REM 5100 or equivalent.

EDLI 7010 - Dissertation Planning and Design. Provides doctoral students with conceptual, methodological, and social support during the early stages of the doctoral dissertation. Course content and discussion focuses on the first three chapters of the dissertation, including: posing research questions and hypotheses, conceptual and theoretical frameworks, literature reviews, and methodological (design, sampling, measurement, analysis) plans. Semester Hours: 3. Prerequisite: Completion of all required course work; successful completion or scheduled doctoral comprehensive examination during the semester in which this course is taken.

EDLI 7100 - Leadership in Education. Introductory seminar for doctoral students in education. Orients students to the array of perspectives on leadership and innovation in education and develops doctoral-level analysis and writing skills. Students develop initial portfolio products and program plans. Semester Hours: 3. Prerequisite: Admission to the doctoral program.

EDLI 7200 - Administrative Leadership and Values Appraisals. Examines the core values underlying the program in education administration: value development in individuals as they relate to the purpose of public schooling in today's society. Semester Hours: 1 to 6. Prerequisite: Permission of instructor.

EDLI 7210 - Educational Policy Making in a Democratic Society. Provides students with relevant theories, research, and practice related to administrative policy making in educational organizations. Focuses on ways of thinking about societal and schooling tensions, and includes a focus on governance, planning, community participation, politics, working with groups, policy arenas, conflict management and the change process. Semester Hours: 1 to 6. Prerequisite: Permission of instructor.

EDLI 7220 - Leadership and Power. Part of a planned sequence of experiences for a cohort group of advanced doctoral students preparing for careers as senior policy administrators in education. Semester Hours: 3. Prerequisite: Permission of instructor.

EDLI 7230 - Organizational Performance in Schools. Examines ways of thinking about schools as organizations that deliver educational services, as well as places of employment for administrators, teachers, and other staff members. The course also focuses on ways to diagnose and change school performance. Semester Hours: 1 to 6. Prerequisite: Permission of instructor.

EDLI 7240 - Problems and Practices in Integrated Services. Examines the specific systems at local, state, and national levels that provide services and support for children, youth, and families including the regulatory and statutory criteria for program administration and funding, the nature and scope of services offered, and the goodness-of-fit between overlapping program mandates and existing needs of families. Semester Hours: 3. Prerequisite: Admission to the PhD program in educational leadership or permission of instructor.

EDLI 7250 - Nature of Work in Schools. 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. Semester Hours: 3. Prerequisite: EDLI 7000 and 7100.

EDLI 7260 - Managing Integrated Services. Examines the dynamics of managing public policies and programs that support integrated services for children and families. Course focuses on managerial skills needed in a complex, multi-disciplinary setting. Course examines federal, state, and local government agency policies and their administrative implications. Semester Hours: 3. Prerequisite: Core course in Integrated Services emphasis of the PhD program in Educational Leadership and Innovation.

EDLI 7300 - Individual and Organizational Change. Covers theory and practice of psychological change as this change relates to systems and individuals within organizations. Addresses the knowledge, understanding, and application of the change process. Semester Hours: 3. Prerequisite: Permission of instructor.

EDLI 7600 - Doctoral Laboratory. Laboratories are organized by professors to engage students in on-going research programs. They provide opportunities for students to extend and apply knowledge and skills developed in course work. The laboratories enable students to complete portfolio requirements and work on doctoral dissertations. Semester Hours: 1 to 6. Prerequisite: Admission to PhD program.

EDLI 7601 - Doctoral Research Lab: Administrative Leadership and Policy Studies Lab. The ALPS lab focuses on research on administrative and organizational leadership, adult and professional education, leadership in higher education, and educational policy and policy making at all levels. Semester Hours: 1 to 6. Prerequisite: Permission of instructor.

EDLI 7602 - Doctoral Research Lab: Postsecondary Teaching and Learning. A doctoral lab exploring theoretical and practical questions about teaching and learning in post-secondary settings. Provides hands-on experiences in the design and development of learner-centered, web-based faculty development workshops along with research opportunities emerging from the workshops. Semester Hours: 1 to 6. Prerequisite: Admission to the doctoral program.

EDLI 7603 - Doctoral Research Lab: Technology-Enhanced Learning. The TEL Lab is comprised of professionals who share an interest in the effective design of learning resources and use of technologies in K12 and adult-learning settings. TEL supports inquiry and provides leadership to practitioner communities. Example projects include technology integration in K12 schools; instructional-design support for higher education faculty; and tools to promote interaction in online learning environments. TEL Lab members meet monthly as an entire group, and weekly as sub-groups on specific projects. For more information, check the web site at: <http://www.cudenver.edu/ilt/TEL>. Semester Hours: 1 to 6. Prerequisite: Permission of instructor.

EDLI 7604 - Doctoral Research Lab: Learning and Activity. The LOLA doctoral lab focuses on learning, change, and activity. The lab provides an environment in which participants work to develop a conceptual framework for conducting multi-level action research; develop tools for change efforts in a variety of contexts; develop skills in scholarly writings and collegial critique; conduct projects and disseminate findings; and become proficient with data management techniques. Semester Hours: 1 to 6. Prerequisite: Permission of instructor required.

EDLI 7605 - Doctoral Research Lab: Urban School Lab. The USDL is focused on systemic change and problems of practice within urban schools. It is in the intersection of systems change and practice issues that we stake out the territory for our lab: practice informed and supported by systems approaches to improvement and renewal; systems change informed and led by the practitioners who daily work in schools to teach and mentor their students. Through the dynamic interplay of the particular and the context, we hope to unveil the life choices and opportunities for each and every student, knowing that these opportunities and choices are so often complicated by lack of resources, limited expectations of success, and depersonalized classrooms. Knowing the critical role that teachers and other practitioners play in creating opportunities for learning to occur, the work of the USDL explores the issues and challenges that face educators on a daily basis. Semester Hours: 1 to 6. Prerequisite: Admittance to the doctoral program or permission of instructor.

EDLI 7607 - Doctoral Lab for Diversity and Equity. The lab is a research community in which participants use critical theory to examine the educational outcomes and experiences of marginalized groups. Critical theory helps to explore marginalization, especially as it relates to schools and to imagine a new society. Semester Hours: 1 to 6. Prerequisite: Doctoral students who meet the requirements for doctorate in Educational Leadership and Innovation.

EDLI 7608 - Doctoral Research Lab: Inquiry or Professional Development. This lab reviews organizational issues in the development and management of authentic content inquiring. Special interest is teacher professional attitudes, collegial teacher-team development and school partnership links that result from such projects. Semester Hours: 1 to 6. Prerequisite: Admittance to doctoral program or permission of instructor.

EDLI 7611 - Doctoral Research Lab: Leadership Capacity Lab. This lab will investigate what constitutes best practice (knowledge, dispositions, skills, training) for impacting the leadership capacity of school leaders as they work to promote: (a) successful student outcomes, (b) inclusive practices, (c) recruitment and retention of high-quality educators, (d) effective learning communities, and (e) social justice and equality for all. Semester Hours: 1 to 6. Prerequisite: Admission to EDLI program.

EDLI 7612 - Doctoral Research Lab: Literacy and Responsive Teaching. The purpose of this doctoral research lab is to explore area of literacy (reading and writing) and responsive teaching, particularly in diverse school settings with the understanding that diversity of culture, language, gender orientation, abilities and economics is the growing

norm in our schools. Topics of interest to the lab are literacy development, language acquisition, assessment, culturally responsive teaching practices, professional development and school reform. Semester Hours: 1 to 6. Prerequisite: Acceptance into the doctoral program.

EDLI 7700 - Doctoral Pro Seminar. First semester students in EDLI are introduced to the faculty and the elements of the program. Semester Hours: 1. Prerequisite: Admission to the PhD program.

EDLI 7710 - Theoretical Bases of Instructional Technology. Seminar on the theoretical foundations of the field of instructional technology, including behavioral, cognitive, and systems theories. Semester Hours: 3. Prerequisite: Acceptance into the doctoral program.

EDLI 7711 - Curriculum Reform in a Democracy. Students address major themes in curriculum improvement. Semester Hours: 3. Prerequisite: Permission of instructor.

EDLI 7712 - Seminar: Learning Theory and Learners. Students apply major issues from learning theories and development to problems of practice related to educational leadership and innovation. Semester Hours: 3. Prerequisite: EPSY 5110 or 5220 or (recommended: EPSY 5100, 5140 or 6000).

EDLI 7830 thru 7832 - Special Topics In Educational Leadership and Innovation. Special topics that reflect current research and scholarly exploration of leadership and innovation. Semester Hours: 1 to 6.

EDLI 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. Semester Hours: 3.

EDLI 7834 - Divergent Scholarly Work on Identity and Voice Through Critical Theory. This seminar is to prepare individuals to integrate theoretical and practical knowledge by cultivating habits of analysis, inquiry and judgment. Students formulate ways of constructing voice for their own individual sense of identity as a leader and innovator in response to social and political pressures. Semester Hours: 3. Prerequisite: EDLI 7831.

EDLI 8994 - Doctoral Dissertation PhD. Semester Hours: 1 to 10.

EDUC: Educational Administration and Supervision (Education)

EDUC 5000 thru 5009 - 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. 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. Semester Hours: 1.

EDUC 5020 - Trainers of Paraeducators Academy. Provides the professional educator with the skills to provide effective presentations to paraprofessionals in schools. Semester Hours: 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. Semester Hours: 3. Prerequisite: EDUC 5010 and 5020.

EDUC 5040 - Mentoring Novice and Pre-service Teachers. Designed to help participants develop or enhance the skills necessary to successfully

work with paraeducators who are completing teacher education programs. Concentrates on supervision and conference skills, adult learning theory, and communication skills. Semester Hours: 1.

EDUC 5050 - Computer Application for Educational Management. Studies the theoretical and applied knowledge of central and school-based administrative educational applications of modern computer technology. Semester Hours: 3.

EDUC 5070 - Elementary School Curriculum. An integrating course dealing with the history, development, problems, and practices of the curriculum of the elementary school. Semester Hours: 3.

EDUC 5090 - Senior High School Curriculum. This course is concerned with the history, development, principles, problems, practices, and trends of the curriculum of the senior high school. Semester Hours: 3.

EDUC 5100 - Curriculum and Program Development and Evaluation. Fundamentals of curriculum and program development, including theoretical foundations of U.S. curriculum, practical criteria to guide decision making, specific models and processes for curriculum or program development and appraisal, emerging issues, problems and trends. Semester Hours: 3.

EDUC 5400 - Special Education Seminar for Principals. This course is designed for principals and prospective principals to investigate the new leadership responsibilities that are emerging in the delivery of special education at the building level. The course reflects the emerging role of the principal in leading special education services at the school level with a two-part emphasis. Effective leadership involves (a) an ability to lead school-wide conversations about problems and issues that arise in special education in ways that strengthen the culture of the school and its commitment to all students' learning; and (b) an ability to garner resources for the school's programs. The course is not intended as an introduction to special education law or the details of special education administration, but a basic familiarity with these issues will be assumed. Semester Hours: 3.

EDUC 5700 - Administrative Leadership in Educational Organizations. Introduces students to key concepts, theories, and research in providing leadership to educational organizations. Special emphasis is placed on the topics of organizational behavior, leadership, culture change and power, as they relate to the administrative role. Semester Hours: 1 to 6. Prerequisite: Permission of instructor.

EDUC 5710 - Administering the Environment of Public Schools. A seminar course which focuses on problems and issues in developing an effective school environment. Emphasis is placed upon inter-relationship of law, finance, strategic planning, culture, political governance, and school or community relations. Semester Hours: 1 to 6. Prerequisite: Permission of instructor.

EDUC 5720 - Supervision of the Curricular and Instructional Program of the School. This seminar addresses the supervisory issues involved in administering curricular and instructional programs in schools. Special emphasis is placed upon teacher appraisal, assessment techniques, curriculum design, and instructional effectiveness. Semester Hours: 1 to 6. Prerequisite: Permission of instructor.

EDUC 5730 - Administering the School Improvement Process. A seminar course focusing on problems and issues in developing effective schools. This course builds on concepts from organizational behavior and leadership and orients students toward planning, executing, and assessing school improvement programs. Emphasis is placed on working through teachers to improve school capacity. Semester Hours: 1 to 6. Prerequisite: Permission of instructor.

EDUC 5751 - Principal/Administrator Licensing I. This program section (1 of 4) combines foundational learning activities in leadership, curriculum and supervision, school improvement, and the school environment via distance learning. Field applications are related to those foundations, and students develop distance-learning plans for various problems of practice along with their field activities. Assessment is by portfolio. Semester Hours: 5 to 9. Prerequisite: Admission to the program.

EDUC 5752 - Principal Administrator Licensing II. This program section (2 of 4) combines advanced learning activities in leadership,

curriculum and supervision, school improvement, and the school environment via distance-learning technology that build on the foundational activities in EDUC 5751 with field applications related to those activities. Students develop distance-learning plans for various problems of practice along with field activities. Assessment is by portfolio. Semester Hours: 5 to 9. Prerequisite: Successful completion of EDUC 5751.

EDUC 5753 - Principal/Administrator Licensing III. This program section (3 of 4) combines foundational learning activities in leadership, curriculum and supervision, school improvement, and the school environment via distance learning that build on foundational activities in EDUC 5752. Field applications are related to those foundations, and students develop distance-learning plans for various problems of practice along with their field activities. Assessment is by portfolio. Semester Hours: 5 to 9. Prerequisite: Successful completion of EDUC 5752.

EDUC 5754 - Principal or Administrator Licensing IV. This program section (4 of 4) combines foundational learning activities in leadership, curriculum and supervision, school improvement, and the school environment via distance learning that build on foundational activities in EDUC 5753. Students complete their distance-learning activities for various problems of practice along with their field activities. Assessment is by portfolio. Semester Hours: 5 to 9. Prerequisite: Successful completion of EDUC 5753.

EDUC 5830 - Governance and Administration of Education. Development of governance structures and of administration as a field of study in education. Influence of governance and views of administration on educational organizations' goals, functions, and personnel. Semester Hours: 3.

EDUC 5831 - School Law. Recent developments, including administrative implications of significant court decisions for school operations. For superintendents, principals, school board members, prospective administrators, and teachers. Semester Hours: 3.

EDUC 5832 - Group Development and Training. Organizational theory and practice for school leadership personnel with emphasis on group and organization development, group problem identification and solutions, conflict management skills and processes, role behaviors and goal setting. Semester Hours: 3.

EDUC 5833 - School Business Management. Emphasizes school-site level management. Includes instruction in planning, budgeting, evaluation and management. Semester Hours: 3.

EDUC 5834 - Seminar in School Administration. Knowledge and insight about organizational behavior drawing upon education and related social science concepts. Semester Hours: 3.

EDUC 5835 - Supervision of Instruction. Studies instructional supervision concepts with practical application. Effective instruction, supervision, and program evaluation in relation to school-wide improvement. Leadership skills in staff development, curriculum development, group development, direct observation and action research. Semester Hours: 3.

EDUC 5836 - Workshop: Educational Administration, Curriculum and Supervision. Semester Hours: 1 to 4.

EDUC 5840 - Independent Study. Master's. Semester Hours: 1 to 4.

EDUC 5930 - Clinical Practice in Administrative Leadership. Semester Hours: 1 to 5. Prerequisite: Admission to the program.

EDUC 5931 - Internship in Curriculum. Semester Hours: 1 to 6.

EDUC 5950 - Master's Thesis. Semester Hours: 1 to 8.

EDUC 6000 thru 6010 - 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. Semester Hours: 1 to 10.

EDUC 6101 - Initial Portfolio Analysis for Administrator Licensure. Students work with faculty members to develop a portfolio related to the professional standards of practice for educational administrators. Faculty members review the portfolio and provide an initial analysis for licensure. Semester Hours: 3. Prerequisite: M.A. or certification in educational administration.

EDUC 6102 - Initial Portfolio Analysis for Principal Licensure.

Students work with faculty members to develop a portfolio related to the professional standards of practice for principals. Faculty members review the portfolio and provide an initial analysis and recommendation for licensure. Semester Hours: 3. Prerequisite: M.A. or certification in educational administration.

EDUC 6103 - Portfolio Product Development for Administrative Licensure.

Students work with the professor to develop the products needed to ensure compliance with the new state standards for administrative licensure. Semester Hours: 1 to 6. Prerequisite: M.A. or certification in educational administration.

EDUC 6104 - Portfolio Product Development for Principal Licensure.

Students work with the professor to develop the products needed to ensure compliance with the new state standards for principal licensure. Semester Hours: 1 to 6. Prerequisite: M.A. or certification in educational administration.

EDUC 6105 - Portfolio Evaluation for Administrative Licensure.

Students work with the professor to conduct a detailed evaluation of portfolios to ensure that they meet the state standards for administrator licensure. The professor assembles a team of faculty and practicing professionals for the evaluation process. Semester Hours: 3. Prerequisite: M.A. or certification in educational administration.

EDUC 6106 - Portfolio Evaluation for Principal Licensure. Students work with the professor to conduct a detailed evaluation of portfolios to ensure that they meet the state standards for principal licensure. The professor assembles a team of faculty and practicing professionals for the evaluation process. Semester Hours: 3. Prerequisite: M.A. or certification in educational administration.

EDUC 6840 - Independent Study. Semester Hours: 1 to 4.

EDUC 6930 - Clinical Practice for Administrative Leadership.

Semester Hours: 1 to 7.

EDUC 6951 - Master's Thesis. Semester Hours: 4.

EDUC 7000-7010 - Special Topics in Administration, Supervision, and Curriculum Development.

Semester Hours: 1 to 3.

EDUC 7120 - Curriculum of Middle Level School. Deals with the history, development, principles, problems, practices, and trends of the curriculum of the middle level school. Semester Hours: 3.

EDUC 7140 - Student Activities Curriculum. Principles, problems, and procedures for improvement of extra class activities, student councils, and home rooms in the secondary school. Semester Hours: 3.

EDUC 7150 - Doctoral Seminar in Curricular Theories. An intensive study of current theories of public school curriculum related to trends in actual practices in elementary and secondary schools. Semester Hours: 3.

EDUC 7160 - Processes and Materials in Curriculum Appraisal.

Designed to provide curriculum workers with skills in the process of assessment of curriculum programs and skill in the appraisal of curriculum materials. Semester Hours: 3.

EDUC 7340 - Doctoral Seminar: Problems and Trends in Education.

A broad overview of current problems in schools and school systems and consideration of practices and policies in U.S. schools for solution of such problems. Evaluates procedures for solving educational problems. Semester Hours: 3.

EDUC 7350 - Elementary Principalship. Two-week in-depth examination of the elementary school principalship. Required for Type D administrative certification, elementary school. Semester Hours: 3. When Offered: *Offered summers only.* Prerequisite: Permission of instructor.

EDUC 7360 - Administration and Supervision of Elementary School. For administrators and teachers. Purposes, practices, and trends in administration and educational leadership. Semester Hours: 3.

EDUC 7370 - Administration and Supervision of Senior High School. Current administrative principles and practices essential to effective organization and management, with emphasis on the educational leadership of the principal. Semester Hours: 3.

EDUC 7380 - Doctoral Seminar: Theory of Educational Administration. Studies organizational models, theories, and communication patterns; leadership roles and behavior; and organizational change.

Attention to recent research in administrative theory. Semester Hours: 3.

EDUC 7400 - Doctoral Seminar in School Finance. For advanced graduate students. Problems of educational finance; theory, practice and control; equalization funds; federal-state-local relations in finance; budgeting; salary schedules; retirement; and school bonds. Semester Hours: 3.

EDUC 7410 - Educational Facilities Planning. Determination of school plant needs; relation of educational and architectural services; criteria of adequate school plants, site development, building operation and management; financial problems. Semester Hours: 3. When Offered: *Offered yearly.*

EDUC 7420 - Personnel Development and Training. Management of human resources in educational organizations. Deals with shared roles between site development, building operation and management; financial problems. Semester Hours: 3.

EDUC 7430 - School and Community Relations. Examines interactions of schools and their communities, citizen role or involvement in governance of education, internal and external communication concepts and practices, politics of education, community power and pressure groups, organizational culture and climate. Semester Hours: 3.

EDUC 7490 - Doctoral Seminar. Semester Hours: 3.

EDUC 7560 - Administration and Supervision in the Junior High School and Middle School. Purposes, practices, and trends in administration of the middle level school. Current administrative principles and practices essential to effective organization and management. Emphasis is on leadership of the principal at the middle level school. Semester Hours: 3.

EDUC 7630 - Doctoral Seminar: Junior and/or Senior High School Education.

For advanced students. Problems, theories, and trends in secondary education. Includes field work and individual projects. Semester Hours: 3.

EDUC 7700 - Doctoral Pro Seminar. This seminar integrates multiple doctoral labs, assists students to focus on dissertation topics, and facilitates inclusion of regional or national researches in students' PhD experiences. Semester Hours: 1. Prerequisite: Admission to the PhD program.

EDUC 7800 - Doctoral Research Seminar: Education Administration, Curriculum and Supervision. This seminar focuses on doctoral research study in these areas of educational research. Semester Hours: 3.

EDUC 7810 - Doctoral Seminar in School Law. An in-depth examination of the American legal process as it pertains to administration, planning, and delivery of educational programs. Involves self-selected research followed by individual or group presentations. Semester Hours: 3.

EDUC 7820 - Doctoral Seminar in Curriculum. Advanced seminar relating to theory and practice in curriculum building. Includes both elementary and secondary levels. Semester Hours: 3.

EDUC 7823 - Doctoral Seminar in Educational Supervision.

Advanced exploration of current instructional supervision concepts with exercises linking theory with professionals to solve instructional problems. Semester Hours: 3.

EDUC 7825 - Doctoral Seminar in Educational Leadership.

Seminar dealing with processes and patterns of educational leadership in the schools. Various theories of leadership are considered in relation to students' leadership behaviors. May be taken more than one semester for credit with advisor's approval. Semester Hours: 3.

EDUC 7840 - Independent Study. Doctoral. Semester Hours: 1 to 4.

EDUC 7911 - Practicum in Education Administration, Supervision and Curriculum. Semester Hours: 1 to 4.

EDUC 7921 - Readings in Education Administration, Curriculum and Supervision. Semester Hours: 1 to 4.

EDUC 7931 - Internship in Educational Administration and Supervision. Semester Hours: 1 to 6. Prerequisite: Permission of instructor.

EDUC 7932 - Internship in Curriculum. Permission of instructor required. Semester Hours: 1 to 6.

EDUC 8997 - Doctoral Dissertation EdD. Semester Hours: 1 to 10.

Educational Leadership and Innovation: EDLI (Education)

Educational Psychology: EPSY (Education)

E E: Electrical Engineering (Engineering)

E E 1201 - Introduction to Electrical Engineering. Introduces the field of electrical engineering and the computer—its primary tool. EE faculty members explain the various specialties within the field by demonstration. Word processors, spreadsheets, and engineering software are introduced. Semester Hours: 1. Prerequisite: High school trigonometry. Note: This course is not available to students who have taken E E 2142. ENGR 1000 cannot be substituted for E E 1201.

E E 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. Semester Hours: 3. Cross-listed with: C SC 1510.

E E 1520 - Embedded Systems Engineering I. Programming concepts are introduced from a hardware design standpoint. Assembly language and the 'C' language are used to interface and manipulate hardware. Microcontroller programming for electrical engineering applications is studied. Semester Hours: 3. Prerequisite: E E 1510.

E E 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. Semester Hours: 3. Prerequisite: MATH 2411. Cross-listed with: C SC 2132.

E E 2142 - Circuit Analysis II. Sequential course after E E 2132. Main topics include: Laplace transforms, frequency domain analysis, transfer functions, Bode plots, active filters and computer-aided analysis. Semester Hours: 3. Prerequisite: E E 2132; prereq/coreq: MATH 3195. Cross-listed with: C SC 2142.

E E 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. Semester Hours: 3. Prerequisite: E E 1520.

E E 2531 - Logic Laboratory. Experiments in digital logic utilizing both computer simulation and actual analysis using integrated circuits. Initially, combinational 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. Semester Hours: 1. Prerequisite: Prereq/Coreq: E E 1510. Cross-listed with: C SC 2531.

E E 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, Kirchhoff's Law, and Thevenin's theorem and Norton's theorem. Learn by experiments: impedance functions, transfer functions, resonance, Fourier series and analog filters. Semester Hours: 1. Prerequisite: Prereq/coreq: E E 2142.

E E 2651 - Introduction to Computer Engineering. Basic computer architecture is covered, including CPUs registers, memory, buses, which includes assembly language, compilers and operating systems. Semester Hours: 3. Prerequisite: C SC 1320 and E E 1510.

E E 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). Semester Hours: 3. Prerequisite: MATH 2421 and PHYS 2331. Cross-listed with: M E 3030.

E E 3133 - Electromagnetic Fields. Basic material is covered, including: vector analysis in generalized coordinates, Maxwell's

equations postulated for free space and extended to material regions and boundary conditions, uniform plane waves for free space and for materials, and static and quasi-static electric and magnetic fields. Semester Hours: 3. Prerequisite: E E 2132, MATH 3195, 2421 and PHYS 2331.

E E 3164 - Energy Conversion. Theory of transformers. Energy conversion concepts. Basic rotating energy converters, including direct current, synchronous and induction machines and applications. Semester Hours: 3. Prerequisite: E E 2142.

E E 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. Semester Hours: 3. Prerequisite: E E 2132, PHYS 2331 and CHEM 1130.

E E 3225 - Electronics II. BJT and FET transistor models at high frequencies, multi-stage amplifiers, frequency response of amplifiers. Feedback, operational amplifiers, oscillators, power amplifiers, and introduction to power electronics. Semester Hours: 3. Prerequisite: E E 2142 and 3215.

E E 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. Semester Hours: 3. Prerequisite: E E 2142.

E E 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. Semester Hours: 3. Prerequisite: E E 2531 and 2651. Cross-listed with: C SC 3651.

E E 3701 - Computer Architecture and RTOS. Computer architectures, operating systems (OS), and real-time OS (RTOS) are explored. The LINUX operating system is introduced and used to control real-time I/O. Performance of I/O software is verified by measurement. Semester Hours: 3. Prerequisite: E E 3651.

E E 3715 - Electronics Laboratory. Design and experimental verification of the operation of filter circuits, power supply circuits, transistor amplifier circuits and FET circuits. Semester Hours: 1. Prerequisite: E E 2552.

E E 3724 - Power Laboratory I. Basic electro-mechanical energy conversion concepts as applied to the synchronous machine, induction machine, and DC machine; the transformer; applications. Semester Hours: 1. Prerequisite: Prereq/coreq: E E 2142 and E E 3164.

E E 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. Semester Hours: 1. Prerequisite: E E 3715.

E E 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. Semester Hours: 3. Prerequisite: MATH 3195 and 2421.

E E 3939 - Cooperative Education. Students gain engineering design experience involving application of specific technical concepts and skills in a supervised industrial environment. (Must have approval from E E faculty). Semester Hours: 1 to 3. Prerequisite: E E 2142.

E E 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. Semester Hours: 3. Prerequisite: E E 3225 and senior standing. Cross-listed with: E E 5025.

E E 4133 - Advanced Electromagnetic Fields. 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 s antenna theory. Semester Hours: 3. Prerequisite: E E 3133.

E E 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. Semester Hours: 3. Prerequisite: E E 3316; and prereq or coreq: EE 3817.

E E 4174 - Power Electronic Systems. Topics to be covered include: power electronics fundamentals and applications in power systems; uncontrolled, semi-controlled and fully controlled power semiconductor converters design and control. Semester Hours: 3. Prerequisite: E E 3164. Cross-listed with: E E 5174.

E E 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. Semester Hours: 3. Prerequisite: E E 3164. Cross-listed with: E E 5184.

E E 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. Semester Hours: 3. Prerequisite: E E 3215, 3225, 3735.

E E 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. Semester Hours: 3. Prerequisite: E E 3316 and 3817.

E E 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. Semester Hours: 3. Prerequisite: E E 3316, 3817; recommended E E 4247. Cross-listed with: E E 5248.

E E 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. Semester Hours: 3. Prerequisite: Permission of instructor. Cross-listed with: E E 5249.

E E 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. Semester Hours: 3. Prerequisite: E E 3316; prereq or coreq: E E 3817.

E E 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. Semester Hours: 3. Prerequisite: Prereq/coreq: all required 3000-level classes and labs. E E 4309 and 4319 must be completed in subsequent academic semesters.

E E 4319 - Senior Design Project II. Project designs completed in E E 4309 are constructed and tested. Oral and written presentations of the completed project performance are required. Semester Hours: 3. Prerequisite: Completion of all required 3000-level classes and labs. E E 4309 and 4319 must be completed in subsequent academic semesters.

E E 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. Semester Hours: 1. Prerequisite: E E 3225, 3316, 3735 and 3817.

E E 4411 - Computer Systems Laboratory. This laboratory provides students with experience in the use of microprocessors and digital interfaces. Topics include microprocessor organization, assembly language, I/O, interrupts, timers and A/D conversion. Semester Hours: 1. Prerequisite: E E 3225, 3651, 3735 and permission of instructor.

E E 4423 - Microwave Laboratory. Microwave design and matching of coaxial and waveguide devices, transmission lines and systems. Devices include attenuators, directional couplers, antennas, ferrites, detectors, mixers, oscillators and amplifiers. Systems are represented by modern X-band transceivers and multi-band satellite systems. Project in microwave computer-aided design of microwave transistor amplifiers. Semester Hours: 1. Prerequisite: E E 3225, 3735 and 4133.

E E 4435 - Advanced Electronics Laboratory. Projects related to digital logic, analog and digital switches, A/D and D/A converters, and design of signal filters. Semester Hours: 1. Prerequisite: E E 3225 and 3735; prereq or coreq: E E 4225.

E E 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. Semester Hours: 1. Prerequisite: E E 4184.

E E 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 Lieapunov 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. Semester Hours: 3. Prerequisite: E E 4136 or 4276. Cross-listed with: E E 5466.

E E 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. Semester Hours: 1. Prerequisite: E E 3735; prereq or coreq: E E 4247 or E E 4248.

E E 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 real time I/O. Semester Hours: 3. Prerequisite: E E 3225, 3651 and 3735. Cross-listed with: E E 5501.

E E 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. Semester Hours: 3. Prerequisite: E E 3651 and E E 3735. Cross-listed with: E E 5511.

E E 4521 - Microprocessor Lab. Provides support for the projects assigned in E E 4501 - a complete embedded system is designed, built and tested. Semester Hours: 1 Corequisite: E E 4501.

E E 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. Semester Hours: 3. Prerequisite: E E 3225. Cross-listed with: E E 5555.

E E 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. Semester Hours: 1 Corequisite: E E 4511.

E E 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. Semester Hours: 3. Prerequisite: E E 3316 and 3817. Cross-listed with: E E 5637.

E E 4800-483X - Special Topics. Semester Hours: 1 to 3.

E E 4807 - Special Topics Prereq: E E 3316, E E 3817, senior standing and consent of instructor. Semester Hours: 3. Cross-listed with: E E 5807.

E E 4808 - Renewable Energy Systems. This course considers electrical generation using renewable energy sources of a variety of types. While examining many developing technologies, it concentrates on the design and application of photovoltaic and wind electrical generation. It examines current methods of classification of wind and solar sites, and discussed aspects which must be considered when choosing sites for wind or solar installations. It examines photovoltaic and thermal solar technologies, inverter technologies, and their integration into the power grid. Also considered are micro-hydro and fuel cell technologies. Renewable system economics and legislative effects are also discussed. Semester Hours: 3. Prerequisite: E E 3164. Cross-listed with: E E 5808.

E E 4840 - Independent Study. An opportunity for independent creative work. Semester Hours: 1 to 3. Prerequisite: Permission of instructor.

E E 4939 - Cooperative Education. Students can earn 1 to 3 credit hours from a project conducted in industry. A project plan must be approved and monitored by an E E faculty. Semester Hours: 1 to 3. Prerequisite: Senior standing.

E E 5005 - VLSI Device Modeling. 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor.

E E 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. Semester Hours: 3. Prerequisite: E E 3225 and senior standing. Cross-listed with: E E 4025.

E E 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 Semester Hours: 3. Prerequisite: E E 4133, graduate standing and permission of instructor.

E E 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. Semester Hours: 3. Prerequisite: E E 3164 and graduate standing or permission of instructor. Cross-listed with: E E 4174.

E E 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. Semester Hours: 3. Prerequisite: E E 3164 and graduate standing or permission of instructor. Cross-listed with: E E 4184.

E E 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. Semester Hours: 3. Prerequisite: MATH 3191 and 3200/3195.

E E 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. Semester Hours: 3. Prerequisite: MATH 3191 and 3200/3195, graduate standing.

E E 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. Semester Hours: 3. Prerequisite: MATH 3191, MATH 3200/3195 and permission of instructor.

E E 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. Semester Hours: 3. Prerequisite: E E 3316, 3817; recommended E E 4247. Cross-listed with: E E 4248.

E E 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. Semester Hours: 3. Prerequisite: Permission of instructor and graduate standing. Cross-listed with: E E 4249.

E E 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. Semester Hours: 3. Prerequisite: E E 3817 or C SC 4535 or MATH 3800. Cross-listed with: C SC 5217.

E E 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor.

E E 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. Semester Hours: 3. Prerequisite: E E 4136 or 4276.

E E 5446 - Introduction to Modern Control Theory. State space representation of dynamic systems. Canonical forms. Frequency domain

analysis. Controllability and observability. Design by state space methods: pole-placement, linear observers, separation principle, robustness. Linear, quadratic optimum control. Semester Hours: 3. Prerequisite: E E 4136 or 4276.

E E 5455 - Numerical Analysis of Semiconductor Devices. 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor.

E E 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. Semester Hours: 3. Prerequisite: E E 4276.

E E 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 Lieapunov 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. Semester Hours: 3. Prerequisite: E E 4136 or 4276. Cross-listed with: E E 4466.

E E 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 Semester Hours: 3. Prerequisite: E E 4136 or 4276.

E E 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. Semester Hours: 3. Prerequisite: E E 3817 or MATH 3800, and E E 4136 or 4276.

E E 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor.

E E 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 real time I/O. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: E E 4501.

E E 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: E E 4511.

E E 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. Semester Hours: 3. Prerequisite: E E 3651 or graduate standing.

E E 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. Semester Hours: 3. Prerequisite: E E 3215 and 3651 or graduate standing.

E E 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. Semester Hours: 3. Prerequisite: E E 3316 and 3651.

E E 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: E E 4555.

E E 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: C SC 5593.

E E 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. Semester Hours: 3. Prerequisite: E E 3316 and E E 3817 and permission of instructor.

E E 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. Semester Hours: 3. Prerequisite: E E 3817 or E E 5617.

E E 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. Semester Hours: 3. Prerequisite: E E 3316 and 3817. Cross-listed with: E E 4637.

E E 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. Semester Hours: 3. Prerequisite: E E 5637.

E E 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. Semester Hours: 3. Prerequisite: E E 5637.

E E 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. Semester Hours: 3. Prerequisite: E E 5617.

E E 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor.

E E 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. Semester Hours: 3. Prerequisite: E E 4247.

E E 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. Semester Hours: 3. Prerequisite: E E 3316.

E E 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. Semester Hours: 3. Prerequisite: E E 4184.

E E 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. Semester Hours: 3. Prerequisite: E E 4184.

E E 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. Semester Hours: 3. Prerequisite: E E 4184/5184 or graduate standing.

E E 5800 - Special Topics. Intermediate courses of variable title and variable credit, usually offered once by guest lecturers. See current departmental notices for details. Semester Hours: 1 to 3.

E E 5804 - Introduction to Biomedical Photonics. The course introduces several principles of applying light to biomedical applications. Engineering students who take this course would allow them to get into the field of biomedical photonics in which highly interdisciplinary knowledge and skills are required Semester Hours: 3. Prerequisite: E E 4802 or E E 5802.

E E 5807 - Special Topics Prereq: graduate standing and consent of instructor. Semester Hours: 3. Cross-listed with: E E 4807.

E E 5808 - Renewable Energy Systems. This course considers electrical generation using renewable energy sources of a variety of types. While examining many developing technologies, it concentrates on the design and application of photovoltaic and wind electrical generation. It examines current methods of classification of wind and solar sites, and discussed aspects which must be considered when choosing sites for wind or solar installations. It examines photovoltaic and thermal solar technologies, inverter technologies, and their integration into the power grid. Also considered are micro-hydro and fuel cell technologies. Renewable system economics and legislative effects are also discussed. Semester Hours: 3. Prerequisite: E E 3164. Cross-listed with: E E 4808.

E E 5810 - 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. Semester Hours: 3.

E E 5813 - Energy Systems Planning. In complex energy systems, effective planning is critical to maintain adequate performance and reliability levels. Topics to be covered include: policy, environmental issues, and methodologies to create effective short- and long-term plans

for energy systems planning. Semester Hours: 3. Prerequisite: E E 4184 or graduate standing.

E E 5840 - Independent Study. Offers the opportunity for independent, creative work. Semester Hours: 1 to 6. Prerequisite: Permission of instructor.

E E 5980 - Statistical Quality Control. Introduces statistical methods of quality control. Statistical process control, process capability, statistical design of experiments and total quality management. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor.

E E 6800-6839 - Special Topics. Semester Hours: 1 to 3.

E E 6950 - Master's Thesis. Semester Hours: 1 to 8.

E E 6960 - Master's Report. Semester Hours: 1 to 8.

E E 7800-7839 - Special Topics. Courses of variable title and variable credit, usually offered once by guest lecturers. See current departmental notices for details. Semester Hours: 1 to 3.

E E 7840 - Independent Study. Offers the opportunity for independent, creative work. Semester Hours: 1 to 6. Prerequisite: Permission of instructor.

E E 8990 - Doctoral Dissertation. Semester Hours: 1 to 10.

ELED: Elementary Education (Education)

ELED 4800 - Curriculum Workshop. Semester Hours: 1 to 4.

ELED 5060 - Improvement of Instruction. Designed to assist the educator in the systematic improvement of instruction. Emphasis is on the emergent knowledge related to successful classroom practices, techniques of assessment, analysis, and action related to the improvement of professional skills. Semester Hours: 3. Cross-listed with: SECE 5060.

ELED 5140 - Elementary Curriculum: Integrating Language Arts with Literature. Integrating the language arts (reading, writing, listening, speaking) with children's literature. Selection of materials and development and presentation of ways to use children's literature in teaching the language arts. Required for post-baccalaureate pre-service teacher. Semester Hours: 3.

ELED 5150 - Elementary Curriculum: Teaching Mathematics, Science and Social Studies. Emphasis is on the role of the classroom teacher in development, implementation, and evaluation of contemporary interdisciplinary curricula. The course demonstrates the relationship between educational theory and classroom pedagogy, and is required for the post-baccalaureate pre-service teacher. Semester Hours: 6.

ELED 5160 - Expressive Arts. Familiarizes participants with drama, music, dance, movement, (P E, dance and health) and visual arts. Provides a rationale for the arts in the elementary curriculum and ways in which arts can be integrated into classroom activities. Semester Hours: 3.

ELED 5170 - Community and Interpersonal Relations. Provides an opportunity for students to develop communication and interpersonal skills that enable them to facilitate positive student self-concept and interaction among professional educators, the community, and social groups. Exposes the student to the urban environment and issues in child abuse. Semester Hours: 3. Cross-listed with: SECE 5170.

ELED 5200 - Classroom Management. Instructional management, physical management, and behavior management are studied as interactive components in the establishment and maintenance of an effective learning environment. Semester Hours: 3. Cross-listed with: SECE 5200.

ELED 5320 - Advanced Language Arts in the Elementary School. Current thought, as determined by research and practice in the various areas of the language arts; listening, speaking, reading and writing. Issues, trends, and innovative practices for the practicing teacher. Semester Hours: 3.

ELED 5340 - Multicultural Science Education. This course examines literature in science education related to multicultural issues, topics will be framed by an understanding of equity in diverse, urban classrooms and how it informs curriculum and instruction. Semester Hours: 3. Cross-listed with: SECE 5340.

ELED 5350 - Science in Elementary School. Emphasis on experimental programs and implementation of the newer programs. Supervision and curriculum development considered. Semester Hours: 3.

ELED 5400 - Contemporary Mathematics for Elementary Schools.

Surveys contemporary content and methodology with emphasis on interrelations among topics and techniques for providing active learning. Semester Hours: 3.

ELED 5401 - Assessment in Mathematics Education. Curriculum-based assessment covering nature of assessment and its relation to evaluation and grading; teacher-made assessments; validity and authentic assessment; techniques for assessing learning of mathematical concepts, procedures, and problem solving. Emphasis on assessment practices of mathematics teachers. Semester Hours: 3.

ELED 5410 - Teaching Numbers and Arithmetic. Teaching methodologies related to arithmetic and its applications. Covers mathematical attitudes, problem solving, math manipulatives, numeration, number concepts, number theory, algorithms, fractions, decimals, calculators and integration of arithmetic with other curriculum areas. Semester Hours: 3.

ELED 5411 - Mathematics Education and Gender. Investigates gender-inclusive curriculum and teaching methods, equity and assessment, mathematical life histories, women in mathematics history, women's individual development and voice, single-sex programs and gender differences. Semester Hours: 3.

ELED 5415 - Math Science Connections: Indoors. (Primarily for pre-secondary teachers.) Explores science concepts through activities appropriate for middle-grade students. Topics include how the nature of science and mathematics informs pedagogy, national and state standards, gravity, density, electricity, simple machines, magnetism, probability, geometry, algebra and elementary chemistry. Semester Hours: 3.

ELED 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. Semester Hours: 3.

ELED 5417 - Structure of Rational Numbers. Emphasizes the use of multiple solution strategies to examine the structure of rational numbers. The assigned problems allow elementary and secondary teachers to investigate the mathematical notions of equivalence, properties, unitization, partitioning, ratios and proportionality. Semester Hours: 3. Prerequisite: Teaching license or permission of instructor. Cross-listed with: SECE 5417.

ELED 5418 - Mathematical Modeling. Elementary and secondary teachers explore settings where mathematics is utilized in everyday activities. Teachers create mathematical models to describe events or situations in the world and use a variety of modeling strategies to solve problems. Semester Hours: 3. Prerequisite: Teacher licensure or permission of instructor. Cross-listed with: SECE 5418.

ELED 5419 - Exploring the Structure of Geometry Using Technology. Develops elementary and secondary teachers' conceptual understanding of geometric properties and theorems through investigations on dynamic computer software. The software enhances and extends teachers' ability to solve complex problems by manipulating abstract ideas on the computer. Semester Hours: 3. Prerequisite: Teaching license or permission of instructor. Cross-listed with: SECE 5419.

ELED 5430 - Topics in Mathematics Education. An in-depth study of topics such as mathematics and learning, geometry, testing, arithmetic, mathematics labs, calculators and computers. (May be repeated as topics vary.). Semester Hours: 3.

ELED 5440 - Problem Solving and Geometry in the Elementary School. Covers problem solving, spatial visualization, informal geometry, and computer software with emphasis on incorporating these topics into the elementary curriculum. Semester Hours: 3.

ELED 5450 - Social Studies in Elementary School. Review and analysis of current innovations and concept formation in the social studies. Involves student development and implementation of materials for trial in classroom instruction. Semester Hours: 3.

ELED 5464 - Teaching About Ethnicity, Race and Prejudice. Designed to introduce the nature of racial and ethnic groups, prejudice,

discrimination, and ethno violence. It also includes the teaching about these and related topics and deals with resolving problems of intergroup relations in schools and institutional settings. Semester Hours: 3. Cross-listed with: SECE 5464.

ELED 5470 - Introduction to Middle School. Covers history and philosophy of the middle school, organization plans, team teaching, integrating content areas, characteristics of the early adolescent, and classroom management. Semester Hours: 3.

ELED 5480 - Museum Studies in Paleontology. A practical laboratory-based course covering aspects of museum studies related to paleontological collections. Students learn how to stabilize and prepare bones removed from fossil quarries; learn molding and casting techniques for bones and fossils; assist with the cataloging and curation of the collection; and participate in designing museum displays. Semester Hours: 3. Prerequisite: At least one science class. Cross-listed with: GEOL 3415, SECE 5480.

ELED 5490 - Middle School Curriculum. Explores the unique curriculum requirements of requirements of transient youth. Topics include team teaching, interdisciplinary curricula, flexible scheduling, basic skills development, guidance functions, fine arts, practical arts, industrial arts, career education, teaching strategies and management techniques. Semester Hours: 3.

ELED 5510 - Teacher Leadership: Theory to Reality. Working with colleagues in schools to make a difference as a team member and a change agent requires knowledge and skills that are 'more than teachers, yet different from administrators' (Danielson, 2006). This course will provide teachers with skill building related to what it takes for teachers to improve schools. Semester Hours: 3. Cross-listed with: SECE 5510.

ELED 5520 - Teacher Leadership: Essential Knowledge. Teacher leaders need expertise about what constitutes a quality curriculum and how best to guide others to develop lessons with assessments that reflect essential standards. They use culturally responsive and differentiated teaching strategies to assure that learning occurs. Semester Hours: 3. Cross-listed with: SECE 5520.

ELED 5530 - Teacher Leadership: Vital Skills. Teacher leaders need skills in collaboration, facilitation and coaching in order to work with colleagues in ways that will optimally impact student learning. This course will provide theory and practice in models of adult learning, professional development and communication. Semester Hours: 3. Cross-listed with: SECE 5530.

ELED 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. Semester Hours: 3. Cross-listed with: SECE 5660.

ELED 5775 - Knowledge of Teaching. Designed for experienced teachers. This course assists them to update their knowledge of research on teaching and extend their use of research findings in their classroom teaching. Semester Hours: 1 to 3. Prerequisite: Teaching certificate.

ELED 5780 - Storytelling. Explores the history, function, philosophy and techniques of storytelling. Includes collecting, selecting, preparing, developing and delivering stories. Research and resources are emphasized. Semester Hours: 1 to 4.

ELED 5800 - Curriculum Workshop for Elementary Teachers. Opportunity to work on projects and problems in the school in which the student is employed: conferences, study groups, discussion, and work in curriculum construction. Topics and credit hours vary. Semester Hours: .5 to 4. Prerequisite: 18 semester hours in education and teaching experience or permission of instructor.

ELED 5840 - Independent Study. Semester Hours: 1 to 4.

ELED 5910 - Advanced Practicum: Elementary. This course is not to be used as an independent study, it is to be used by students approved in advance by the director of teacher education. Semester Hours: 1 to 4. Prerequisite: Permission of instructor. Fulfills the student teaching requirement for students seeking a second endorsement. Cross-listed with: SECE 5910.

ELED 5920 - Readings in Elementary Education. Semester Hours: 1 to 4.

ELED 5930 - Internship in Elementary Education. Semester Hours: 1 to 8.

ELED 6100 - Seminar: Elementary Education. Students work on individual topics and report orally and in writing. Semester Hours: 3.

ELED 6110 - Curriculum Development and School Improvement. Places curriculum development in the historical, social, and political context of educational change, considering underlying concepts and assumptions, and examining the implications of implementation theory and practice for school restructuring and professional development. Semester Hours: 3. Prerequisite: Graduate student status.

ELED 6120 - International Perspectives on the Curriculum.

Considers schooling patterns in the U.S., the U.K., Japan, Australia and several European countries. Examines different approaches to curriculum issues in relation to social, historical and economic factors. Semester Hours: 3. Prerequisite: FNDS 5500 or permission of instructor.

ELED 6600 - Special Topics: Laboratory in Educational Leadership and Innovation. Laboratories are organized by professors to engage students in on-going research programs. They provide opportunities for students to extend and apply knowledge and skills developed in course work. The laboratories enable students to complete portfolio requirements and work on doctoral dissertations. Semester Hours: 1 to 6. Prerequisite: Admission to M.A. or PhD programs; permission of instructor. Cross-listed with: ELED 7600.

ELED 6950 - Master's Thesis. Semester Hours: 4.

ELED 7600 - Special Topics: Laboratory in Educational Leadership and Innovation. Laboratories are organized by professors to engage students in on-going research programs. They provide opportunities for students to extend and apply knowledge and skills developed in course work. The laboratories enable students to complete portfolio requirements and work on doctoral dissertations. Semester Hours: 1 to 6. Prerequisite: Admission to M.A. or PhD programs; permission of instructor. Cross-listed with: ELED 6600.

ELED 7840 - Independent Study. Semester Hours: 1 to 3.

Engineering Nondepartmental: ENGR (Engineering)

ENGL: English (Liberal Arts and Sciences)

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. Semester Hours: 3.

ENGL 1020 - Core Composition I: CO1. 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. Semester Hours: 3.

ENGL 1050 - Vocabulary for Professionals. Studies English words derived from Latin and Greek by analyzing their component parts (prefixes, stems, and suffixes). Semester Hours: 3. Cross-listed with: LATN 1050.

ENGL 1111 - Freshman Seminar. Semester Hours: 1 to 3.

ENGL 1200 - Introduction to Fiction. Introduces class members to the works of famous authors as well as to major themes, elements, and techniques of fiction in both short stories and novels. Semester Hours: 3.

ENGL 1400 - Introduction to Literary Studies. Helps students develop a sense of literary techniques and issues so they can bring an improved critical sensibility to their reading and writing. Semester Hours: 3. Prerequisite: Prereq or Coreq: ENGL 1020. Note: Designed for students who plan to major in English or who are seriously interested in literature.

ENGL 1601 - Telling Tales: Narrative Art in Literature and Film: AH2.

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? Prereq or Coreq: ENGL 1020. Semester Hours: 3.

ENGL 2030 - Core Composition II: CO2. 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. Semester Hours: 3. Prerequisite: ENGL 1020.

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. Semester Hours: 3. Prerequisite: ENGL 1020 or equivalent.

ENGL 2154 - Introduction to Creative Writing. Reading, discussing, writing short fiction and poetry in a workshop setting. Semester Hours: 3. Prerequisite: ENGL 1020.

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. Semester Hours: 3.

ENGL 2300-2349 - Topics in Literature and Film. Courses supplement the regular program of the department, offering such topics as: literary perceptions of motherhood, Asian-American literature, literary classics of science, and contemporary women writers. Semester Hours: 3. Note: Can be taken more than once if topics vary.

ENGL 2390 - Writing the Short Script. Examines narrative screenwriting elements—premise, theme, conflict, protagonist/antagonist, setting/situation, dialogue, plot structure, imagery—required to create a strong narrative short film. Semester Hours: 3. Prerequisite: ENGL 1020.

ENGL 2415 - Introduction to Movie Writing. Examines structural and dramatic elements required to write a feature-length screenplay. Students conceptualize, plan, write and then re-write to complete the first ten pages of their own feature-length screenplay. Semester Hours: 3.

ENGL 2510 - Greek and Roman Mythology. Surveys influential literature from Greece and Rome. Among the Greek works are Homer's epics, Sophocles's tragedies, Plato's and Aristotle's philosophical writings. Among the Roman works are the writings of Vergil, Ovid, the elegists and historians. A brief look at Augustine's writings concludes the course. Semester Hours: 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. Semester Hours: 3. Cross-listed with: RLST 2700.

ENGL 2600 - Great Works in British and American Literature: AH2. Traces the traditions 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. Semester Hours: 3.

ENGL 2840 - Independent Study. Semester Hours: 1 to 3.

ENGL 2970 - Russian Cinema and Cultural History. Analyzes the central and most representative scenes of film masterpieces, offering an intellectual experience and insight into how Russian cinema both reflects socio-political issues of the time and acts as a cultural force in shaping history. Semester Hours: 3.

ENGL 3001 - Critical Writing. Introduces literary theory, which provides extensive practice in writing about literature. Semester Hours: 3. Prerequisite: ENGL 1400 and two literature courses. Note: Required for literature majors, and should be taken in the sophomore or junior year.

ENGL 3020 - Poetry Workshop. Practical workshop for developing poetic craft, focusing on writing process and specialized topics. Semester Hours: 3. Prerequisite: ENGL 2154 for English majors and minors only; all others must obtain permission of instructor.

ENGL 3050 - Fiction Workshop. Practical workshop for developing narrative craft, focusing on writing process and specialized topics. Semester Hours: 3. Prerequisite: ENGL 2154 for English majors and minors only; all others must obtain permission of instructor.

ENGL 3070 - History of Silent Film. Examines the history of cinema from its 19th-century origins until the introduction of sound. Studies important trends in the silent era, including the beginnings of film comedy, early documentary, the origins of Hollywood narrative, avant-garde cinema, German Expressionism and Soviet Cinema. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor.

ENGL 3075 - Film Genres. An intensive study of films of one or more significant genres, such as comedy, film noir, science fiction. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Note: May be taken more than once when genres vary.

ENGL 3080 - History of Sound Film. Begins with the early sound period, advent of the studio system, and the maturing of the techniques of synchronized sound production. Traces the development of the various Hollywood genres—westerns, musicals, gangster films, etc. and examines representative Hollywood studio films through the as well as major American films from the post-studio period up to the present. Also covers major developments and filmmakers in European, Latin American, British and Asian filmmaking. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor.

ENGL 3084 - Advanced Composition. Focuses on the rhetorical examination and production of visual and textual documents in such areas as politics, education, art, culture and advertising. Equal focus on developing individual student writing skills at advanced levels. Semester Hours: 3. Prerequisite: ENGL 2030.

ENGL 3085 - Film Directors. An intensive study of the films of one or more major directors, such as Chaplin, Keaton, Hitchcock, Welles, Coen Brothers. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Note: May be taken more than once when directors vary.

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. Semester Hours: 3. Prerequisite: ENGL 1020.

ENGL 3160 - Language Theory. Provides a basic introduction to linguistics and language theory for undergraduates, including phonetics, grammar, semantics, pragmatics, sociolinguistics, cognitive processing, and language acquisition. Includes practical applications of the theories and methodologies presented. Semester Hours: 3.

ENGL 3170 - Business Writing. Focuses on the strategies and techniques of business writing, with emphasis on reader, message and form. Semester Hours: 3. Prerequisite: ENGL 1020. ENGL 2030 highly recommended.

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. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor.

ENGL 3300-3324 - Topics in Film. Courses supplement the department's regular course offerings. Recent topics have included women and film, movies as history and film comedy. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Note: Open to both majors and non-majors. Can be taken more than once when topics vary.

ENGL 3330-3350 - Topics in Literature. Courses supplement the department's regular course offerings. Recent topics have included Tolkien and international short stories. Semester Hours: 3. Prerequisite:

Must have 30 semester hours or permission of the instructor. Note: Open to both majors and non-majors. Can be taken more than once when topics vary.

ENGL 3384 - J.R.R. Tolkien. Studies the Hobbit and the Lord of the Rings and their sources. Emphasis on the works' mythical, historical, and philosophical dimensions, as well as on the craft of storytelling. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor.

ENGL 3385 - Fantasy Literature. Explores the development of modern fantasy literature and its uses of myth, legend, and fairy tale, while also looking at how fantasy imaginatively deals with contemporary issues and makes use of modern narrative forms. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor.

ENGL 3386 - Classic Science Fiction. Studies the evolution of science fiction literature from its genesis in England at the turn of the century through the New Wave movement in America in the 1980s. Includes authors such as Wells, Huxley, Herbert, Heinlein, Dick and Le Guin. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor.

ENGL 3415 - Screenwriting Workshop. Continues and expands ENGL 2415. By the end of ENGL 3415, students have completed the first two acts of their screenplay. Semester Hours: 3. Note: May be repeated a second time in a different semester to complete entire screenplay.

ENGL 3416 - Magazine Writing. An intensive, practical course in writing non-fiction with an emphasis on journalistic approaches for daily, weekly, and monthly publications. Semester Hours: 3. Prerequisite: ENGL 1020.

ENGL 3450 - Twentieth Century 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. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: WGST 3450.

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. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: RLST 3720.

ENGL 3530 - 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 hera 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. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: RLST 4340.

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. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor.

ENGL 3700 - American Literature to the Civil War. Surveys American literature from the colonial era to the Civil War. Semester Hours: 3. Prerequisite: ENGL 1020.

ENGL 3750 - American Literature from the Civil War. Surveys American literature from the Civil War to the contemporary era. Semester Hours: 3. Prerequisite: ENGL 1020.

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. Semester Hours: 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. Semester Hours: 3. Note: May be repeated for credit when title and content are different. All texts in English translation.

ENGL 3840 - Independent Study. Semester Hours: 1 to 3. Prerequisite: Must have 30 semester hours or permission of the instructor.

ENGL 3939 - Internship/Cooperative Education. 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. Semester Hours: 1 to 3. Prerequisite: Junior standing and 2.75 grade-point average. Before enrolling, students should contact the Career Center. Note: Up to six hours may be counted toward the major.

ENGL 3995 - Travel Study. An intensive course focusing on cinematic, literary, or rhetorical topics enriched through travel. Subtitles reflect specific area of concentration. Students may repeat course with different topics. Registration is through the Office of International Affairs. Semester Hours: 3.

ENGL 4000 - Studies of Major Authors. An intensive study of works of one major British or American author. Examples: Dickens, Woolf or James. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: ENGL 5000.

ENGL 4025 - Advanced Poetry Workshop. Focuses on the development of poetic craft. Semester Hours: 3. Prerequisite: ENGL 2154 and 3020 for English majors and minors only; all others must obtain permission of instructor.

ENGL 4055 - Advanced Fiction Workshop. Focuses on the development of narrative craft. Semester Hours: 3. Prerequisite: ENGL 2154 and 3050 for English majors and minors only; all others must obtain permission of instructor.

ENGL 4080 - 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. Semester Hours: 3. Prerequisite: ENGL 2070 or one year of a college foreign language. Cross-listed with: ENGL 5080.

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. Semester Hours: 3. Prerequisite: ENGL 1400 or permission of instructor. Cross-listed with: ENGL 5160.

ENGL 4166 - 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. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: ENGL 5166.

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. Semester Hours: 3. Prerequisite: ENGL 1020, 2030 and 2070.

ENGL 4190 - Special Topics in Rhetoric and Writing. 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. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: ENGL 5190.

ENGL 4200 - History of the English Novel I. Rise and development of the English novel from its beginnings in the 18th century through the mid-19th century, including such writers as Defoe, Fielding, Austen and Shelley. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: ENGL 5200.

ENGL 4210 - 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 Brontës, George Eliot, Henry James, Joseph Conrad, D.H. Lawrence and Virginia Woolf.

Check for updates at <http://courses.cudenver.edu>.

Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: ENGL 5210.

ENGL 4220 - African-American Literature. Surveys African-American literature with special emphasis on post-Civil War writing. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: ENGL 5220, ETST 4220.

ENGL 4230 - The American Novel. Surveys major developments in the American novel from the 18th century to the 21st century. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: ENGL 5230.

ENGL 4235 - Faulkner. Studies the works of Faulkner's high period with special attention to southern themes and Faulkner's experimentation with narrative form. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: ENGL 5235.

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. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: ENGL 5236.

ENGL 4240 - Topics in Contemporary American Literature. Seminar focusing on a segment of contemporary American literature. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: ENGL 5240.

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. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: ENGL 5250.

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. Semester Hours: 3. Prerequisite: ENGL 1020. Cross-listed with: ENGL 5280.

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. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: ENGL 5300.

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. Semester Hours: 3. Cross-listed with: ENGL 5306, HIST 4306, 5306, WGST 4306, 5306.

ENGL 4320 - 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. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: ENGL 5320.

ENGL 4350 - 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. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: ENGL 5350.

ENGL 4400 - Old English I. Instruction in the Old English language. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. One year of college foreign language or ENGL 2070 recommended. Cross-listed with: ENGL 5400.

ENGL 4410 - Old English II: Beowulf. Continuing training in the reading of Old English and intensive reading of Beowulf. Semester Hours: 3. Prerequisite: ENGL 4400 or 5400. Cross-listed with: ENGL 5410.

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. Semester Hours: 3. Prerequisite: ENGL 2250 and 3070, 3080 or permission of instructor. Cross-listed with: ENGL 5420.

ENGL 4460 - Contemporary World Literature. Surveys literature written by world writers since World War II. Semester Hours: 3.

Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: ENGL 5460. Note: Texts read in English.

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. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: ENGL 5500.

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. Semester Hours: 3. Prerequisite: Nine hours of literature courses or instructor permission. Cross-listed with: ENGL 5510, RLST 4730 and RLST 5730, WGST 4510.

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. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: ENGL 5520.

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. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: ENGL 5530.

ENGL 4540 - 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. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: ENGL 5540.

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. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: ENGL 5560.

ENGL 4580 - 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. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: ENGL 5580.

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. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: ENGL 5600.

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. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: ENGL 5601.

ENGL 4651 - 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. Semester Hours: 3. Cross-listed with: ENGL 5651.

ENGL 4701 - Multimedia in the Community. Produce dossier-quality multimedia shorts by researching and writing digital compositions for selected community organizations. Topics for research range across

numerous social issues and involve all disciplines. Semester Hours: 3. Prerequisite: ENGL 2030, 3154, and 3170 or permission of instructor. Cross-listed with: ENGL 5701.

ENGL 4720 - Honors in Literature. Designed for students taking departmental honors in English. Semester Hours: 1 to 3. Prerequisite: Students must have written permission from the honors advisor.

ENGL 4730 - Chaucer's Canterbury Tales. An intensive study of Chaucer's Canterbury Tales, as an introduction to the historical, ideological, and literary genres of the period. Learn to read Middle English by studying Chaucer's text. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: ENGL 5730.

ENGL 4731 - Chaucer's Early Poetry. Examines Chaucer's dream visions and Troilus and Criseyde through sources and historical and ideological factors influencing the texts. Learn to read Middle English by reading Chaucer's texts. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: ENGL 5731.

ENGL 4735 - Philosophy and Literature. Considers the philosophical dimensions of literature. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: ENGL 5735, PHIL 4730, 5730.

ENGL 4740 - Honors in Writing. Designed for students taking departmental honors in English writing. Semester Hours: 1 to 3. Prerequisite: Student must have written permission from honors director and faculty advisor.

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. Semester Hours: 3. Prerequisite: Must have 30 semester hours or permission of the instructor. Cross-listed with: ENGL 5770.

ENGL 4800 thru 4805 - 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. Semester Hours: 3. Prerequisite: ENGL 2154; permission of instructor may be required.

ENGL 4840 - Independent Study. Semester Hours: 1 to 3.

ENGL 4920 - Directed Readings. Explores an area of English literature not covered in regular course work. Semester Hours: 3 to 6. Prerequisite: Senior status. Note: May be taken as a precursor to honors essay, in which case student should consult with the honors advisor.

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. Semester Hours: 3. Prerequisite: Senior standing. Note: Available only to students in the creative writing and film tracks.

ENGL 4991 - Senior Seminar in Writing. Students focus on rhetorical studies through extensive reading, writing, discussion, and reflection upon their own literacy practices. Students produce individual and collaborative writing projects for a final portfolio. Semester Hours: 3. Prerequisite: ENGL 3084 and senior standing.

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. Semester Hours: 3. Prerequisite: Senior standing.

ENGL 4999 - Literary Studies Senior Seminar. Allows students to pursue, learn, and apply advanced methodologies such as bibliographical, archival/historical, or cultural and ideological, and apply them to a single author, genre, or period of text. Students engage in research under the tutelage of their instructor. Semester Hours: 3. Prerequisite: Senior standing and ENGL 3001 previously completed or concurrent. Note: Senior capstone course for literature majors in the literary studies track.

ENGL 5000 - Studies of Major Authors. An intensive study of works of one major British or American author. Examples: Dickens, Woolf or James. Semester Hours: 3. Cross-listed with: ENGL 4000.

ENGL 5001 - Special Topics. This variable credit course offers intensive study of the teaching of writing in a collaborative action-oriented approach. 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. Semester Hours: 3. Prerequisite: ENGL 2070 or one year of a college foreign language. Cross-listed with: ENGL 4080.

ENGL 5093 - Rhetoric and the 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. Semester Hours: 3.

ENGL 5100 - Literary Research and Writing. Designed to prepare students for graduate scholarship and writing in literature; should be taken soon after entering the program. Introduction to the research methodologies of literary scholarship as well as the practical strategies and the formal and stylistic standards for writing graduate-level analytical-interpretive essays. Semester Hours: 3. Prerequisite: Must be enrolled or accepted into the MA in English, Literature Option program.

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. 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. Semester Hours: 1.

ENGL 5150 - Critical Inquiry and Classroom Research. Studies the intellectual disposition and the reading, writing, and thinking characteristic of 'critical inquiry' and its relationship to classroom research. Emphasizes understanding critical inquiry and literacy through reading and writing, and through conducting projects that illuminate the nature and place of critical inquiry in the classroom. Semester Hours: 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. Semester Hours: 3. Prerequisite: ENGL 1400 or permission of instructor. Cross-listed with: ENGL 4160.

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. Semester Hours: 3. Cross-listed with: ENGL 4166.

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. Semester Hours: 3.

ENGL 5190 - Special Topics in Rhetoric and Writing. 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. Semester Hours: 3. Cross-listed with: ENGL 4190.

ENGL 5200 - History of the English Novel I. Rise and development of the English novel from its beginnings in the 18th century through the mid-19th century, including such writers as Defoe, Fielding, Austen and Shelley. Semester Hours: 3. Cross-listed with: ENGL 4200.

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 Brontës, George Eliot, Henry James, Joseph Conrad, D.H. Lawrence and Virginia Woolf. Semester Hours: 3. Cross-listed with: ENGL 4210.

ENGL 5220 - African-American Literature. Surveys African-American literature with special emphasis on post-Civil War writing. Semester Hours: 3. Cross-listed with: ENGL 4220, ETST 4220.

ENGL 5230 - The American Novel. Surveys major developments in the American novel from the 18th century to the 21st century. Semester Hours: 3. Cross-listed with: ENGL 4230.

ENGL 5235 - Faulkner. Studies the works of Faulkner's high period with special attention to southern themes and Faulkner's experimentation with narrative form. Semester Hours: 3. Cross-listed with: ENGL 4235.

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. Semester Hours: 3. Cross-listed with: ENGL 4236.

ENGL 5240 - Topics In Contemporary American Literature. Seminar focusing on a segment of contemporary American literature. Semester Hours: 3. Cross-listed with: ENGL 4240.

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. Semester Hours: 3. Cross-listed with: ENGL 4250.

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. Semester Hours: 3. Prerequisite: ENGL 1020. Cross-listed with: ENGL 4280.

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. Semester Hours: 3. Cross-listed with: ENGL 4300.

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. Semester Hours: 3. Cross-listed with: ENGL 4306, HIST 4306, 5306, WGST 4306, 5306.

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. Semester Hours: 3. Cross-listed with: ENGL 4320.

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. Semester Hours: 3. Cross-listed with: ENGL 4350.

ENGL 5400 - Old English I. Instruction in the Old English language. One year of college foreign language or ENGL 2070 recommended. Semester Hours: 3. Cross-listed with: ENGL 4400.

ENGL 5410 - Old English II: Beowulf. Continuing training in the reading of Old English and intensive reading of Beowulf. Semester Hours: 3. Prerequisite: ENGL 5400 or 4400. Cross-listed with: ENGL 4410.

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. Semester Hours: 3. Prerequisite: ENGL 2250 and 3070, 3080 or permission of instructor. Cross-listed with: ENGL 4420.

ENGL 5460 - Contemporary World Literature. Surveys literature written by world writers since World War II. Semester Hours: 3. Cross-listed with: ENGL 4460. Note: Texts read in English.

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. Semester Hours: 3. Cross-listed with: ENGL 4500.

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. Semester Hours: 3. Prerequisite: Nine hours of literature courses or

instructor permission. Cross-listed with: ENGL 4510, RLST 4730 and RLST 5730, WGST 4510.

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. Semester Hours: 3. Cross-listed with: ENGL 4520.

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. Semester Hours: 3. Cross-listed with: ENGL 4530.

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. Semester Hours: 3. Cross-listed with: ENGL 4540.

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. Semester Hours: 3. Cross-listed with: ENGL 4560.

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. Semester Hours: 3. Cross-listed with: ENGL 4580.

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. Semester Hours: 3. Cross-listed with: ENGL 4600.

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. Semester Hours: 3. Cross-listed with: ENGL 4601.

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. Semester Hours: 3. Prerequisite: Graduate standing.

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. Semester Hours: 3. Cross-listed with: ENGL 4651.

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. Semester Hours: 3. Prerequisite: Graduate standing.

ENGL 5701 - Multimedia in the Community. Produce dossier-quality multimedia shorts by researching and writing digital compositions for selected community organizations. Topics for research range across numerous social issues and involve all disciplines. Semester Hours: 3. Prerequisite: ENGL 2030, 3154, and 3170 or permission of instructor. Cross-listed with: ENGL 4701.

ENGL 5730 - Chaucer's Canterbury Tales. An intensive study of Chaucer's Canterbury Tales, as an introduction to the historical, ideological, and literary genres of the period. Learn to read Middle English by studying Chaucer's text. Semester Hours: 3. Cross-listed with: ENGL 4730.

ENGL 5731 - Chaucer's Early Poetry. Examines Chaucer's dream visions and Troilus and Criseyde through sources and historical and ideological factors influencing the texts. Learn to read Middle English by reading Chaucer's texts. Semester Hours: 3. Cross-listed with: ENGL 4731.

ENGL 5735 - Philosophy and Literature. Considers the philosophical dimensions of literature. Semester Hours: 3. Cross-listed with: ENGL 4735, PHIL 5730, 4730.

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. Semester Hours: 3. Cross-listed with: ENGL 4770.

ENGL 5840 - Independent Study. Semester Hours: 1 to 3.

ENGL 5913 - Practicum in Language and Rhetoric. Supervised work in applied language or rhetoric and the teaching of writing. 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. Semester Hours: 3. Prerequisite: ENGL 5100 or permission of instructor.

ENGL 6002 - Rhetorical Theory: Teaching Writing. Examines the principles and applications of rhetorical theory and its relationship to writing. Semester Hours: 3.

ENGL 6010-6019 - Studies of Major Authors. Semester Hours: 3. Note: May be repeated when topics vary.

ENGL 6110-6119 - Special Topics in Literature. An intensive study of specialized topics in English and/or American literature. Semester Hours: 3. Note: May be repeated when topics vary.

ENGL 6120-6129 - Special Topics in Film. An intensive study of specialized topics in film. Semester Hours: 3. Note: May be repeated when topics vary.

ENGL 6210 - Teaching Second Language and Second Dialect Speakers. Covers problems for second language/dialect speakers, including: issues in listening and speaking in inter/subcultural communication; maturational constraints; and personal and social factors that affect learners' achievement of the acquisition of L2 speech. Semester Hours: 3.

ENGL 6840 - Independent Study. 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. Semester Hours: 1 to 3.

ENGL 6950 - Master's Thesis. Semester Hours: 1 to 6.

ENGL 6960 - Master's Project. Semester Hours: 1 to 6.

ENGR: Engineering Nondepartmental (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. Semester Hours: 1. Prerequisite: High school trigonometry. Note: ENGR 1000 cannot be substituted for E E 1201.

ENGR 1025 - Engineering Graphics and Computer-Aided Design. Introduces microcomputer-based, menu-driven, 3-D computer-aided design systems, spreadsheets and freehand drawing; three-dimensional modeling of solid objects; principles of engineering drawing and descriptive geometry with applications to engineering design and analysis. Semester Hours: 3. Prerequisite: High school geometry and algebra.

ENGR 1208-12X8 - Special Topics. Semester Hours: 1 to 3.

ENGR 2208-22X8 - Special Topics. Semester Hours: 1 to 3.

ENGR 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. Semester Hours: 3. Prerequisite: MATH 1401 and PHYS 2311.

ENGR 3208-32X8 - Special Topics. 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. Semester Hours: 3. Prerequisite: One course in social sciences, one

course in humanities, one course in science. (Satisfies the multicultural diversity requirement of the UCDHSC core curriculum).

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. Semester Hours: 3. Prerequisite: One course in social sciences, one course in humanities, one course in science. (Satisfies the international perspectives requirement of the UCDHSC core curriculum).

ENGR 4208-42X8 - Special Topics. Semester Hours: 1 to 3.

ENGR 4840 - Independent Study. Semester Hours: 1 to 3.

ENGR 5208-52X8 - Special Topics. Semester Hours: 1 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. Semester Hours: 3.

ENTP: Entrepreneurship (Business)

ENTP 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 accounting information to make decisions focusing on cost behavior analysis, budgeting and product costing in entrepreneurial and arts related businesses. Semester Hours: 3. Prerequisite: MATH 1010, MATH 1110, or MATH 1070. Cross-listed with: ACCT 2550.

ENTP 3000 - Principles of Entrepreneurship. Focuses on the concepts, skills, know-how, practical information, attitudes and alternatives that are relevant for start-up companies. The materials are designed to enhance the student's capacity to anticipate HR, financial, marketing problems through the application of proper planning. The primary objective of the course is to teach participants the practical aspects of entrepreneurship in order to change the odds of success. Semester Hours: 3.

ENTP 3120 - Legal Issues for Entrepreneurs. Skills in legal and factual analysis and the application of ethical theories are addressed with an emphasis on applicability for entrepreneurs. The cases are drawn from a variety of functional areas such as accounting, information systems, finance, management, marketing and production. Topics include: agency law, business organizations, securities, venture capital, employment law, real property, entrepreneurial aspects of intellectual property law, consumer law and international law. Semester Hours: 3. Prerequisite: ENTP 3000 or equivalent. Cross-listed with: BLAW 4120. Note: For non business majors only. Does not count towards an Entrepreneurship certificate.

ENTP 3780 - Managing Entrepreneurial Ventures. Teaches future new and small business owners the practical aspects of managing their entrepreneurial venture, to develop a comprehensive business plan and to develop the skills necessary to improve the odds of success. The course will consider strategies to leverage limited resources for maximum effect. Also covers small organization and group behavior, performance, leadership and motivation in small business settings and focuses on the owner/manager as the principle success factor in the context of a small organization. Semester Hours: 3. Prerequisite: MGMT 1000, ACCT 2200, and ENTP 3000. Note: For non-business majors only. Does not count towards business degree but does count towards Entrepreneurship Certificate.

ENTP 4950 - Special Topics. A variety of topics in entrepreneurship are offered. Consult the current 'Schedule Planner' for semester offerings. Semester Hours: 3. Prerequisite: Topics vary.

ENTP 6000 - Fundamentals of Entrepreneurship. Focuses on the concepts, skills, know-how, attitudes, information, and alternatives that are relevant for start-up and early-stage entrepreneurs, entrepreneurial managers, and their stakeholders. Speakers, exercises, and lectures focus

on the critical role of opportunity creation and recognition, and the entrepreneur as the principal success factor in new entrepreneurial formation and building. Semester Hours: 3.

ENTP 6020 - The Business Plan. Business plan development which incorporates all key ingredients necessary for various users. Includes the ins and outs of business plans for new ventures through environmental scans of new business opportunities, case studies, by sharing the experience of entrepreneurs and investors that have been through the process and by writing a business plan, either individually or with a team of other students. Semester Hours: 3.

ENTP 6040 - Growing Your Venture. Provides a series of concepts, frameworks, and heuristics that enable the entrepreneur to anticipate and deal with the challenges that accompany growth of an existing business. Cases, exercises, lectures, and speakers are used to focus on choosing opportunities, allocating resources, motivating employees, and maintaining control, while not stifling innovation. A key component of the course is how to sustain entrepreneurial thinking in mid-sized ventures as they continue to grow. Semester Hours: 3.

ENTP 6800 - Special Topics. A variety of topics in entrepreneurship are offered. Consult the current 'Schedule Planner' for semester offerings. Semester Hours: 3.

ENTP 6820 - Business Consulting. Assists to understand how to successfully grow experience and current knowledge so that any future business consulting goals are realized, regardless of whether the student is an 'inside' consultant to the organization or an 'outside' consultant to many organizations. Students are expected to identify experiences, current knowledge, and future goals. The course includes 'practice' of 32 topics within 16 classes. Students learn how to identify root problems instead of treating the symptoms. Most importantly, student deliver recommendations and implement the optimum solution. Semester Hours: 3.

ENTP 6822 - Legal and Ethical Issues of Entrepreneurship. This course addresses the legal issues most frequently encountered by entrepreneurs and others involved in start-ups 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. Semester Hours: 3. Note: Cannot receive credit for both BUSN 6540 and this course.

ENTP 6824 - Entrepreneurial Financial Management. Provides a foundation for the financial management of a small business, including financial and legal aspects of setting up different forms of small business, and overview of financial reporting and cash flow analysis for small businesses, financial planning and budgeting techniques, working capital management and long-term asset decisions, practices in obtaining funds, business valuation, franchising, lease versus buy decisions, financial aspects of international trade, and different methods of obtaining capital including: trade credit, loans, private placements, angel capital and venture capital. Students cannot receive credit if they have taken FNCE 6460. Semester Hours: 3. Prerequisite: BUSN 6550 or previous accounting course and ability to read financial statements.

ENTP 6826 - International Entrepreneurship. Provides the student with an overview of key trends and developments in international business. Familiarize the student with selected theories and concepts of international business and how it affects entrepreneurial functions, including finance, marketing, accounting, organization design and management. Semester Hours: 3.

ENTP 6828 - Assess and Develop Market Opportunities. Seeks to discern how entrepreneurs identify, assess and exploit market opportunities. Provides a series of guest speakers, business cases and a project, an informal survey of how entrepreneurs use both systematic and non-technical entrepreneurial ventures to illustrate this process. The ultimate objective is to provide a roadmap of the interaction between the entrepreneur and market opportunities, which facilitates the development of student skills in assessing market opportunities. Semester Hours: 3. Prerequisite: One previous graduate level class or permission of instructor.

ENTP 6830 - Launching Technology-Based Ventures. Provides an introduction to concepts and activities applicable to launching and managing technology-based ventures. Emphasis is placed on evaluating and financing new technology-based ventures. Other course topics include: identifying and specifying opportunities; creating profitable business models and strategies; marketing and managing and working in new ventures. Course readings, case studies and discussions highlight key issues and concepts. Successful entrepreneurs, professional investors and other business professionals visit the class to share their experiences and insights. Semester Hours: 3.

ENTP 6832 - Corporate Entrepreneurship and Innovation. Includes building, running and growing an entrepreneurial organization. Addresses the principles of organizational architecture, group behavior and performance, interpersonal influence, leadership and motivation in entrepreneurial settings. It addresses strategies to leverage limited resources for maximum effect. Students develop competencies in organizational behavior in the context of an entrepreneurial firm. Semester Hours: 3.

ENTP 6834 - Entrepreneurial Marketing. Designed to help students learn about best practices recent lessons on Internet economy, companies large and small face unique challenges successfully building a competitive advantage with limited marketing resources. Covers the analysis of marketing opportunities, identification of the targets, audience, and the development of a marketing strategy, brand positioning and an integrated marketing plan. Reviews product and service development processes. Provides a basis for establishing pricing and pricing plans. Assesses Internet economy. Semester Hours: 3.

ENTP 6836 - Designing and Leading the Entrepreneurial Organization. Addresses the principles of organizational architecture, group behavior and performance, interpersonal influence, leadership and motivation in entrepreneurial settings. It addresses strategies to leverage limited resources for maximum effect. Students develop competencies in organizational design, human resources management, leadership and organizational behavior in the context of an entrepreneurial firm. Semester Hours: 3.

ENTP 6838 - Real Estate for the Entrepreneur. This course will address issues critical to the success of any new venture location including business site selection and negotiation of real estate leases and purchases. General principles of real estate development, financing and urban planning, applicable to entrepreneurs, will also be discussed. Zoning, affordable housing, ADA issues, property management, real estate investing, historic preservation and selected taxation issues are also covered. Semester Hours: 3.

ENTP 6842 - New Concept Development. Designed to help entrepreneurs address questions related to assessing the viability of new business opportunities. Using marketing theory provides tools for understanding and evaluating the attractiveness of industries and potential receptiveness of markets. Both Individual and group projects teach students to identify potential new business opportunities and to assess the viability in various industries and markets. Semester Hours: 3.

ENTP 6844 - Managing New Entrepreneurial Ventures. Focuses on the decisions owner-managers make in recognizing and choosing opportunities, positioning themselves in the market place, obtaining and allocating resources, motivating employees and maintaining control while not stifling innovative actions that allow a business to control its own destiny. Semester Hours: 3.

ENTP 6846 - Marketing a New Business. The objective is to help entrepreneurs learn the latest techniques involved in taking a new business or service concept to market. It includes a theoretical analysis of how products diffuse, product life cycle issues, qualitative and quantitative research techniques (including exposure to an analytical software program), consumer behavior issues, strategic positioning given the nature of the product, the company and the external environment, promotion of the new concept and issues regarding the implementation of a marketing solution surrounding the new venture. Semester Hours: 3.

ENTP 6848 - Leadership in New Ventures. Provides the student with an overview of key leadership principles for creating strategy and

managing teams in a new venture. 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 that is able to execute the strategy through measurable goals and objectives. Semester Hours: 3.

ENTP 6852 - Introduction to Life Science Technology Transfer.

This course is designed to familiarize biomedical scientists and those interested in the business of science with the basic fundamentals of biomedical technology transfer. The emphasis of the course will be on how technology transfer occurs, different technology transfer models, early stage technology finance, basics of intellectual property and the regulatory and reimbursement environment for commercializing drugs, devices, diagnostic tests and health information software. Semester Hours: 3.

ENTP 6854 - Design & Manage Entrepreneurial Organizations.

This course is about building, running and growing an entrepreneurial organization. It is about creating an organization that will sustain high performance over a long period of time and become a premier institution in its field. Semester Hours: 3.

ENTP 6856 - Strategic Planning for Entrepreneurs. This course is designed to help students learn and use tools and frameworks to create, implement and update a strategic plan to shape the future and guide an entrepreneurial organization on its path to success. Semester Hours: 3.

ENTP 6858 - Innovation in the Social Sector. This course will introduce you to the context, models, trends, opportunities and challenges in social entrepreneurship. Provide you with the framework and tools to develop an opportunity analysis for a social venture of your choice. Engage you in learning community and collaboratively develop a deeper understanding of this emerging field. Semester Hours: 3.

ENTP 6860 - Business Planning for Social Entrepreneurs. Strategic planning is a key process both in new and existing organizations. The plan is a road map for achieving your organizational goals and is a vehicle for thinking about, discussing, researching and analyzing your strategies for sustainability. It is a living document that helps you plan for the future, measure your achievements, manage your risk and stay focused. Semester Hours: 3.

ENTP 6930 - Bioscience Internship. The Bard Center for Entrepreneurship Bioscience Internship Program is intended to provide entrepreneurship students with outstanding real world business experience in emerging Colorado bioscience companies. Business graduate students will use their skills in the area of marketing, accounting, management, information systems and finance and apply them to current business needs of the Bioscience companies. Semester Hours: 3.

ENVS: Environmental Sciences (Liberal Arts and Sciences)

ENVS 1042 - Introduction to Environmental Sciences: SC1. This laboratory or 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. Semester Hours: 4.

ENVS 1342 - Introduction to Environment and Society: SS2.

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. Semester Hours: 3.

ENVS 2939 - Internship/Cooperative Education. Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 3. Prerequisite: 15 hours of 2.75 GPA.

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. Semester Hours: 3. Prerequisite: One course in college science or mathematics. Cross-listed with: PHYS 3082.

ENVS 3500 - Topics in Environmental Sciences. Semester Hours: 1 to 6. Note: Topics may vary from one offering to the next.

ENVS 4210 - Mining and the Environment. Mineral resources such as metals have played an important role in human civilization. However, the extraction, processing, and use of metals have left a legacy of damage to the environment and human health. These impacts and their mitigation are examined. Semester Hours: 3. Prerequisite: One course in college mathematics or science.

ENVS 4500 - Topics In Environmental Sciences. Semester Hours: 1 to 6. Prerequisite: Varies according to the topic. Note: Topics may vary from one offering to the next.

ENVS 4995 - Travel Study. Rigorous yet flexible fieldwork-based experience exploring geographical and environmental phenomena in diverse world locations. Course begins with intensive regional and methodological introductions, followed by on location field investigations in environmental analyses, cultural studies, GIS applications, tourism evaluation and/or hazards assessment. Semester Hours: 3 to 9. Prerequisite: GEOG 1202 and GEOG 1302, or permission of instructor. Cross-listed with: ENVS 5995, GEOG 4995, and GEOG 5995.

ENVS 5000 - Biogeochemical Cycles. Topics include an introduction to ecosystem structures and biosphere functions through the lens of soil ecology. The hydrologic cycle and global cycles of sulfur, nitrogen, and carbon are reviewed as they especially relate to climate variability.

Semester Hours: 3. Prerequisite: GEOG 1202 or GEOG 3232 or permission of instructor. Cross-listed with: GEOG 4010, GEOL 4000.

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. Semester Hours: 3. Cross-listed with: GEOG 4020, GEOL 4020.

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. Semester Hours: 3. Prerequisite: Entry into MSES program, senior standing in sciences or geography, or permission of instructor. Cross-listed with: GEOL 4030 and 5030.

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. Semester Hours: 3. Prerequisite: Chemistry, physics, calculus or permission of instructor. Cross-listed with: GEOL 4402.

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. Semester Hours: 3. Prerequisite: Graduate status and general chemistry and/or CHEM 4700.

ENVS 5500 - Topics in Environmental Sciences. Topics may vary from one offering to the next. 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. Semester Hours: 3. Prerequisite: College algebra and GEOG 3080, or consent of an instructor. Cross-listed with: GEOG 4770, GEOL 4770, 5770.

ENVS 5620 - Health Risk Communication. Acquaints students with contemporary theory, research, and practice in health risk communication. Semester Hours: 3. Cross-listed with: CMMU 5620, 4620, HBSC 5620, 4620.

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. Semester Hours: 3. Prerequisite: Graduate standing. Note: For graduate students in environmental sciences or engineering, and for those working in the environmental field.

ENVS 5840 - Independent Study. Semester Hours: 1 to 3.

ENVS 5939 - Cooperative Education. Semester Hours: 1 to 6.

ENVS 5995 - Travel Study. Rigorous yet flexible fieldwork-based experience exploring geographical and environmental phenomena in diverse world locations. Course begins with intensive regional and methodological introductions, followed by on-location field investigations in environmental analyses, cultural studies, GIS applications, tourism evaluation and/or hazards assessment. Semester Hours: 3 to 9. Prerequisite: GEOG 1202 and GEOG 1302, or permission of instructor. Cross-listed with: ENVS 4995, GEOG 4995, and GEOG 5995.

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. Semester Hours: 1. Prerequisite: Must be an M.S. in Environmental Science student.

ENVS 6002 - Environmental Sciences Seminar. 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. Semester Hours: 3. Prerequisite: Must be an MS Environmental Science student or permission of instructor.

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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: C E 5494, HBSC 7340.

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. Semester Hours: 3. Cross-listed with: HBSC 7210.

ENVS 6220 - Toxicology. Introduces the field of toxicology. Emphasizes the mechanisms by which chemicals produce toxic effects and the methods for assessing toxicity. Semester Hours: 3. Prerequisite: One year college chemistry and one year college biology. Cross-listed with: HBSC 7360. Note: Designed for students in the environmental sciences and occupational health fields.

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. Semester Hours: 3. Prerequisite: A basic statistics course and graduate standing or permission of instructor. Cross-listed with: HBSC 7310.

ENVS 6840 - Independent Study. Semester Hours: 1 to 3.

ENVS 6950 - Master's Thesis. Semester Hours: 1 to 6.

ENVS 6960 - Master's Report. Semester Hours: 3. or 6

EPSY: Educational Psychology (Education)

EPSY 5000 - Psychological Foundations of Education. Surveys the results of psychological inquiry with emphasis on applications to educational practices. Major topics are motivation, behavior, learning, development, measurement, and characteristics of teachers and students. Semester Hours: 2 to 4.

EPSY 5020 - Advanced Psychological Foundations of Education. Selected topics in educational psychology are examined; theoretical issues, current research and applications assume the primary emphasis. The course is intended primarily for students who have had prior professional experiences in teaching and psycho-educational settings. Topic areas addressed include research on intelligence, development, motivation, objective analyses of behavior, and learning. Semester Hours: 3.

EPSY 5050 - Children's Thinking. 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 others. Semester Hours: 3.

EPSY 5100 - 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. Semester Hours: 3.

EPSY 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. Semester Hours: 3.

EPSY 5120 - Behavior Analysis. A systematic survey of current theory in learning and behavior. The course emphasizes analysis of behavior and behavior change. Semester Hours: 3.

EPSY 5140 - Advanced Adolescent Growth and Development. Systematic study of the major theories of adolescent growth and development. Focuses on current research regarding adolescents and the implications of the research for education. Semester Hours: 3.

EPSY 5160 - Behavior Disorders in Exceptional Children. An in-depth study of the psychological, social, and behavioral problems of exceptional learners. Topics to be discussed include identification, etiology, educational assessment and strategies, non-educational intervention, parent involvement, programming and evaluation. Attention is given to current research and its applications. Semester Hours: 3.

EPSY 5170 - Behavior Analysis and Intervention. An application-oriented course that focuses on the development of social and affective skills for children and adolescents. Students gain actual experiences in the analysis and implementation of a variety of behavioral, ecological and psycho-educational interventions. Semester Hours: 3. Prerequisite: EPSY 5160 or permission of instructor.

EPSY 5180 - Psychology of Gifted, Talented and Creative Children. Examines the nature of gifted, talented, and creative children from an educational psychology perspective. Topics addressed include historical antecedents, identification, characteristics of such children, research initiatives, measurement issues, relevant programs and teaching strategies. Semester Hours: 3.

EPSY 5200 - Social Psychology of Learning. An analysis of social-psychological concepts, such as self-concept, attitude development, person perception, group processes and related phenomena. Applications to education and other settings are considered. Semester Hours: 3.

EPSY 5220 - Adult Learning and Education. Surveys theories and principles of adult learning and adult education with emphasis on practical applications and design of programs of instruction for adult learners. Semester Hours: 3.

EPSY 5240 - Cognition and Instruction. Explores recent developments in cognition and the implications for instructional practices. Includes theory and research in cognitive psychology and resultant educational practices. Semester Hours: 3.

EPSY 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. Semester Hours: 3.

EPSY 5500 - Student Teaching. Involves an extended period (usually one school year) of apprenticeship teaching under the daily supervision of mentor/master teachers. Over time, the student discusses teaching strategies with the mentor and a university supervisor—and takes on increasing responsibility for the conduct of the classroom. Semester Hours: 2 to 4. Prerequisite: Enrollment in a teacher licensure program.

EPSY 5800 - Workshop: School Applications of Educational Psychology. Research, development, and other scholarly activities in educational psychology are studied and reviewed. Applications are then made to school and other educational settings, with student practice and utilization of techniques emphasized. Semester Hours: 1 to 4.

EPSY 5840 - Independent Study. Semester Hours: 1 to 4.

EPSY 5920 - Readings in Educational Psychology. Semester Hours: 1 to 4.

EPSY 6000 - Seminar in Educational Psychology. Examines classic research and personalities in the field of educational psychology, broadly conceived. Also includes the history of the field, major divisions in educational psychology, professional organizations, and (as appropriate) the teaching of educational psychology. Semester Hours: 3.

EPSY 6120 - 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. Semester Hours: 3.

EPSY 6170 - Assessment of Handicapped and At-risk Infants. Provides classroom and field-based experience in the assessment of young children, birth to three years. Topics include selection, administration and interpretation of a variety of tests. Norm-referenced and criterion-referenced tests and observational methods are included. Semester Hours: 3.

EPSY 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. Semester Hours: 3.

EPSY 6250 - Advanced Abnormal Psychology. The major objective of this course is to help the student develop a professional level of understanding of the major disorders commonly subsumed under the term 'psychopathology' and related treatments. Classification of disorders in the DSM IV is utilized. Semester Hours: 3. Cross-listed with: CPCE 6250.

EPSY 6350 - Theories of Personality Development and Change. Advanced course in personality theory intended to assist students in becoming aware of their personal theory of personality and its implications for change. Students are introduced to an array of personality theories, taught to recognize the assumptions of each and their mechanism for change, and taught the implications of each for personal growth and therapy. Semester Hours: 3. Cross-listed with: CPCE 6350.

EPSY 6500 - Student Teaching: Implementation and Reflection. Involves an extended period (usually one school year) of apprenticeship teaching under the daily supervision of mentor/master teachers. Over time, the student discusses teaching strategies with the mentor and a university supervisor—and takes on increasing responsibility for the conduct of the classroom. Additionally, students meet periodically with professors in seminars to relate their classroom experiences, reflect on their generality, and review pertinent (especially psychological) research. Semester Hours: 2 to 4. Prerequisite: Enrollment in a teacher licensure program.

EPSY 6600 - Human Motivation. Reviews the research on human motivation. Various theories of human motivation are examined in-depth, and their applications are considered for both teacher and learner in educational settings, primarily (and, in other settings, secondarily). Semester Hours: 3. Prerequisite: EPSY 5020 or permission of instructor.

EPSY 6840 - Independent Study. Semester Hours: 1 to 4.

EPSY 6910 - Practicum in Educational Psychology. 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). Semester Hours: 2 to 4. Prerequisite: Permission of instructor.

EPSY 6950 - Master's Thesis. Semester Hours: 4.

EPSY 7910 - Educational Psychology Practicum. Semester Hours: 2 to 4.

ETST: Ethnic Studies (Liberal Arts and Sciences)

ETST 1111 - Freshman Seminar. Semester Hours: 3.

ETST 2000 - Introduction to Ethnic Studies: SS3. 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. Semester Hours: 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. Semester Hours: 3.

ETST 2036 - 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. Semester Hours: 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. Semester Hours: 3.

ETST 2115 - Genocide in the 21st Century: Darfur and Beyond. Introduces students not only to the first genocide of the twenty-first century, in which over 400,000 ethnic Sudanese have been forcibly wiped out and millions displaced, but also studies the root cause of genocide and some of the past genocides. Semester Hours: 3.

ETST 2125 - The Bi-Racial Family. Covers specific issues related to the biracial/bicultural family in the U.S., including the socio-cultural factors involved. Parenting concerns and skills for professional application will be included. Semester Hours: 3.

ETST 2145 - The Gullah in Novel and Film. Explores the history and culture of a distinct group of African Americans known as Gullah/Geechee, whose ancestors were brought to the U.S. as part of a specialized and often illegal slave trade that existed in coastal South Carolina and Georgia. Semester Hours: 3.

ETST 2155 - African American History: HI1. 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. Semester Hours: 3.

ETST 2165 - Cultural Diversity Awareness in the Workplace. An analytical assessment aimed at understanding the impact and effectiveness of cultural diversity awareness. Participants focus on understanding their own cultural biases, recognizing the impact of cultural values, and gain an appreciation for the value of diversity in work organizations. Semester Hours: 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. Semester Hours: 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. Semester Hours: 3. Cross-listed with: T ED 2400.

ETST 2496 - American Indian Literature. Introduces American Indian literature and other expressive forms, with emphasis on their aesthetic, linguistic, psychological, and historical properties, as well as the contemporary social and cultural influences upon native authors and their material. Semester Hours: 3.

ETST 2606 - The American Indian Experience. Surveys the relationships between Indian and non-Indian peoples, particularly in the context of the unique interaction between tribes and the federal government. Semester Hours: 3. Cross-listed with: RLST 2680.

ETST 2840 - Independent Study. Semester Hours: 1 to 3.

ETST 2939 - Internship/Cooperative Education. Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: 15 hours of 2.75 GPA.

ETST 3001 - Urban Sociology. The city and urban society are examined in terms of social structure, residential and institutional patternings, process of interaction, demographic processes, and patterns of growth and change. Semester Hours: 3. Cross-listed with: SOC 3001.

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. Semester Hours: 3. Cross-listed with: HBSC 3002.

ETST 3108 - Chicano/a and Latino/a History. A 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. Semester Hours: 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. Semester Hours: 3.

ETST 3129 - Contemporary Latin American Literature. The best of contemporary Latin American novels. Examines how U.S. policies in Latin America affect literary creation. Semester Hours: 3. Note: Taught in English.

ETST 3216 - 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. Semester Hours: 3. Cross-listed with: P SC 3214.

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. Semester Hours: 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. Semester Hours: 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. Semester Hours: 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. Semester Hours: 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. Semester Hours: 3. Cross-listed with: SOC 3297.

ETST 3307 - Selected Topics: Asian Americans. Examines specific topics on Asian Americans to be selected by the instructor and the students. Detailed study of subjects relating to the Asian American experience and communities. Semester Hours: 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. Semester Hours: 3. Cross-listed with: HIST 3350.

ETST 3357 - Asian American Literature. Readings in this course examine the experiences of men and women in different generations; how each group attempts to maintain traditional values in a foreign land, to assimilate, and to forge a new identity. Includes short stories, poetry, essays, and novels by leading Asian American writers. Semester Hours: 3.

ETST 3365 - Aztlan in the United States: Chicano History from 1821. Explores the impact of U.S. rule on the Southwest, paying particular attention to legal, economic, and social changes that created new political and cultural identities in the Southwest. Semester Hours: 3. Cross-listed with: HIST 3365.

ETST 3394 - Literature of Social Protest from an Ethnic Perspective. The literature of social protest of various ethnic groups is examined from a literary perspective and with reference to political and social theories. Semester Hours: 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. Semester Hours: 3. Cross-listed with: HIST 3396.

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. Semester Hours: 3.

ETST 3567 - Asian American Women. Examines processes of change in values, roles, and relations of Asian American women, using contemporary and historical readings that address problems such as generational differences, assimilation, and changing roles. Semester Hours: 3.

ETST 3574 - Topics in Ethnic Studies. Topics vary from term to term, based upon interest and availability of instructors in specialized areas. Semester Hours: 3.

ETST 3616 - Selected Topics: American Indians. Detailed study of subjects related to American Indian experience and communities. Semester Hours: 3. Note: Specific topics to be selected by the instructor and students.

ETST 3697 - Contemporary Asian American Issues. Examines several contemporary Asian American issues, including the adaptation of new immigrants and refugees, economic and educational problems, ethnic identity, intermarriage, anti-Asian discrimination and other civil rights issues, and recent political activism. Semester Hours: 3.

ETST 3704 - Culture, Racism and Alienation. The effects of racism on the personality of participants in racist cultures. Semester Hours: 3.

ETST 3794 - Ethnic Diversity in American Literature. Surveys the cultural perspectives of various ethnic writers and their contributions to American literature. Semester Hours: 3.

ETST 3838 - History of the Mexican American in Colorado. Mexican Americans in Colorado from the 1800s to the present. Topics include founding of Colorado towns, labor strikes, farm worker issues, land and water rights, the Chicano Movement and political power. Semester Hours: 3.

ETST 3840 - Independent Study. Semester Hours: 1 to 3.

ETST 3939 - Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: Junior standing and 2.75 GPA.

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. Semester Hours: 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. Semester Hours: 3. Cross-listed with: P SC 4144.

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. Semester Hours: 3. Cross-listed with: P SC 4146, 5145.

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. Semester Hours: 3. Prerequisite: Upper division standing. Cross-listed with: P SC 4156.

ETST 4220 - African-American Literature. Surveys African-American literature with special emphasis on post-Civil War writing. Semester Hours: 3. Cross-listed with: ENGL 4220 and 5220.

ETST 4411 - Modern Mexico. Designed to familiarize students with the critical issues of Mexican political, economic and social history. Traces the emergence of independence and the difficult consolidation of an independent nation state. Semester Hours: 3. Cross-listed with: HIST 4411, 5411.

ETST 4515 - The African American in Politics. Examines African American politics in the U.S.; the role of African American interest groups, structure and function of African American political organizations, goals and political styles of African American politicians, trends, and the future of African American politics in the United States. Semester Hours: 3.

ETST 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. Semester Hours: 3. Cross-listed with: P SC 4555, P SC 5555 and WGST 4555.

ETST 4558 - Chicano and Latino Politics. Analysis of the social, cultural, and economic factors that affect political behavior of Latinos. Special attention is paid to the Mexican American cultural heritage and to relations between Mexican Americans and Anglo Americans. Semester Hours: 3. Cross-listed with: P SC 4554.

ETST 4574 - Special Topics. Semester Hours: 3.

ETST 4616 - Selected Topics: Chicanos/as and Latinos/as. Examines various contemporary issues in ethnic studies regarding Chicanos/as and Latinos/as. Semester Hours: 3.

ETST 4726 - North American Indian Art. Surveys major tribal styles of the North American continent. Semester Hours: 3.

ETST 4730 - Peoples and Cultures of Sub-Saharan Africa. Covers various types of societies and civilizations that have existed in sub-Saharan Africa. Explores foragers, pastoralists, agricultural societies, chiefdoms, kingdoms, and empires, as these emerged and interacted with each other. Details their ideas and social orders, including the following topics: race, ethnicity, kinship, politics, economics, religion, magic, witchcraft, sorcery, marriage, age, gender, stratification, art, literature and oral traditions. Also addresses the impact of colonialism, the rise of nations, changes in the post-colonial period, warfare, and the impact of globalism on Africa today. Semester Hours: 3. Prerequisite: Upper division standing. Cross-listed with: ANTH 4730 and 5730.

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. Semester Hours: 3. Cross-listed with: ENGL 4768.

ETST 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. Semester Hours: 3. Cross-listed with: P SC 4827 and WGST 4827.

ETST 4840 - Independent Study. Semester Hours: 1 to 3.

ETST 4960 - Senior Seminar in Ethnic Studies. Examines recent research in ethnic studies. Intended to be the capstone course for students minoring in ethnic studies. Semester Hours: 3.

EXCH: Student Exchange

EXCH 3996 - Student Exchange. This course is a placeholder for Student Exchange courses and should not be published in the Catalog of courses, nor should it appear in the Course Schedule Planner. Enrollment for this course should be via Office of International Education and only through Extended Studies. Semester Hours: 12

F A: Fine Arts (Arts & Media)

F A 1001 - Introduction to Art: AH1. 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. Semester Hours: 3. Note: This course will not satisfy any degree requirements for Visual Arts Majors.

F A 1015 - Interdisciplinary Foundations. Students will work across 2-D, 3-D and 4-D medias to develop interdisciplinary skills, techniques, strategies and methodologies for investigating contemporary ideas informed by theories of visual culture while implementing critical concepts into creative production. Course work includes creative projects, research assignments, critiques and presentations. Semester Hours: 3.

F A 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. Semester Hours: 3.

F A 1140 - Topics in Photography. Semester Hours: 1 to 3.

F A 1150 - Introduction to Photography. Introduces the breadth of photographic practice. Techniques covered in the course include an in-depth exploration of how to use your camera, film processing, basic black and white printing, color photography, alternative processes, digital imaging and other photographic techniques. This course builds a foundation for critical thinking and intelligent image making through readings, presentation, idea development and expressive uses of the medium. Semester Hours: 3.

F A 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. Semester Hours: 3.

F A 1435 - Intro to Electronic Art and Design. A Lecture/art-studio course for high school students that provides an introduction to the computer and its artistic and commercial possibilities. Through projects, lectures, discussions and readings students explore techniques of production including digital photographic manipulation, sound editing, and web animation. Semester Hours: 2.

F A 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. Semester Hours: 3.

F A 1600 - Painting Methods and Materials. This course introduces students to color theory through an exploration of various painting materials/ techniques including: complex color mixing, preparing surfaces, producing studies utilizing different painting mediums, and writings, lectures, and discussions surrounding the scientific and symbolic nature of color. Semester Hours: 3. Prerequisite: F A 1400.

F A 1810 - Digital Animation Foundations: Producing Animation.

A lecture/lab course that explores the theory, practices and fundamentals of producing 3-D animation. Students will explore the foundations of the animation process including the production pipeline, studio organizations, traditional animation techniques, foundational cinematography, storyboarding and character development. Semester Hours: 3. Prerequisite: A basic knowledge of computer operating systems. Note: Offered through Extended Studies (Continuing and Professional Education) due to separate tuition structure. Acceptance to the Digital Animation Center is competitive by interview/portfolio review with the Area Head for the program.

F A 1820 - Digital Animation Foundations: Introduction to Digital 3-D.

A lecture/lab course that explores the foundations of creating digital 3-D content. Primary focus is an introduction to current 3-D software. Class lectures, demonstrations and hands-on application will expose the student to the expectations for commercial high- end 3-D animation production. Semester Hours: 3. Prerequisite: A basic knowledge of computer operating systems. Note: Offered through Extended Studies (Continuing and Professional Education) due to separate tuition structure. Acceptance to the Digital Animation Center is competitive by interview/portfolio review with the Area Head for the program.

F A 2000 - 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. Semester Hours: 3. Prerequisite: F A 1100, F A 1400 or permission of instructor.

F A 2015 - Intermedia Foundations. Students will develop techniques, strategies and methodologies for investigating contemporary ideas informed by theories of visual culture while implementing critical concepts into creative production centered in digital media. Course work includes creative projects, research assignments, critiques and presentations. Semester Hours: 3.

F A 2020 - Drawing II: Spatial Thinking and Visualization. Building on skills learned in F A 1100, students explore complex problems in the representation of space. Perceptual and constructed perspective is utilized to create real and invented form. The Golden Mean is studied in master artworks and translated into effective compositions. Semester Hours: 3. Prerequisite: F A 1100, 1400 or permission of instructor.

F A 2100 - 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. Semester Hours: 3. Prerequisite: F A 1100, F A 1400, F A 2020.

F A 2130 - Experiments in Color/Photography for Non-Majors.

Explores both practical and innovative ways to manipulate color materials. Students gain technical mastery in understanding their cameras, using creative camera controls, color balancing film, and exposing color film while creating a portfolio of work that reveals experimental and innovative uses of color photographic materials. Semester Hours: 3. Prerequisite: F A 1150.

F A 2140 - Topics in Photography. Semester Hours: 1 to 3.

F A 2155 - Introduction to Digital Photography. Introduces digital imaging as it relates to photographic practice and theory. Through creative assignments that emphasize skill building and conceptual development, students learn basic digital image manipulation, input and output strategies, digital cameras and creative camera controls. Through presentations, required readings, research projects and class discussions, students explore contemporary theory in relationship to digital imaging and gain greater insight into the role of digital imaging in photography. (Priority given to photography majors and minors.) Semester Hours: 3. Prerequisite: F A 1150.

F A 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. Semester Hours: 3. Prerequisite: F A 1015 and F A 1100 or permission of instructor.

F A 2210 - Painting II: Figure. 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. Semester Hours: 3. Prerequisite: F A 1015, 1100, 1400, 2200 and 2600 or permission of instructor.

F A 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. Semester Hours: 3. Note: Priority seating given to Digital Design and Transmedia majors.

F A 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, arranging and moving typographic forms students will create projects that examine how typography is used to create meaning. Semester Hours: 3. Prerequisite: F A 1400 or permission of instructor. Note: Priority seating given to Digital Design majors.

F A 2500 - Bronze Casting and Metal Sculpture. Students learn the lost wax process of casting with ceramic shell. Modeling wax, investment, foundry work, centrifugal casting and welding for aluminum and bronze are introduced, as is steel fabrication. Individual vocabularies are explored and design skills required. Semester Hours: 3. Prerequisite: Sculpture majors: F A 1500; Other: No prerequisites.

F A 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. Semester Hours: 3. Prerequisite: Sculpture majors: F A 1500 and 2500; Transmedia majors: F A 1500; Other: Permission of instructor. Cross-listed with: F A 3535.

F A 2600 - History of Art I (survey). (This course is an approved Colorado Statewide Guaranteed Transfer Course). Overview of various cultures of humankind from cave painting to the Renaissance. Semester Hours: 3.

F A 2610 - History of Art II (survey). Survey of various cultures of humankind from the Renaissance to the present. Semester Hours: 3.

F A 2810 - Digital Animation Techniques: Surface Modeling.

A lecture/lab course focused on the mastery of creating surface models for digital 3-D content. Students will develop skills/knowledge about the processes and techniques for building complex 3-D objects with an emphasis on artistic excellence through application of current 3-D technologies. Semester Hours: 3. Prerequisite: F A 1810, 1820 and acceptance into the Digital Animation Center Animation Program. Note: Offered through Extended Studies (Continuing and Professional Education) due to separate tuition structure. Acceptance to the Digital Animation Center is competitive by interview/portfolio review with the Area Head for the program.

F A 2820 - Digital Animation Techniques: Surface Properties.

A lecture/lab course focused on mastery of creating surface textures/materials for digital 3-D content. Students will develop skills/knowledge about the processes and techniques for creating realistic 3-D textures/materials with an emphasis on artistic excellence through application of current 3-D technologies. Semester Hours: 3. Prerequisite: F A 1810, 1820 and acceptance into the Digital Animation Center Animation Program. Note: Offered through Extended Studies (Continuing and Professional Education) due to separate tuition structure. Acceptance to the Digital Animation Center is competitive by interview/portfolio review with the Area Head for the program.

F A 2830 - Digital Animation Techniques: Lighting. A lecture/lab course focused on mastery of lighting the digital 3-D environment. Students will develop skills/knowledge about the processes and techniques for creating realistic 3-D lighting/lighting effects with an emphasis on artistic excellence through application of current 3-D

technologies. Semester Hours: 3. Prerequisite: F A 2810, 2820, and acceptance into the Digital Animation Center Animation Program. Note: Offered through Extended Studies (Continuing and Professional Education) due to separate tuition structure. Acceptance to the Digital Animation Center is competitive by interview/portfolio review with the Area Head for the program.

F A 2850 - Digital Animation Techniques: 3-D Character Creation.

A lecture/lab course focused on mastery of skills for creating digital 3-D characters. Students will develop skills/knowledge to shape, mold, transform/articulate, deform digital 3-D shapes creating digital characters with an emphasis on artistic excellence through application of current 3-D technologies. Semester Hours: 3. Prerequisite: F A 2810, 2820 and acceptance into the Digital Animation Center Animation Program. Note: Offered through Extended Studies (Continuing and Professional Education) due to separate tuition structure. Acceptance to the Digital Animation Center is competitive by interview/portfolio review with the Area Head for the program.

F A 2995 - Travel Study Topics. Created for students doing travel study in a foreign country. Students register through the Office of International Education. Semester Hours: 1 to 15.

F A 3000 - Intermediate Drawing. In this course students develop an artistic voice through the creation of a series of work that stretch a chosen concept. Students will explore complex approaches to the picture plane and search our unique motifs, juxtapositions and frames of reference. Semester Hours: 3. Prerequisite: F A 1015, F A 1100, F A 1400, F A 1500, F A 2001, F A 2015, F A 2020, F A 2600 and F A 2610 or permission of instructor.

F A 3110 - Imaging and Identity. Experiential grounding in the issues of cultural diversity within the context of artistic process and art criticism. Focuses on a study of cultural differences through the image of self in art. Semester Hours: 3.

F A 3120 - Visual Culture Studies. Introduces the challenges of exploring images from the perspective of visual culture as influenced by the study of emerging technologies, critical thought and observation. Semester Hours: 3. Prerequisite: Must have at least two art history survey courses.

F A 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. (Offered summer only). Semester Hours: 3. Prerequisite: F A 1150 and 2155. Students must apply to the study abroad program to enroll in this class. Corequisite: F A 3135.

F A 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. Semester Hours: 3. When Offered: (*Offered summer term only*). Prerequisite: F A 1150 and F A 2155.

F A 3140 - Postcolonial Art and Theory. Introduces the art, artists and culture of the postcolonial world as a cultural and historic phenomenon that is continually unfolding. Semester Hours: 3. Prerequisite: Must have at least two art history survey courses.

F A 3150 - Feminism and Art. Introduces students to feminist art, artists and their topical positions. The study of feminist art and theory as a cultural and historic phenomenon are explored and debated. Semester Hours: 3. Prerequisite: Not less than two art history survey courses.

F A 3155 - Digital Book Making/Narrative Strategies. Students create hand-made artists' books using digital technologies. Projects build conceptual skills in the areas of idea development, the use of text and image, and strategies for creating narratives and storytelling. Technical skills explored include digital image manipulation, digital printing, film scanning, flatbed scanning and basic book binding techniques. (Offered fall only.). Semester Hours: 3. Prerequisite: F A 1150, and F A 2155.

Photography majors must also have completed the Fine Arts Foundation Core including: F A 1015, F A 1100, F A 1400, F A 1500, F A 2015, F A 2600, F A 2610. Photography majors and minors must apply to the program to enroll in this class.

F A 3160 - Color and Studio Lighting Dynamics. Explores color photography and lighting dynamics while continuing to build skills in the areas of idea development, critical thinking, and expressive uses of the medium. Students gain expertise in balancing film to light sources, chromogenic printing, the use of flash, an understanding of color theory, and studio lighting techniques. Semester Hours: 3. Prerequisite: F A 1150, and F A 2155. Photography majors must also have completed the Fine Arts Foundation Core including: F A 1015, F A 1100, F A 1400, F A 1500, F A 2015, F A 2600, F A 2610. Photography majors and minors must apply to the program to enroll in this class.

F A 3165 - Concepts and Processes in Photography. Designed to help students explore the relationships between ideas and alternative photographic techniques. Processes covered may include cameraless and pinhole photography, reticulation, non-silver printing, enlarged negatives, liquid emulsions, solvent transfers, alternative toning and manipulation of Polaroid materials. Emphasis is placed upon non-traditional ways of creating images. (Offered spring only) Semester Hours: 3. When Offered: (*Offered spring only*). Prerequisite: F A 1150, F A 2155, and F A 3170. Photography majors must also have completed the Fine Arts Foundation Core including: F A 1015, F A 1100, F A 1400, F A 1500, F A 2015, F A 2600, F A 2610. Photography majors and minors must apply to the program to enroll in this class.

F A 3170 - Photography: Constructing the Fine Print. Students advance their black and white printing skills while exploring photography as a means of creative expression. Techniques covered include the zone system, split filter printing, toning, montage printing, paper and film choices and darkroom safety. Projects are coupled with readings in contemporary theory and criticism. Semester Hours: 3. Prerequisite: F A 1150, and 2155. Photography majors must also have completed the Fine Arts Foundation Core including: F A 1015, 1100, 1400, 1500, 2015, 2600, 2610. Photography majors and minors must apply to the program to enroll in this class.

F A 3175 - Photography: Creative Commercial Applications. Explores how photographic artists can apply their creative, technical, and conceptual skills to commercial photographic applications. Students create a body of work that is influenced by commercial applications such as editorial and studio or location photography, while exploring commercial business practices, shooting strategies, equipment and presentation solutions. Semester Hours: 3. Prerequisite: F A 1150, 2155, 3160. Photography majors must also have completed the Fine Arts Foundation Core including: F A 1015, 1100, 1400, 1500, 2015, 2600, 2610. Photography majors and minors must apply to the program to enroll in this class.

F A 3200 - Intermediate Painting I. In this course, students develop an awareness of historical and contemporary artistic practice. Students create works that stretch a chosen concept, with focus on the study of painterly 'space - deep', shallow, foreshortened, ambiguous, fragmented and in dialog with actual space. Semester Hours: 3. Prerequisite: F A 1015, F A 1100, F A 1400, F A 1410, F A 1500, F A 2015, F A 2200, F A 2210, F A 2600, and F A 2610 or permission of instructor.

F A 3210 - Intermediate Painting II. In this course, students develop an awareness of historical and contemporary artistic practice. Students will create works that stretch a chosen concept, with focus on a study of narrative 'approaches - including' symbolism, metaphor, juxtaposition, allegory, drama and stilled time. Semester Hours: 3. Prerequisite: F A 1015, F A 1100, F A 1400, F A 1410, F A 1500, F A 2015, F A 2200, F A 2210, F A 2600, F A 2610, F A 3200 or permission of instructor.

F A 3230 - Abstract Drawing. This course explores abstract drawing as a focus for creative expression through the concept, methods and techniques of abstraction. Students explore strategies in abstract composition, mark-making and expressive use of materials as they develop a complex visual vocabulary of form. Semester Hours: 3. Prerequisite: F A 2000, 2001 and 2020 or permission of instructor.

F A 3240 - Abstract Painting. This course introduces the practice of abstract painting as a focus for creative expression and inquiry into the concepts, methods and techniques of abstraction. Students will explore various strategies in abstract composition, expressive use of materials and color interaction. Semester Hours: 3. Prerequisite: F A 1410, F A 2000, F A 2200 and F A 2210 or permission of instructor.

F A 3250 - 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. Semester Hours: 3. Prerequisite: F A 1500, F A 2600 and F A 2610.

F A 3260 - Portraiture. This is an advanced course in portraiture using both drawing and painting media. Working from observation and focusing on the anatomical structure, the artist will gain a greater command in portraying complex expressions of the human face. Semester Hours: 3. Prerequisite: F A 1100, 1410, 2200 and 2000 or permission of instructor.

F A 3300 - Painting and the Printed Image. The role of technology in the history of painting will be explored in this course. Students will produce works of art that combine photo-mechanical imagery with the hand painted mark by utilizing different types of technology as a tool in combination with painting. Semester Hours: 3. Prerequisite: F A 1015, 1100, 1400, 1500, 2001, 2200, 2600 and 2610 or permission of instructor.

F A 3310 - Drawing and the Printed Image. Relationships between history of drawing and technology will be explored in this course. Students will produce mixed media drawings that utilize different types of technology as a tool in the creation of or as inspiration for fine art drawings. Semester Hours: 3. Prerequisite: F A 1015, F A 1100, F A 1400, F A 1500, F A 2015, F A 2600, and F A 2610 or permission of instructor.

F A 3340 - Topics in Studio Art. Semester Hours: 1 to 3.

F A 3342 - Topics in Studio Art. Semester Hours: 1 to 3.

F A 3343 - Topics in Studio Art. Semester Hours: 1 to 3.

F A 3350 - Topics in Multimedia. Specialized topics are offered in new multimedia technologies, theories, processes and conceptual thinking. Course titles are unique and changing semester to semester. Semester Hours: 3. Prerequisite: Multimedia majors must have completed all F A 2000 level classes with a 2.75 GPA or have passed portfolio review. Other majors must have permission of instructor. (Priority seating given to multimedia majors.)

F A 3400 - Web Design and Digital Imaging for Non-Majors.

A studio course for non-design-majors that explores the design and creation of web sites for personal and professional use. Through critiques, discussion and research, students learn the basics of digital imaging and illustration as well as principles of user-interface design. Semester Hours: 3. Note: Class may not be taken by Digital Design majors for credit toward degree.

F A 3405 - Digital Video for Non-Majors. 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. Semester Hours: 3. Note: Class may not be taken by Digital Design or Transmedia majors for credit toward degree.

F A 3409 - 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. Semester Hours: 3. Prerequisite: Digital Design majors: passed portfolio review, F A 2405, 2415 can be taken concurrently with 3414 and 3424. Digital Design minors: F A 2405 and 2415 or permission of instructor. Note: Priority seating given to Digital Design majors.

F A 3414 - Motion Design I. A workshop devoted to understanding time based imagery that focuses on utilizing video and motion graphics as a creative communication tool. Students will create projects that explore topics using video, animation, time and motion using a non-

linear digital editing software. Semester Hours: 3. Prerequisite: Digital Design majors: passed portfolio review, F A 2405 and 2415. Digital Design minors: F A 2405 and 2415. Transmedia: F A 2405, 2510, 3505—can be taken concurrently with 3424 and 3438, or permission of instructor. Note: Priority seating given to Digital Design and Transmedia majors.

F A 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. Semester Hours: 3. Prerequisite: Digital Design majors: passed portfolio review, F A 2405, 2415 can be taken concurrently with 3414 and 3424. Digital Design minors: F A 2405 and 2415 or permission of instructor. Note: Priority seating given to digital design majors.

F A 3424 - Interactive Media. A workshop exploring how interactive media can be used to convey a 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. Semester Hours: 3. Prerequisite: Digital Design majors: passed portfolio review, F A 2405 and 2415. Digital Design minors: F A 2405 and 2415. Transmedia: F A 2405, 2510, 3505—can be taken concurrently with 3414 and 3438 or permission of instructor. Note: Priority seating given to Digital Design and Transmedia majors.

F A 3428 - 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 throughout the semester. Semester Hours: 3. Prerequisite: F A 3410, 3414, 3424 or permission of instructor.

F A 3434 - 3-D Motion Design. A workshop devoted to 3-D 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 3-D digital environment. Semester Hours: 3. Prerequisite: Digital Design majors: F A 3410, F A 3414 and F A 3424; Digital Design minors and Transmedia majors: F A 2405, F A 3414 or permission of instructor. Note: Priority seating given to Digital Design and Transmedia majors.

F A 3438 - Text, Image and Electronic Art. A workshop-laboratory devoted to examining advanced concepts concerning the role of image and text within time-based and interactive media in design/artistic practices. Through creative investigations, readings and discussion students consider the new and expanding roles of text and image within the electronic sphere. Semester Hours: 3. Prerequisite: Digital Design majors: F A 3410, 3414, 3424 and portfolio review. Transmedia: F A 2405, 2510, 3505 - can be taken concurrently with 3414 and 3424. Permission of instructor. Note: Priority is given to Digital Design and Transmedia majors.

F A 3440 - Visible Stories. Focuses on the basics of storytelling using time-based and digital video. Examines the concept of montage (the combination of image with image, image with sound and image and text) and strategies to develop effective video imagery. Semester Hours: 3. Prerequisite: Multimedia majors must have completed all required F A 2000 level classes with a 2.75 GPA and passed a portfolio review. Other majors must have permission of instructor. (Priority seating given to multimedia majors.).

F A 3441 - 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 narrative, identity, reception and audience and private/public space and develop approaches to creating user-centered works of art and design. Semester Hours: 3. Prerequisite: Digital Design majors: F A 3410, F A 3414 and F A 3424; Transmedia majors: F A 3414, F A 3424 and F A 3438; Other: Permission of instructor. Note: Priority seating is given to Digital Design and Transmedia majors.

F A 3444 - Interactive Media II. An intense workshop-laboratory devoted to using interactivity as a medium for communicating ideas and

information. Through creative investigations, readings and discussions students will create projects that explore active viewer participation using vector and raster animation, non-linear editing and viewer interaction. Semester Hours: 3. Prerequisite: Digital Design majors: F A 3410, F A 3414, F A 3424, can be taken concurrently with F A 3434; Transmedia majors: F A 3414, F A 3424 or permission of instructor.

F A 3450 - Digital Painting. Digital Painting is a studio designed for student exploration of artistic expression using digital tools for traditional painting and illustration techniques. Semester Hours: 3. Prerequisite: F A 1100 and all F A foundation classes.

F A 3454 - Motion Design II. An intense workshop-laboratory devoted to using time and motion as a medium for communicating ideas and information. Through creative investigations, readings and discussions students will explore linkages between non-linear editing, animation and 3-dimensional animation as used in motion graphics. Semester Hours: 3. Prerequisite: F A 3434, 3444, and portfolio review. Can be taken concurrently with F A 3428/3444/3454. Transmedia: F A 3414, 3424 or permission of instructor.

F A 3500 - Modeling and Casting the Figure. Study of the figure from life and imagination directs visual vocabulary towards expression using the human form. Mold making using rubber, alginate and plaster are introduced for casting resin, synthetics, plastic, paper and biodegradable materials as well as metal. Drawing included. Semester Hours: 3. Prerequisite: Sculpture majors: F A 1500, F A 2500 and portfolio review; Other: No prerequisites.

F A 3505 - Sculpture Topics. Developed to cover new technical and conceptual areas of sculpture. Some topics may expand traditional processes, others may introduce new processes and ideas. Semester Hours: 3.

F A 3510 - Installation Art. Students learn to modify the way a particular space is experienced through material intervention in everyday public or private spaces. Material use ranges from everyday and natural materials to new media such as video, sound, performance, computers and the Internet. Semester Hours: 3. Prerequisite: Sculpture majors: F A 1500, F A 2500, F A 2510, portfolio review, F A 3500 and F A 3505; Transmedia majors: F A 1100, F A 1500, F A 2400, F A 2510, F A 3414, F A 3424 and F A 3505; Other: F A 1100 and F A 1500. Cross-listed with: F A 4505.

F A 3515 - Public Art. Students connect with professional/visiting artists installing public art works on campus for the Auraria Sculpture Park. Public relations, installation techniques, curatorial and administration skills are developed. Students learn to establish, maintain and promote the current sculpture collection on campus. Semester Hours: 3. Prerequisite: Sculpture majors: F A 1500, 2500, 2510 and portfolio review. Transmedia track: F A 1500, 2400, 2500, 2510, 3414 and 3424.

F A 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. Semester Hours: 3. Prerequisite: F A 1100, 1500, 2600 and 2610.

F A 3525 - Environmental Sculpture. Students create environmental site-specific work to exist in a certain place. This involves temporary outdoor landscaping combined with permanently site sculptured elements. The format, the political, the historical, or the social context of the natural environment will be explored. Semester Hours: 3. Prerequisite: Sculpture majors: F A 1500, F A 2500, F A 2510, F A 3505 and portfolio review. Transmedia majors: F A 1500, F A 2500, F A 2510, F A 2400, F A 3414, F A 3424 and F A 3505; Other: No prerequisites.

F A 3530 - Iron Casting. Students will learn traditional and innovative mold making techniques for casting iron. Working with lost wax, sand molds and space age materials students will cast ingots molds to final object. Furnace and Cupola design and fabrication techniques are researched. Semester Hours: 3. Prerequisite: Sculpture majors: F A 1500, 2500, 2510 and portfolio review. Transmedia track without the portfolio review: F A 1500, 2500 and 2510.

FA 3535 - Sculpture Rendering. Students apply traditional and mixed media drawing skills to depict the sculptural objects in two-dimensional space. Students will learn to construct small-scale three-dimensional models for sculpture proposals. Traditional mixed media, photography and digital reproduction techniques explored. Semester Hours: 3.

Prerequisite: Sculpture majors: FA 1500, 2500, 2510 and portfolio review. Transmedia majors: FA 1100 and 1500. Cross-listed with: FA 2510.

FA 3600 - Art History Survey III: Non-Western Art. Introduces the art of non-western cultures through a survey of diverse cultures. Semester Hours: 3.

FA 3630 - History of Photography. Comprehensive history of photography, from 1839 to the present. Slides of historic photographs and a number of original photographs illustrate the various stages, techniques, and types of photography, and their relationships to the totality of art. Semester Hours: 3.

FA 3635 - Photography Now. Through lectures, discussions, readings, and field trips, students learn about trends in the fine art photography from 1990 through the present. Students investigate current topics, styles, and techniques explored by today's photographers while gaining an understanding of contemporary photographic practice and its relationship to the history and future of the medium. Semester Hours: 3. Prerequisite: FA 3630.

FA 3640 - Topics in Art History. Semester Hours: 1 to 3.

FA 3644 - Topics in Art History. Semester Hours: 1 to 3.

FA 3645 - Aesthetics. Studies aesthetics in art and art history from a theoretical and historical perspective focusing on ancient, modern and contemporary ideas. This course looks at the cultural, political and social environments that define art. Semester Hours: 1 to 3. Prerequisite: Must have at least two survey classes in art history.

FA 3650 - Criticism. Studies art criticism from a theoretical and historical perspective, focusing on ancient, modern and contemporary thought and research. Semester Hours: 3. Prerequisite: Must have at least two survey classes in art history.

FA 3720 - Native American Art. Includes discussions of traditional Native American art forms by geographical area, the impact that European contact had upon these forms, and the responses of contemporary Native American artists to these issues. Semester Hours: 3.

FA 3800 - Law and the Visual Arts. Serves as an introduction to the areas of law that impact the visual artist. Copyright law and contract law are emphasized as well as business planning issues and artist or gallery relations, including consignment contracts. Free speech and privacy rights are also discussed. Semester Hours: 3.

FA 3810 - Digital Animation Studio: Set/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/environment utilizing current 3-D technologies. Semester Hours: 3. Prerequisite: FA 2830, 2840 and Acceptance into the Digital Animation Center Animation Program. Note: Offered through Extended Studies (Continuing and Professional Education) due to separate tuition structure. Acceptance to the Digital Animation Center is competitive by interview/portfolio review with the Area Head for the program.

FA 3820 - Digital Animation Techniques: Rigging and Animation. A lecture/lab course focused on mastery of skills for rigging and animating digital 3-D objects/characters. Students explore the processes/techniques of animation rigging, its relationship to the skeletal/muscular system, articulated joints for manipulating character bones, muscle deformations, clothes and facial features. Semester Hours: 3. Prerequisite: FA 2830, 2840 and acceptance into the Digital Animation Center Animation Program. Note: Offered through Extended Studies (Continuing and Professional Education) due to separate tuition structure. Acceptance to the Digital Animation Center is competitive by interview/portfolio review with the Area Head for the program.

FA 3830 - Digital Animation Technique: Character Animation. A lecture/lab course focused on mastery of skills for animating digital 3-D 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 3-D technologies. Semester Hours: 3. Prerequisite: FA 3810, 3820 and acceptance into the Digital Animation Center Animation Program. Note: Offered through Extended Studies (Continuing and Professional Education) due to separate tuition structure. Acceptance to the Digital Animation Center is competitive by interview/portfolio review with the Area Head for the program.

FA 3845 - Digital Animation Discovery and Preproduction Seminar. A seminar course focused on the development and preproduction phases for the DAC senior thesis short. The principle focus of the course will be story development, preproduction activities and organizing the production team and production pipeline for the thesis short. Semester Hours: 3. Corequisite: FA 3830 and 3840 for all DAC thesis candidates. All other visual arts students, sophomore or greater, with permission of instructor. Note: This course is required for all DAC students entering year four of the animation emphasis. It is also open to all visual arts students, subject to course instructor approval, with a sophomore or greater standing.

FA 3850 - Digital Animation Techniques: Dynamic Simulation. A lecture/lab course exploring the theory/techniques of dynamic and particle simulations for 3-D 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 3-D technologies. Semester Hours: 3. Prerequisite: FA 3810, 3820 and acceptance into the Digital Animation Center Animation Program. Note: Offered through Extended Studies (Continuing and Professional Education) due to separate tuition structure. Acceptance to the Digital Animation Center is competitive by interview/portfolio review with the Area Head for the program.

FA 3939 - Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: Junior standing and 2.75 GPA.

FA 3995 - Travel Study Topics. Created for students doing travel study in a foreign country. Students register through the Office of International Education. Semester Hours: 1 to 15.

FA 4000 - Advanced Drawing I. This course is the first advanced level study of drawing. Students will explore techniques and develop a rigorous body of drawings that express their concepts and theories through various processes needed in creating an independent body of work. Semester Hours: 3. Prerequisite: (all FA foundation courses) FA 2020, FA 3000, FA 3020, FA 3230 and FA 3310, or permission of instructor.

FA 4010 - Advanced Drawing II. This course is the second advanced level study of drawing. Students will create a more rigorous and challenging body of work that emphasizes a stylistic development of critical ideas and methodologies that were developed in the first level of advanced drawing. Semester Hours: 3. Prerequisite: (all FA foundation courses) FA 1410, FA 2000, FA 2010, FA 2020, FA 3000, FA 3230, FA 3310, FA 4020, FA 4000, FA 4100, or permission of instructor.

FA 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. Semester Hours: 3. Prerequisite: FA 1100, 1400, 2000 or permission of instructor.

FA 4100 - Painting and Drawing Theory. This course focuses on critical art theory and developing creative vision. Students discuss writings relating theory to the history of art while exploring research in studio practices. Students gain an overview of theory as they question their conceptual ideas process. Semester Hours: 3. Prerequisite: FA 1015, 1100, 1400, 1500, 2015, 2600 and 2610 or permission of instructor.

FA 4140 - Topics in Photography. Semester Hours: 1 to 3.

FA 4195 - Advanced Photography I/Creating a Personal Vision. Advanced Photography I and II are capstone courses that give students an opportunity to create a cohesive body of work that integrates visual and conceptual ideas with technical mastery. Includes examination of

the issues addressed in student work and the relationship of the work to historical and contemporary strategies and practices. Students build expertise in the areas of professional development, the business of art, and the artistic community. Semester Hours: 3. Prerequisite: F A 1015, F A 1100, F A 1150, F A 1400, F A 1500, F A 2015, F A 2420, F A 2600, F A 2610, F A 3155, F A 3160, F A 3165, F A 3170 and F A 3630.

F A 4196 - Advanced Photography II. Advanced, project-oriented class with an emphasis on integrating visual and conceptual ideas into a cohesive body of work. Semester Hours: 3. Prerequisite: F A 1015, F A 1100, F A 1150, F A 1400, F A 1500, F A 2015, F A 2421, F A 2600, F A 2610, F A 3155, F A 3160, F A 3165, F A 3170, F A 3180, F A 3630 and F A 4195.

F A 4200 - Advanced Painting I. This course is the advanced level study of painting where students are to create an independent body of work that expresses an individual vision and direction based on the cumulative experiences and knowledge gained from previous painting and drawing courses. Semester Hours: 3. Prerequisite: (all F A foundation courses) F A 1410, F A 2200, F A 2210, F A 3200, F A 3210, F A 3240, F A 3300, F A 4100 or permission of instructor.

F A 4210 - Advanced Painting II. This course is the second advanced level study of painting where students are to further their development of an independent body of work that expresses a more critical and self-directed means of rigorous artistic productivity based on previous bodies of work. Semester Hours: 3. Prerequisite: (all F A foundation courses) F A 3210, F A 3230, F A 3300, F A 4100 and F A 4200 or permission of instructor.

F A 4340 - Topics in Studio Art. Semester Hours: 1 to 3.

F A 4350 - Topics in Multimedia. Specialized topics are offered in new multimedia technologies, theories, processes and conceptual thinking. Course titles are unique and changing semester to semester. Semester Hours: 3. Prerequisite: Multimedia majors must have completed all required FA 2000 level classes with a 2.75 GPA or have passed a portfolio review. Other majors must have permission of instructor as course prerequisites may vary depending on course subject matter. Priority seating is given to multimedia majors. Cross-listed with: F A 5350.

F A 4400 - Design Studio III. Set up as a collaborative studio course, 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. Semester Hours: 3. Prerequisite: Digital Design majors: F A 3428, F A 3434, F A 3444, F A 3454, can be taken concurrently with F A 4480, portfolio review or permission of instructor.

F A 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. Semester Hours: 3. Prerequisite: Digital Design majors: F A 3434 and portfolio review. Transmedia: F A 3434 and 4500. Or permission of instructor.

F A 4480 - The Practice of Design. 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 resume writing, interview techniques, portfolio and general business practices to prepare students for entering profession or post-graduate studies. Semester Hours: 3. Prerequisite: Digital Design majors: F A 3428, F A 3434, F A 3454, and portfolio review. Note: Priority seating given to Digital Design majors.

F A 4495 - Design Studio IV. Through critique, research, writing and discussion, students will critically explore a 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. Semester Hours: 3. Prerequisite: Digital Design majors: F A 4400, F A 4480, and portfolio review.

F A 4500 - Kinetic Sculpture. Students explore sound, movement and projection mechanics using existing motors that provide cause and effect scenarios in conjunction with knowledge, materials and techniques acquired to date in the program. Semester Hours: 3. Prerequisite: Sculpture majors: F A 1500, F A 2500, F A 2510, portfolio review,

F A 3500 and F A 3505; Transmedia majors: F A 1100, F A 1500, F A 2510, F A 3414, F A 3424, F A 3505 and F A 3510; Other: F A 1500 and permission of instructor.

F A 4505 - Performance Art. Students use the human body as a vehicle and premise to examine social, political and personal concerns in situations that involve four basic elements: time, space, the performer's body and a relationship between performer and audience to explore conceptual ideas. Semester Hours: 3. Prerequisite: Sculpture majors: F A 1500, F A 2500 and portfolio review; Transmedia majors: F A 1500, F A 2510, F A 2400, F A 3414, F A 3424 and F A 3505; Other: F A 1500 and permission of instructor. Cross-listed with: F A 3510.

F A 4510 - Advanced Sculpture. Individual decision-making is stressed in developing a strong body of work. Competent technical skills and conceptual ideology are expanded to achieve complete visual experiences and development of conceptual ideas. Semester Hours: 3. Prerequisite: Sculpture majors: F A 1500, 2500, 2510 portfolio review, 3500, 3505, 3510, 3515, 3525 and 3530. Transmedia majors: F A 1100, 1500, 2510, 3505, 3510, 4424 and 4500. Corequisite: 4950. Cross-listed with: F A 4510 and 4350.

F A 4520 - Performance/Installation in Fine Art. Individual and collaborative projects, pieces, and events that develop one's attitudes, trust, and abilities to express through the awareness of space, environment, and the human condition and body. Semester Hours: 3. Prerequisite: F A 1500.

F A 4522 - Interdisciplinary Art in Ireland. Introduces the student to the relationship between issues and concepts and the process used to communicate them. (Throughout the course, students work at specific outdoor and indoor sites on related object, image and installation projects using a range of interdisciplinary tools and techniques). Significant contemporary artists, whose work employs interdisciplinary and nontraditional materials and processes, are discussed. Semester Hours: 6. Prerequisite: Junior standing or permission of instructor.

F A 4524 - Topics in Art History. Semester Hours: 3.

F A 4525 - Museum Studies. Introduces the student to an understanding of the dynamics of the museum as a creative and intellectual institution for the preservation and display of cultural materials. The opportunities and challenges of working in a museum context are explored. Semester Hours: 3. Prerequisite: Must have at least two survey classes in art history. Cross-listed with: F A 5525.

F A 4526 - Appraisal and Auction Studies. Introduces fine art appraisal and auction studies. Students develop a market-oriented understanding of art as a business activity involving the interaction of product, buyers and sellers. Semester Hours: 3. Prerequisite: Must have at least two survey classes in art history. Cross-listed with: F A 5526.

F A 4527 - The Business of Art. Introduces the challenges of art as a business activity. Ways of developing strategies for approaching art as a business activity are explored. Semester Hours: 3. Cross-listed with: F A 55273.

F A 4610 - Pre-Columbian Art. Architecture, sculpture, and painting of the high cultures of Meso-America and the Andean area before the Spanish conquest. Semester Hours: 3. Prerequisite: F A 2600 or F A 2610 or permission of instructor. Cross-listed with: F A 5610.

F A 4620 - American Art. Studies American art and architecture from the colonial period to the present. Semester Hours: 3. Prerequisite: F A 2600 or 2610. Cross-listed with: F A 5620.

F A 4625 - Studio Creative Process. Provides students with an understanding of the artistic creative process which is learned through an examination of pre-studio, studio and post-studio practices. Semester Hours: 3. Prerequisite: Must have at least two art history survey courses. Cross-listed with: F A 4625.

F A 4630 - Photography: Theory and Criticism. Introduces the historical texts of photographic criticism. Examines texts relating to the practice of photography as a fine art form, concentrating on photography from 1970 to the present. Critical writing about photography is discussed and practiced. Semester Hours: 3. Prerequisite: F A 2630, F A 3630.

F A 4632 - Media History and Aesthetics. This survey class will present the current and historic impact of media technology on the arts and professional design practice. Through lectures, research and discussion students will become familiar with issues specific to digital media and design. Semester Hours: 3. Prerequisite: Digital Design majors: F A 3410, portfolio review or permission of instructor. Cross-listed with: F A 5632.

F A 4650 - Nineteenth-Century Art. History of European movements of the late 19th century from the French Revolution through Post-Impressionism, with attention to Neoclassicism, Romanticism, Realism, and Impressionism. Semester Hours: 3. Prerequisite: F A 2600 or 2610. Cross-listed with: F A 5650.

F A 4660 - Twentieth-Century Art. Surveys major trends in painting, sculpture, and architecture from Post-Impressionism to the present. Semester Hours: 3. Prerequisite: F A 2600 or 2610. Cross-listed with: F A 5660.

F A 4670 - Greek and Roman Art. Greek art and architecture from Archaic through Hellenistic periods, Etruscan art, Roman art, and architecture from the Republican period to the fall of the Empire. Semester Hours: 3. Prerequisite: F A 2600 or 2610. Cross-listed with: F A 5670.

F A 4680 - Art of the Middle Ages. Treats significant issues and themes related to artistic production in Western Europe from the 4th to the 14th centuries. Semester Hours: 3. Prerequisite: F A 2600 or F A 2610 or permission of instructor. Cross-listed with: F A 5680.

F A 4690 - Renaissance Art. The art and architecture of Italy and Northern Europe (Flanders, France and Germany) from the late 14th century to the late 16th century. Semester Hours: 3. Prerequisite: F A 2600 or 2610. Cross-listed with: F A 5690.

F A 4710 - Baroque and Rococo Art. History of art in Italy, Spain, France, England, and the Low Countries in the 17th and 18th centuries. Semester Hours: 3. Prerequisite: F A 2600 or 2610. Cross-listed with: F A 5710.

F A 4712 - Applied Digital Media. This lab course provides students with the opportunity to execute practical applications in the use of digital 3-D media for commercial and/or non-profit venue. Semester Hours: 1 to 3. Prerequisite: Permission of instructor.

F A 4720 - Art of Native America. Surveys major trends in Native American art across North America. Semester Hours: 3. Prerequisite: F A 2600 or 2610 or permission of instructor. Cross-listed with: F A 5720.

F A 4730 - Arts of Japan. Appreciation and chronological development of the arts of Japan. Emphasis is upon the arts of Shinto and Buddhism as well as the particular Japanese aesthetic. Semester Hours: 3. Prerequisite: F A 2600 or 2610. Cross-listed with: F A 5730.

F A 4740 - African Visual, Verbal and Musical Metaphors. Introduces students to the visual, verbal and musical traditions of Africa. The artistic traditions of Africa from a comprehensive perspective on the visual cultural are explored. Semester Hours: 3. Prerequisite: Junior standing. Cross-listed with: F A 5740.

F A 4745 - African American Visual Culture. Thematic exploration of African American art, based on issues of identity. Lectures focus on historical, political, religious and aesthetic aspects of African American visual culture, since the 19th century. Semester Hours: 3. Prerequisite: Junior standing or permission of instructor. Cross-listed with: F A 5745.

F A 4750 - Arts of China. Surveys Chinese painting, sculpture, and architecture from the Neolithic period through the present era, including the art of Tibet. Semester Hours: 3. Prerequisite: F A 2600 or 2610. Cross-listed with: F A 5750.

F A 4760 - Art of the Ancient Near East. Surveys the architecture, sculpture, and painting of the ancient Near East from their beginnings to the end of the Persian Empire, including the arts of Anatolia, Egypt, Mesopotamia and Persia. Semester Hours: 3. Prerequisite: F A 2600 or 2610. Cross-listed with: F A 5760.

F A 4770 - Art of India and Southeast Asia. Surveys the architecture, sculpture, and painting of India and those areas of Southeast Asia influenced by India, from the period of Mohenjo Dato and Harappa

to the present. The Himalayan region will be treated, as will Tantric art in general. Semester Hours: 3. Prerequisite: F A 2600 or 2610. Cross-listed with: F A 5770.

F A 4780 - Art of Islam. Art and architecture of the Muslim world from the time of Mohammed to the present. Semester Hours: 3. Prerequisite: F A 2600 or 2610. Cross-listed with: F A 5780.

F A 4785 - Chicano/Chicana Art. Introduces the student to Chicano/a art and visual artistic traditions among Chicano/a people from a cultural perspective. Semester Hours: 3. Prerequisite: Junior standing. Cross-listed with: F A 5785.

F A 4787 - Oceanic Art. Introduces students to artistic traditions of Oceania from a comprehensive perspective with an emphasis on the visual culture. African forms and artists are explored through the writing of research essays. Semester Hours: 3. Prerequisite: Junior Standing. Cross-listed with: F A 5787.

F A 4790 - Methods in Art History. Seminar in the nature and purpose of the study of the history of art, in which the student is introduced to basic approaches and various research methodologies in the history of art. Semester Hours: 3. Prerequisite: F A 2600 or F A 2610. Cross-listed with: F A 5790.

F A 4800 - Senior Art Seminar. Required of Fine Arts majors in the B.F.A. and B.A. studio degree tracks. Course work is concerned with the intersection of the arts, contemporary trends in the arts, the commerce of the arts and the artist's self-promotion and evolution. Course work may include discussion and research into professional practices, business practices, creative practice and career development. Semester Hours: 3. Prerequisite: 90 credits completed, 45 credits in fine arts; open to UCD Arts Majors only. . Cross-listed with: F A 5800.

F A 4810 - Digital Animation Studio: Animation Production I. This year-long capstone series focuses on the production of the BFA thesis short. As a team, students assume key management/production roles to organize, produce and complete a high-production value animated short and student 'demo reel' within a real-world production pipeline. Semester Hours: 3. Prerequisite: F A 3830, F A 3840, F A 3845 and acceptance into the Digital Animation Center Animation Program. Note: Offered through Extended Studies (Continuing and Professional Education) due to separate tuition structure. Acceptance to the Digital Animation Center is competitive by interview/portfolio review with the Area Head for the program.

F A 4820 - Digital Animation Studio: Animation Production II. The continuation of the two-course capstone production experience preparing DAC students for their animation career. Students will work in a one-on-one mentorship environment focused on completion of the BFA thesis short and their student 'Demo Reel' in preparation for graduation. Semester Hours: 3. Prerequisite: F A 4810 and acceptance into the Digital Animation Center Animation Program. Note: Offered through Extended Studies (Continuing and Professional Education) due to separate tuition structure. Acceptance to the Digital Animation Center is competitive by interview/portfolio review with the Area Head for the program.

F A 4840 - Independent Study. Semester Hours: 1 to 3.

F A 4950 - BFA Thesis. The BFA thesis course involves the preparation, exhibition and critical faculty response to creative work and self-promotional materials as developed by graduating seniors on the B.F.A. degree track. Semester Hours: 1. Prerequisite: 90 credits completed, 45 credits in fine arts; open to UCD Arts Majors only. F A 4940 for Multimedia majors.

F A 4951 - Bachelor of Art Thesis. Prepares students for creative and original thinking demonstrated through the production of a thesis focused on a selected researched topic in Art History. Semester Hours: 3. Prerequisite: Senior status in art history.

F A 4990 - Contemporary Art - 1945 To the Present. A lecture for students involving viewing, reading, and discussion of conventions of post 1945 art including painting, photography, sculpture, installation, multi-media and other. Semester Hours: 3. Prerequisite: F A 2600 and F A 2610.

FA 4995 - Travel Study Topics. Created for students doing travel study in a foreign country. Students register through the Office of International Education. Semester Hours: 1 to 15.

FA 5000 - Graduate Drawing. Students are independently directed through an intensive process of critical investigation of drawing. Students will develop professional creative work through a rigorous exploration of process and content, while researching the role of contemporary drawing in artistic, cultural and social discourse. Semester Hours: 3. Prerequisite: Graduate level standing.

FA 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 examining the figure in relation to architecture, perspective and pictorial narrative is also required. Semester Hours: 3. Prerequisite: Graduate level standing.

FA 5190 - Graduate Photography. Graduate level project-oriented class with an emphasis on integrating visual and conceptual ideas into a cohesive body of work. The final body of work must demonstrate mastery of technical skills and an understanding of the role of photography in art and contemporary culture. Semester Hours: 3. Prerequisite: FA 1150, FA 2155, FA 3155, FA 3160, FA 4195 and FA 4196.

FA 5200 - Graduate Painting I. An intensive painting course for students who want to further their development of an independent body of work beyond the advanced level. Students will produce mature work using self-directed means of rigorous artistic productivity based on previous bodies of work. Semester Hours: 3. Prerequisite: Graduate level standing.

FA 5210 - Graduate Painting II. An intensive painting course for students who want to further their development of an independent body of work beyond the advanced level. Students will produce mature work using self-directed means of rigorous artistic productivity based on previous bodies of work. Semester Hours: 3. Prerequisite: Graduate level standing.

FA 5340 - Topics in Studio Art. Semester Hours: 1 to 3.

FA 5350 - Topics in Multimedia. Specialized topics are offered in new multimedia technologies, theories, processes and conceptual thinking. Course titles are unique and changing semester to semester. Semester Hours: 3. Prerequisite: Multimedia majors must have completed all required FA 2000 level classes with a 2.75 GPA or have passed a portfolio review. Other majors must have permission of instructor as course prerequisites may vary depending on course subject matter. Priority seating is given to multimedia majors. Cross-listed with: FA 4350.

FA 5500 - Graduate Sculpture I. A tutorial format which asks students to be self-directed. Conceptual ideology is expanded through research connected to projects. Portfolio documentation and presentation are required. Semester Hours: 3. Prerequisite: Sculpture majors FA 1500, FA 2500, FA 2510, FA 3500, FA 3505, FA 3510, FA 3515, FA 3530, FA 4500, FA 4510; Transmedia majors FA 1100, FA 1500, FA 2510, FA 3505, FA 3510, FA 4424, FA 4500. Corequisite: FA 4950. Non-majors graduate level studies in appropriate background. Cross-listed with: FA 5510.

FA 5510 - Graduate Sculpture II. A tutorial format which asks students to be self-directed. Conceptual ideology is expanded through research connected to projects. Portfolio documentation and presentation are required. Semester Hours: 3. Prerequisite: Sculpture majors FA 1500, FA 2500, FA 2510, FA 3500, FA 3505, FA 3510, FA 3515, FA 3530, FA 4500, FA 4510; Transmedia majors FA 1100, FA 1500, FA 2510, FA 3505, FA 3510, FA 4424, FA 4500. Corequisite: FA 4950. Non-majors graduate level studies in appropriate background. Cross-listed with: FA 5500.

FA 5522 - Interdisciplinary Art in Ireland. Introduces the student to the relationship between issues and concepts and the process used to communicate them. (Throughout the course, students work at specific outdoor and indoor sites on related object, image and installation projects using a range of interdisciplinary tools and techniques). Significant contemporary artists, whose work employs interdisciplinary

and nontraditional materials and processed, are discussed. Semester Hours: 6. Prerequisite: Undergraduate degree in fine arts.

FA 5525 - Museum Studies. Introduces the student to an understanding of the dynamics of the museum as a creative and intellectual institution for the preservation and display of cultural materials. The opportunities and challenges of working in a museum context are explored. Semester Hours: 3. Prerequisite: Must have at least two survey classes in art history. Cross-listed with: FA 4525.

FA 5526 - Appraisal and Auction Studies. Introduces fine art appraisal and auction studies. Students develop a market-oriented understanding of art as a business activity involving the interaction of product, buyers and sellers. Semester Hours: 3. Prerequisite: Must have at least two survey classes in art history. Cross-listed with: FA 4526.

FA 5527 - The Business of Art. Introduces the challenges of art as a business activity. Ways of developing strategies for approaching art as a business activity are explored. Semester Hours: 3. Cross-listed with: FA 4527.

FA 5610 - Pre-Columbian Art. Architecture, sculpture, and painting of the high cultures of Meso-America and the Andean area before the Spanish conquest. Semester Hours: 3. Prerequisite: FA 2600 or FA 2610. Cross-listed with: FA 4610.

FA 5620 - American Art. Studies American art and architecture from the colonial period to the present. Semester Hours: 3. Prerequisite: FA 2600 or 2610. Cross-listed with: FA 4620.

FA 5625 - Studio Creative Process. Provides students with an understanding of the artistic creative process which is learned through an examination of pre-studio, studio and post-studio practices. Semester Hours: 3. Prerequisite: Must have at least two art history survey courses. Cross-listed with: FA 4625.

FA 5632 - History of Digital Music 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. Semester Hours: 3. Prerequisite: Junior standing or permission of instructor. Cross-listed with: FA 4632.

FA 5644 - Topics in Art History. Semester Hours: 1 to 3.

FA 5650 - Nineteenth-Century Art. History of European movements of the late 19th century from the French Revolution through Post-Impressionism, with attention to Neoclassicism, Romanticism, Realism and Impressionism. Semester Hours: 3. Prerequisite: FA 2600 or 2610. Cross-listed with: FA 4650.

FA 5660 - Twentieth-Century Art. Surveys major trends in painting, sculpture, and architecture from Post-Impressionism to the present. Semester Hours: 3. Prerequisite: FA 2600 or 2610. Cross-listed with: FA 4660.

FA 5670 - Greek and Roman Art. Greek art and architecture from Archaic through Hellenistic periods, Etruscan art, Roman art, and architecture from the Republican period to the fall of the Empire. Semester Hours: 3. Prerequisite: FA 2600 or 2610. Cross-listed with: FA 4670.

FA 5680 - Art of the Middle Ages. Treats significant issues and themes related to artistic production in Western Europe from the 4th to the 14th centuries. Semester Hours: 3. Prerequisite: FA 2600 or FA 2610 or permission of instructor. Cross-listed with: FA 4680.

FA 5690 - Renaissance Art. Art and architecture of Italy and Northern Europe (Flanders, France, and Germany) from the late 14th century to the late 16th century. Semester Hours: 3. Prerequisite: FA 2600 or 2610. Cross-listed with: FA 4690.

FA 5710 - Baroque and Rococo Art. History of art in Italy, Spain, France, England, and the Low Countries in the 17th and 18th centuries. Semester Hours: 3. Prerequisite: FA 2600 or 2610. Cross-listed with: FA 4710.

FA 5720 - Art of Native America. Surveys major trends in Native American art across North America. Semester Hours: 3. Prerequisite: FA 2600 or 2610 or permission of instructor. Cross-listed with: FA 4720.

F A 5730 - Arts of Japan. Appreciation and chronological development of the arts of Japan. Emphasis upon the arts of Shinto and Buddhism as well as the particular Japanese aesthetic. Semester Hours: 3. Prerequisite: F A 2600 or 2610. Cross-listed with: F A 4730.

F A 5740 - African Visual, Verbal and Musical Metaphors. Introduces students to the visual, verbal and musical traditions of Africa. The artistic traditions of Africa from a comprehensive perspective on the visual cultural are explored. Semester Hours: 3. Prerequisite: Junior standing. Cross-listed with: F A 4740.

F A 5745 - African American Visual Culture. Thematic exploration of African American art, based on issues of identity. Lectures focus on historical, political, religious and aesthetic aspects of African American visual culture, since the 19th century. Semester Hours: 3. Prerequisite: Junior standing or permission of instructor. Cross-listed with: F A 4745.

F A 5750 - Arts of China. Surveys Chinese painting, sculpture, and architecture from the Neolithic period through the present era, including the art of Tibet. Semester Hours: 3. Prerequisite: F A 2600 or 2610. Cross-listed with: F A 4750.

F A 5760 - Art of the Ancient Near East. Surveys the architecture, sculpture, and painting of the ancient Near East from their beginnings to the end of the Persian Empire, including the arts of Anatolia, Egypt, Mesopotamia and Persia. Semester Hours: 3. Prerequisite: F A 2600 or 2610. Cross-listed with: F A 4760.

F A 5770 - Art of India and Southeast Asia. Surveys the architecture, sculpture, and painting of India and those areas of Southeast Asia influenced by India, from the period of Mohenjo Dato and Harappa to the present. The Himalayan region will be treated, as will Tantric art in general. Semester Hours: 3. Prerequisite: F A 2600 or 2610. Cross-listed with: F A 4770.

F A 5780 - Art of Islam. Art and architecture of the Muslim world from the time of Mohammed to the present. Semester Hours: 3. Prerequisite: F A 2600 or 2610. Cross-listed with: F A 4780.

F A 5785 - Chicano/Chicana Art. Introduces the student to Chicano/a art and visual artistic traditions among Chicano/a people from a cultural perspective. Semester Hours: 3. Prerequisite: Junior standing. Cross-listed with: F A 4785.

F A 5787 - Oceanic Art. Introduces students to artistic traditions of Oceania from a comprehensive perspective with emphasis on the visual culture. African forms and artists are explored through the writing of research essays. Semester Hours: 3. Prerequisite: Junior Standing. Cross-listed with: F A 4787.

F A 5790 - Methods in Art History. A seminar in the nature and purpose of the study of the history of art, in which the student is introduced to basic approaches and various research methodologies in the history of art. Semester Hours: 3. Prerequisite: F A 2600 or F A 2610. Cross-listed with: F A 4790.

F A 5800 - Art Seminar. Based on an exchange of ideas basic to students own creative work, and to contemporary philosophies and tendencies in the field. Semester Hours: 3. Prerequisite: 90 credits completed, 45 credits in fine arts; open to UCD Fine Arts majors only. Cross-listed with: F A 4800.

F A 5840 - Independent Study. Semester Hours: 1 to 3.

F A 5939 - Internship/Cooperative Education. Semester Hours: 1 to 6.

F A 5995 - Travel Study Topics. Created for students doing travel study in a foreign country. Students register through the Office of International Education. Semester Hours: 1 to 15.

FILM: Film/Video Studies (Arts & Media)

FILM 1050 - Video Production/Post-Production I. Students gain a knowledge of single camera video techniques and are introduced to non-linear digital editing. Course work is hands-on and collaborative, with several projects shot and edited. Learning centers on storytelling, including pacing and aesthetics. Semester Hours: 4. Prerequisite: BA TFVP majors, minors. Cross-listed with: THTR 1050.

FILM 1060 - Camera/Multi-Media Production. In a lecture/lab setting students will develop knowledge of equipment and skills in

studio multi-camera production and the use of multi-media for live performances. Working together students will crew, produce and direct multi-camera studio and live productions. Semester Hours: 3. Prerequisite: BA majors, minors or permission of instructor.

FILM 1100 - Introduction to Theatre, Film and Television. An introduction to dramatic and cinematic texts, styles and productions; students will research and analyze a play and develop it into a film script. They will present their understanding by storyboards and multi-media presentations, exams and written work. Semester Hours: 3. Prerequisite: Majors, minors or permission of instructor. Cross-listed with: THTR 1100.

FILM 1550 - Scriptwriting I. Each student conceptualizes, designs and creates short dramatic scripts. These scripts are for stage and screen, with production lengths from one to ten minutes. Instruction includes story development through first draft and rewrites, incorporation of critical feedback and the merger of image and idea to convey dramatic concepts. Students compare theatrical and video performance realization. Semester Hours: 3. Prerequisite: Theater/Film major and minors or permission of instructor. Cross-listed with: THTR 1550.

FILM 1611 - Acting Lab I. Students will perform scenes, have required readings and write research papers introducing them to the basic performance skills required for Stage and Screen Acting. This work will provide a foundation and vocabulary for future projects, where students interact with performers Semester Hours: 3. Prerequisite: BA TFVP majors, minors. Cross-listed with: THTR 1611.

FILM 2000 - Film/Video Production II. Students work in teams to create productions using three chip digital cameras and advanced techniques. Preproduction planning, working with actors and maximizing production values are stressed. Studio and exterior location shoots are included. Semester Hours: 3. Prerequisite: FILM 1050, 2060, BA TFVP majors, minors. concurrently. Corequisite: FILM 2150.

FILM 2060 - Film and Video Lighting and Grip. Provides an understanding of lighting theory and tools and techniques for lighting for studio and location video and film production. Topics include lighting equipment (lights, stands, nets, flags, grids, diffusion, light meters and wavefore). Lighting aesthetics is addressed in interior, exterior, studio, and location settings. Semester Hours: 3. Prerequisite: FILM 1050 and FILM 1100 or permission of instructor.

FILM 2090 - Production Management Techniques. Teaches students various aspects of planning, scheduling and managing both theatre and film productions. There will be lectures, planning exercises, demonstrations and critiques along with theatre and film attendance. Students will plan a event in their field of interest. Semester Hours: 3. Prerequisite: BA TFVP majors, minors.

FILM 2150 - Film and Video Post-Production II. Students edit the projects filmed in FILM 2000. Cutting for narrative and storytelling are stressed. Importation of sound and visual effects files are covered. Students use professional non-linear digital editing software. Semester Hours: 3. Prerequisite: FILM 1050, THTR/FILM 1100, Theatre/Film majors and minors or permission of instructor.

FILM 2500 - Introduction to Screenwriting for Film and Television. Addresses the basic elements of the craft of creating a script for film or television. Idea generation, character, scene setting, genre conventions and three act structure are addressed. Semester Hours: 3. Prerequisite: Theatre/Film majors and minors or permission of instructor. Note: ENGL 1020, ENGL 2030 or ENGL 2154 are recommended.

FILM 2640 - Introduction to Digital Editing. Introduces digital editing tools. This course uses various programs as the platform to explore the fundamentals of non-linear digital editing, including digitizing, compression, input, output and software integration. Semester Hours: 3. Prerequisite: THTR 1100 or FILM 1100.

FILM 3100 - History of Film Production I. Surveys international film history from a production perspective from the origins of the medium to the development of sound. Semester Hours: 3.

FILM 3111 - Shooting Action and Physical Effects. Examines techniques for shooting action based on the needs of the editor. A workshop for production projects. This course analyzes films, storyboard and shoot projects designed for specific outcomes such as: chase, hand

combat and car chases. Semester Hours: 3. Prerequisite: Four college-level courses in film/video production and post-production. (For TFVP majors only).

FILM 3150 - History of Film Production II. Surveys international film history from a production perspective, beginning with the introduction of sound to the present. Semester Hours: 3.

FILM 3207 - Directing Workshop. Students work on scene studies rehearsed outside and presented in class. Emphasis is on capturing performance: working with actors and cameras to reveal character, deliver narrative and illuminate subtext. Semester Hours: 3. Prerequisite: Theatre/Film majors, minors or permission of instructor, THTR 1100 or FILM 1100 and THTR 1611 or FILM 1611, 6 college-level courses in film/video production, postproduction and acting.

FILM 3222 - The Film and Video Business. Covers feature film production, finance, distribution as well as an overview of broadcast, cable, industrial, commercial, internet, music video production, finance, distribution, organization and legal issues. Semester Hours: 3. Prerequisite: THTR 1100 or FILM 1100 and majors, minors or permission of instructor.

FILM 3264 - Advanced Digital Effects. Cinematography and Post Productions majors 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. Semester Hours: 3. Note: Other majors by permission of instructor.

FILM 3270 - Film/Video Production III. Involves the scripting, planning, casting, storyboarding, and production of individual student projects to be shot on film or digital video. Emphasis is on storytelling and professional techniques. Semester Hours: 3. Prerequisite: Six college-level courses in film/video production, postproduction and scriptwriting. For TFVP majors only.

FILM 3275 - Film and Video Postproduction III. Involves cutting the individual projects shot on film or video in FILM 3270. Emphasis on outputting a professional quality narrative product with full audio and visual sweetening. Semester Hours: 3. Prerequisite: FILM 3270 (Majors only).

FILM 3300 - Advanced Lighting for Film and Video. Students master film and video set lighting techniques for studio and locations. Focus is on art, technology, methodology, exposure, instruments, rigging and terminology. Semester Hours: 3. Prerequisite: Six college-level courses in film/video production and postproduction.

FILM 3350 - Editing Aesthetics. Students will study samples of existing films and their own work for artistic and visual merits. Students will edit several short films and learn the rules for editing as well as rhythm and pacing. Semester Hours: 3. Prerequisite: FILM 1050/1051.

FILM 3400 - Intermediate Screenwriting. Emphasis is on character, conflict and structure. Discussion of theme, motifs, subplots and story tone are also discovered. Students complete the first act and a 25 page feature film treatment or the first draft of a feature length script. Semester Hours: 3. Prerequisite: FILM 2500 and majors only.

FILM 3820 - Production Process. Part of four course sequence; students gain theoretical and practical applications of the tools, vocabulary and experience in a variety of presentations. Students participate as crewmembers for both theatrical and film events. They maintain a record/portfolio of their participation. Semester Hours: 2. Prerequisite: Majors, minors and permission of instructor. Note: Must be taken 2 times for BA degree.

FILM 3838 - Applications Seminar. Reflection on the intellectual competencies, artistic capabilities and skill sets gained throughout student's academic career. Coursework in this seminar includes investigation of career opportunities and trends in theatre. This course is designed to be an alternative if FILM 3939-Internship, is not appropriate or available. Semester Hours: 1 to 3. Prerequisite: Senior standing.

FILM 3910 - BA Junior Project. This course consists of structured work and independent work sessions assisting students with portfolio and career path. Students will be required to work on planning an event, either in theatre or film and produce professional portfolio for faculty

review. Semester Hours: 1. Prerequisite: BA majors, minors, junior status or permission of instructor. Cross-listed with: THTR 3910.

Note: Not for BFA majors.

FILM 3939 - Cooperative Education. Semester Hours: 1 to 3.

FILM 4209 - Advanced Production Management. Workshop or project-based class. Students serve as Production Manager or First Assistant Director on advance student or professional projects while refining their mastery of scheduling and budgeting software. Semester Hours: 3. Prerequisite: FILM 2010 or FILM 2090, Six college-level courses in film or video production and postproduction.

FILM 4270 - Film and Video Production IV. The final production course of the BFA program geared to creating a show reel for employment in the industry. Students plan, cast, budget, and shoot a final professional quality film or video to be edited in FILM 4280 the following semester. Semester Hours: 3. Prerequisite: FILM 3270 and FILM 3275.

FILM 4280 - Film and Video Postproduction IV. Students cut Production IV projects on high-end digital non-linear edit systems incorporating advanced audio and effects, resulting in a final professional quality project. Semester Hours: 3. Prerequisite: FILM 4270 (For TFVP majors only).

FILM 4350 - Analysis of Contemporary Motion Picture Editing Techniques. Focuses on analysis of editing techniques, through viewing of contemporary feature films and episodic television exemplars. The techniques of cutting for character, story, action, comedy and genre is covered citing the work of the top editors of our time. Semester Hours: 3. Prerequisite: Junior standing. Cross-listed with: FILM 5350.

FILM 4400 - Advanced Screenwriting. Students complete a full-length feature screenplay. Particular attention are paid to three-act structure, dialogue, believable characterization, and the polishing of a saleable screenplay or teleplay. Semester Hours: 3. Prerequisite: FILM 3400 or permission of the instructor.

FILM 4500 - Writing for Episodic Television. Explores the constructive and critical process of writing prime-time dramatic television. Each student is guided through a series of viewings, readings, and writing exercises culminating with the written completion of an episode from a current television series. Semester Hours: 3. Prerequisite: FILM 2500 or permission of instructor. Cross-listed with: FILM 5500.

FILM 4600 - Topics in Film. Specialized topics in film and video. Semester Hours: 1 to 3. Prerequisite: Permission of instructor.

FILM 4720 - Reel Prep. Students will work with a faculty member to prepare a sample of the student's creative work and projects in an 'industry standard' format used to secure employment. This work is referred to as an artists 'reel'. Semester Hours: 1. Prerequisite: FILM 4270. Corequisite: Film 4280. Note: It is suggested to take this course during your final semester.

FILM 4840 - Independent Study: Film. Semester Hours: 1 to 3.

FILM 4910 - BA Senior Project. This course consists of structured and independent sessions of advanced work assisting senior students with portfolios and careers. Students will work on planning an event, either in theatre or film and will produce a portfolio to professional standards for faculty review. Semester Hours: 1. Prerequisite: Majors, minors, FILM 3910 and permission of instructor. Cross-listed with: THTR 4910.

FILM 5350 - Analysis of Contemporary Motion Picture Editing Techniques. Focuses on analysis of editing techniques, through viewing of contemporary feature films and episodic television exemplars. The techniques of cutting for character, story, action, comedy and genre is covered citing the work of the top editors of our time. Semester Hours: 3. Cross-listed with: FILM 4350.

FILM 5500 - Writing for Episodic Television. Explores the constructive and critical process of writing prime-time dramatic television. Each student is guided through a series of viewings, readings, and writing exercises culminating with the written completion of an episode from a current television series. Semester Hours: 3. Prerequisite: FILM 2500 or permission of instructor. Cross-listed with: FILM 4500.

FILM 5600 - Topics in Film. Specialized topics in film and video. Semester Hours: 1 to 3. Prerequisite: Permission of instructor.

FILM 5840 - Independent Study: Film. Semester Hours: 1 to 3.

Fine Arts: F A (Arts & Media)

FNCE: Finance (Business)

FNCE 3000 - Principles of Finance. This course provides an introduction to financial markets and institutions, interest rates and the time value of money, principles of security valuation, concepts of risk and return, costs of capital and capital budgeting. Semester Hours: 3. Prerequisite: MATH 1070 or MATH 1110, MATH 1080, DSCI 2010, ACCT 2200, ECON 2012, ECON 2022 and junior standing. Note: This course is required in the Business Core. A grade of 'C' or better must be earned to receive credit as a core course and to take subsequent courses for which it is a prerequisite.

FNCE 3500 - Management of Business Capital. Students learn the basic principles of managing capital in the business firm. Topics include financial statement analysis, management of working capital, theory and management of capital structure and cost of capital. A grade of a 'C' or better must be earned to receive credit for this course and to take subsequent courses for which it is a prerequisite. Semester Hours: 3. When Offered: *Fall, Spring, Summer*. Prerequisite: MATH 1080, DSCI 2010, ACCT 2220, FNCE 3000 with a grade of 'C' or better.

FNCE 3939 - Internship/Cooperative Education. Supervised experiences involving the application of concepts and skills in an employment situation. Semester Hours: 1 to 3. Prerequisite: Senior standing and approval of Business advisor.

FNCE 4330 - 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 a 'C' or better must be earned to receive credit for the course, and to take subsequent courses for which it is a prerequisite. Semester Hours: 3. Prerequisite: FNCE 3500 (and its prerequisites) and FNCE 4330, FNCE 4350 (which may be taken concurrently).

FNCE 4350 - 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 operations of financial markets and institutions. A grade of a '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. Semester Hours: 3. When Offered: *Fall, Spring*. Prerequisite: FNCE 3000.

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. A grade of a 'C' or better must be earned to receive credit for the and to take subsequent courses for which it is a prerequisite. Semester Hours: 3. When Offered: *Fall, Spring, Summer*. Prerequisite: FNCE 3000.

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 a 'C' or better must be earned to receive credit towards graduation. Semester Hours: 3. Prerequisite: FNCE 3000, FNCE 3500 and FNCE 4330 all with a grade of 'C' or better and senior standing.

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. Semester Hours: 3. Prerequisite: ISMG 2050, FNCE 3000 and ISMG 3000 (or ACCT 3054) with a grade of 'C' or better. Cross-listed with: ISMG 4750.

FNCE 4840 - Independent Study. Semester Hours: 1 to 8.

FNCE 4950 - Special Topics. Research methods and results, special topics and professional development in finance. Semester Hours: 3. Prerequisite: Prerequisites vary according to topic and instructor requirements.

FNCE 5939 - Internship or Cooperative Education. Supervised experiences involving the application of concepts and skills in an employment situation. Semester Hours: 1 to 3. Prerequisite: 21 semester hours and 3.5 GPA.

FNCE 6290 - Quantitative Methods for Finance. This course provides 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. Semester Hours: 3. Note: Students cannot receive credit for both FNCE 6290 and BUSN 6530.

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). Semester Hours: 3. Prerequisite: BUSN 6620 (may be taken concurrently if student has previous economics coursework).

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. Semester Hours: 3. Prerequisite: BUSN 6640.

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. Semester Hours: 3. Prerequisite: BUSN 6620 and BUSN 6640.

FNCE 6340 - Security Analysis and Firm Valuation. Focuses on the application of fundamental analysis techniques to the diagnosis of firms' financial condition; the valuation of publicly traded firms and privately owned businesses; and the valuation of debt and equity securities. These techniques are useful in a variety of situations such as qualifying firms for bank loans or partnerships, valuing firms for mergers and acquisitions and decisions, and the valuation of stocks for investment decisions. Semester Hours: 3. Prerequisite: BUSN 6640 and FNCE 6330.

FNCE 6350 - Financial Innovations. Covers financial innovations in fixed income securities, including zero coupon bonds, floating rate instruments and inflation indexed bonds, asset backed securities, structured notes, collateralized mortgage obligations, and the use of interest rate swaps in hedging. The student learns about the markets and pricing of these securities, and how they are used to manage interest rate risk. The course prepares the student for careers in corporate treasury management, structured financing, swaps trading, and mortgage backed securities. Semester Hours: 3. Prerequisite: BUSN 6640 and FNCE 6300.

FNCE 6360 - Management of Financial Institutions. Presents an analysis of the structure, markets, regulation, chartering of commercial banks and other financial institutions. Topics include problems and policies of the internal management of funds, loan practices and procedures,

investment behavior, deposit and capital adequacy, liquidity and solvency. Analytical methodology for these problems is developed. (Case format). Semester Hours: 3. Prerequisite: BUSN 6640.

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. 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. Semester Hours: 3. Prerequisite: BUSN 6640. Cross-listed with: INTB 6372.

FNCE 6372 - Business Forecasting. Modern businesses use forecasts in marketing, finance, accounting, human resources management and supply chain and production management decision making. This course focuses on practical application of forecasting techniques, choosing and comparing appropriate methods and applying the results to the business application. Semester Hours: 3. Prerequisite: BUSN 6530 or FNCE 6290. Cross-listed with: BUSN 6824 and DSCI 6230.

FNCE 6380 - Futures and Options. 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 hedge risks. 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. Option trading strategies such as bull and bear spreads, straddles, strangles, and other popular strategies are discussed. Semester Hours: 3. Prerequisite: BUSN 6640 and FNCE 6330.

FNCE 6382 - Survey of Financial Derivatives: Futures, Options and Swaps. This course provides an overview of financial derivatives and their markets. It covers futures, options, interest rate and currency swaps, convertible bonds, asset-backed securities and mortgage derivatives. Diagrams and simple mathematics are used to show how these instruments work and how they are used in corporate financing. This course is a less technical presentation of the topics covered in both FNCE 6350, Financial Innovations and FNCE 6380, Futures and Options. The course is suitable for both MBA and MS-Finance students. However, MS-Finance students who are interested in the deeper knowledge necessary for trading derivatives are advised to take either or both FNCE 6350 and FNCE 6380. Semester Hours: 3. Prerequisite: BUSN 6640.

FNCE 6410 - Real Options and Investment Decisions Under Uncertainty. This course introduces the student to the concepts of options and option pricing as applied to the problem of making capital investment decisions for a firm. Firms often face investment decisions that include opportunities and options for future strategy shifts and the adoption of new projects. The methods of real options provide a mechanism to analyze the values of these future opportunities. With this course, the student will learn about the theory and application of real options and learn how to identify, analyze and evaluate real options that are imbedded in many corporate investment situations. Semester Hours: 3. Prerequisite: BUSN 6640. (Good mathematical and analytical skills are needed). Note: This course will fulfill the requirement for an options course in the MS-Finance program.

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. Semester Hours: 3. Prerequisite: BUSN 6640. Cross-listed with: INTB 6411. Note: Students cannot receive credit for both FNCE 6411 and INTB 6411.

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. Semester Hours: 3. Prerequisite: BUSN 6640.

FNCE 6430 - Practical Equity Analysis & Portfolio Management. This class focuses on the application of the concepts of portfolio theory and security valuation to the tasks of analyzing security investments and managing a security portfolio. Topics include the economic and financial analysis of the industry, understanding how financial statements are used in security analysis, security valuation methods and portfolio management. Semester Hours: 3. Prerequisite: BUSN 6640 and FNCE 6330.

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. Semester Hours: 3. Prerequisite: BUSN 6640.

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 student are exposed to the uses of a variety of computer software packages that can be used for modeling financial planning problems. Semester Hours: 3. Prerequisite: BUSN 6640, knowledge of computer and spreadsheet software.

FNCE 6800 - Special Topics. Experimental course offered irregularly for the purpose of presenting new subject matter in finance. Semester Hours: 3. Prerequisite: BUSN 6640. Note: Prerequisites vary depending upon topics covered. (Consult the 'Schedule Planner' for semester offerings).

FNCE 6840 - Independent Study. Instructor approval required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Semester Hours: 1 to 8.

FNDS: Foundations (Education)

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. Semester Hours: 3.

FNDS 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. Semester Hours: 3.

FNDS 5100 - Education in Other Countries. Comparative examination of the political, historical, philosophical, sociological, economic, religious and other foundational aspects of education in several selected countries. Semester Hours: 3.

FNDS 5410 - History and Philosophy of Modern Education. Examines Western intellectual heritage from the 16th to the 20th century; tracing corresponding development of educational theory and practice and its continuing impact on modern society. Semester Hours: 3.

FNDS 5420 - 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. Semester Hours: 3. Cross-listed with: FNDS 7420.

FNDS 5500 - Contemporary Philosophies of Education. Provides an examination of selected contemporary philosophies and their impact on educational thought and practice. Students are challenged to determine their own educational philosophy, while yet recognize and respect the variety of beliefs of educators. Students are asked to re-examine current educational issues from within the perspectives of different philosophies. Semester Hours: 3. Cross-listed with: FNDS 7500.

FNDS 5800 - Seminar: Foundations of Education. An in-depth exploration of topics, issues, and ideas largely generated by students through their other course experiences in foundations. Semester Hours: 3. Prerequisite: At least one graduate level course in foundations and permission of instructor.

FNDS 5810-5814 - Special Topics. Variable credit courses designed to deal with specific areas of content not covered in-depth in other program offerings; e.g., the social structure of the classroom. Semester Hours: 1 to 3.

FNDS 5840 - Independent Study. Semester Hours: 1 to 4.

FNDS 5920 - Readings in Foundations of Education. Critical examination of very recent publications in the field of foundations: books and professional journal publications. Semester Hours: 3. Prerequisite: At least one graduate-level course in foundations and permission of instructor.

FNDS 6350 - Seminar: Foundations of Education. Semester Hours: 3.

FNDS 6600 - Special Topics: Laboratory in Educational Leadership and Innovation. Laboratories are organized by professors to engage students in on-going research programs. They provide opportunities for students to extend and apply knowledge and skills developed in course work. The laboratories enable students to complete portfolio requirements and work on doctoral dissertations. Semester Hours: 1 to 6. Prerequisite: Admission to M.A. or PhD programs; permission of instructor. Cross-listed with: FNDS 7600.

FNDS 6920 - Readings in Foundations of Education. Semester Hours: 3.

FNDS 6950 - Master's Thesis. Semester Hours: 3.

FNDS 7370 - Dissertation Seminar. Semester Hours: 1.

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. Semester Hours: 3. Cross-listed with: FNDS 5420.

FNDS 7500 - Contemporary Philosophies of Education. Provides an examination of selected contemporary philosophies and their impact on educational thought and practice. Students are challenged to determine their own educational philosophy, while yet recognize and respect the variety of beliefs of educators. Students are asked to re-examine current educational issues from within the perspectives of different philosophies. Semester Hours: 3. Cross-listed with: FNDS 5500.

FNDS 7600 - Special Topics: Laboratory in Educational Leadership and Innovation. Laboratories are organized by professors to engage students in on-going research programs. They provide opportunities for students to extend and apply knowledge and skills developed in course work. The laboratories enable students to complete portfolio requirements and work on doctoral dissertations. Semester Hours: 1 to 6. Prerequisite: Admission to M.A. or PhD programs; permission of instructor. Cross-listed with: FNDS 6600.

FNDS 7840 - Independent Study. Semester Hours: 1 to 4.

FNDS 7930 - Teaching Internship in Foundations of Education. Semester Hours: 3.

FNDS 8990 - Doctor of Philosophy Dissertation. Semester Hours: 3 to 10.

FNDS 8991 - Doctor of Education Dissertation. Semester Hours: 3 to 10.

Check for updates at <http://courses.cudenver.edu>.

FR: French (Liberal Arts and Sciences)

FR 1000 - Introduction to Cultures of the French-Speaking World: AH1. 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. Semester Hours: 3.

FR 1010 - Beginning French I. Basic grammatical and syntactic structures are introduced, together with an elementary vocabulary and cultural items that allow the student to carry on simple conversations in French. Semester Hours: 5. 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.

FR 1020 - Beginning French II. (Continuation of FR 1010.) More complex grammatical structures are introduced, and literary and cultural readings are added. Elementary vocabulary and cultural awareness are expanded to enable the student to carry on more complicated conversations. Semester Hours: 5. Prerequisite: FR 1010 with a grade of 'C' (2.0) or higher. 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.

FR 1111 - Freshman Seminar. Semester Hours: 1 to 3.

FR 2110 - Intermediate French I: Grammar Review, Reading and Composition. Designed to further develop all the language skills, with particular emphasis on reading and writing, and to further continue students' introduction to French culture. Students review grammar and vocabulary, read and discuss *Le Petit Prince*, and express their reactions to the text both orally and in writing. Semester Hours: 3. Prerequisite: FR 1020 with a grade of 'C' (2.0) or higher. 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.

FR 2120 - Intermediate French II: Grammar Review and Conversation. Designed to further develop all the language skills, with particular emphasis on speaking, and to continue students' introduction to French culture. Students review grammar and vocabulary, read and discuss short cultural texts and participate in oral activities intended to increase communication skills. Semester Hours: 3. Prerequisite: FR 2110 with a grade of 'C' (2.0) or higher. 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.

FR 2939 - Internship/Cooperative Education. Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: 15 hours of 2.75 GPA.

FR 2995 - Travel Study: Amiens, France. An intensive language and culture course, taught in Amiens, France. Students are enrolled in either beginning, intermediate, or advanced courses at the University of Picardie/Jules Verne. Afternoon sessions and weekends include excursions to Paris, the northern coasts, lectures, movies, business tours, discussions, and field trips. Register through the Office of International Education. Semester Hours: 3 to 6. Prerequisite: FR 2110.

FR 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. Semester Hours: 3. Prerequisite: FR 2120 or equivalent. 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.

FR 3020 - Oral Practice. Conversation course, using dialogues, debates, small-group discussion, and short oral presentations to improve fluency in spoken French and to build vocabulary. Discussions center around current issues. Semester Hours: 3. Prerequisite: FR 2120 or equivalent. Note: Students with native or near-native-level proficiency will not be allowed to take FR 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.

FR 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. Semester Hours: 3. Prerequisite: FR 2120 or equivalent. Note: May be taken before or after FR 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.

FR 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. Semester Hours: 3. Prerequisite: FR 2120 or equivalent. Note: May be taken before or after FR 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.

FR 3082 - Introduction To Translation. Introduces the methodology and practice of written translation from English to French. Thorough analysis of source texts precedes translation into target language. Semester Hours: 3. Prerequisite: FR 3050, 3060 or equivalent. 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.

FR 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. Semester Hours: 3. Prerequisite: FR 2120 or equivalent. Note: May be taken before or after FR 3122.

FR 3120 - French Cultural Identities: Myths and Realities. The self-assured demeanor of the average French man or woman both attracts and confounds. In fact, a French person's behavior—or that of the French government—can seem impossible to decode if not understood within an authentically French context. This course examines that context and explores how the French view everyday life. Includes analysis of classic French films. Semester Hours: 3. Prerequisite: FR 2120 or equivalent.

FR 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. Semester Hours: 3. Prerequisite: FR 2120 or permission of instructor. Note: May be taken before or after FR 3112.

FR 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. Semester Hours: 3. Prerequisite: FR 2120 or equivalent.

FR 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. Semester Hours: 3. Prerequisite: FR 2120 or equivalent.

FR 3840 - Independent Study. Semester Hours: 1 to 3.

FR 3939 - Internship/Cooperative Education. Semester Hours: 1 to 3.

FR 3970 - Special Topics. Varying topics in French and Francophone language, literature and culture appropriate to the 3000 level, not otherwise covered by regular courses. Semester Hours: 3. Prerequisite: FR 2120 or equivalent. Note: May be taken more than once, provided that the topic is different each time.

FR 3995 - Travel Study: Amiens, France. An intensive language and culture course, taught in Amiens, France. Students are enrolled in either beginning, intermediate, or advanced courses at the University of Picardie/ Jules Verne. Afternoon sessions and weekends include excursions to Paris, the northern coasts, lectures, movies, business tours, discussions, and field trips. (Register through the Office of International Education.). Semester Hours: 3. or 6. Prerequisite: FR 2120 or equivalent.

FR 4010 - Advanced Composition: Stylistics. Focuses on improvement of writing skills and development of the student's ability to compose logically and convincingly. The writing styles to be studied include: narration, description, portrait, persuasive essay and report. Semester Hours: 3. Prerequisite: FR 3050 or 3060 plus one other 3000-level French course or permission of instructor.

FR 4050 - Advanced French for Business. Concentrates on the technical language necessary to meet the economic and commercial needs of the modern world. Prepares students for the practical certificate of business and economic French of the Paris Chamber of Commerce. Semester Hours: 3. Prerequisite: FR 3050 or 3060 plus one other 3000-level French course or permission of instructor. 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.

FR 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. Semester Hours: 3. Prerequisite: Two 3000-level courses or permission of instructor. Note: May be taken before or after FR 4210.

FR 4210 - French Civilization - Twentieth and Twenty-First Centuries. (Continuation of FR 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. Semester Hours: 3. Prerequisite: Two 3000-level courses or permission of instructor. Note: May be taken before or after FR 4200.

FR 4310 - Seventeenth Century Literature. An in-depth study of the century considered to be the pinnacle of French theatre. Includes plays by Racine, Moliere and Corneille, as well as poetry by LaFontaine and Boileau. Semester Hours: 3. Prerequisite: FR 3112 or 3122 plus one other 3000-level French course or permission of instructor.

FR 4360 - Eighteenth Century Novel, Theater and Poetry. Studies several novels and plays characteristic of the 18th century as well as some of the more famous poems. Includes Diderot, Rousseau, Voltaire, Marivaux and Laclos. Semester Hours: 3. Prerequisite: FR 3112 or 3122 plus one other 3000-level French course or permission of instructor.

FR 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. Semester Hours: 3. Prerequisite: FR 3112 or 3122 plus one other 3000-level French course or permission of instructor. Cross-listed with: FR 5430.

FR 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. Semester Hours: 3. Prerequisite: FR 3112 or 3122 plus one other 3000-level French course or permission of instructor. Cross-listed with: FR 5480.

FR 4490 - Twentieth Century French Theater. Surveys the major movements in French literature of the 20th century as represented in the theater arts. Such authors as Jarry, Artaud, Apollinaire, Giraudoux, Sartre, and Beckett are discussed. Semester Hours: 3. Prerequisite: FR 3112 or 3122 plus one other 3000-level French course or permission of instructor.

FR 4500 - Black Literature of the French-Speaking World. Black poetry, drama, and novel of the French-speaking world in the 20th century. Semester Hours: 3. Prerequisite: FR 3112 or 3122 plus one other 3000-level French course or permission of instructor.

FR 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. Semester Hours: 3. Prerequisite: FR 3112 or 3122 plus one other 3000-level French course or permission of instructor. Cross-listed with: FR 5510 and WGST 4511.

FR 4600 - History of the French Language. Studies phonological, morphological, and syntactic changes in the language of Gaul from Latin to modern French. Semester Hours: 3. Prerequisite: FR 3010 and FR 3050 or FR 3060 or permission of instructor. Cross-listed with: FR 5600.

FR 4840 - Independent Study. Semester Hours: 1 to 3.

FR 4970 - Special Topics. Varying topics in French and Francophone language, literature and culture appropriate to the 4000 level, not otherwise covered by regular courses. Semester Hours: 3. Prerequisite: FR 2120 or equivalent. Note: May be taken more than once, provided that the topic is different each time.

FR 4995 - Travel Study Topics. For students doing travel study in France; register through the Office of International Education. Semester Hours: 1 to 15 Cross-listed with: FR 5995.

FR 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. Semester Hours: 3. Prerequisite: Graduate standing in French.

FR 5210 - French Civilization - Twentieth and Twenty-First Centuries. (Continuation of FR 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. Semester Hours: 3. Prerequisite: Graduate standing in French.

FR 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. Semester Hours: 3. Prerequisite: Graduate standing in French. Cross-listed with: FR 4430.

FR 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. Semester Hours: 3. Prerequisite: Graduate standing in French. Cross-listed with: FR 4480.

FR 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. Semester Hours: 3. Prerequisite: FR 3112 or 3122 plus one other 3000-level French course or permission of instructor. Cross-listed with: FR 4510 and WGST 4511.

FR 5600 - History of the French Language. Studies phonological, morphological, and syntactic changes in the language of Gaul from Latin to modern French. Semester Hours: 3. Prerequisite: Graduate standing in French. Cross-listed with: FR 4600.

FR 5840 - Independent Study. Semester Hours: 1 to 3.

FR 5995 - Travel Study Topics. For students doing travel study in France; register through the Office of International Education. Semester Hours: 1 to 15 Cross-listed with: FR 4995.

GEMM: Global Energy Management (Business)

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. Semester Hours: 3.

GEMM 6100 - Global Energy Economics and Geography.

Introduction to managerial tools of trade including energy geo-economic. Topics discussed are: world energy markets, demand, supply, refining, marketing, forecasting, national v. international oil companies, transportation. An introduction to environmental economics will help connect energy industry to sustainable work practices, which include geographic distribution and political and governmental systems associated with the resources. Semester Hours: 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. Semester Hours: 3.

GEMM 6210 - Land Management and Energy 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. Semester Hours: 3.

GEMM 6300 - Renewable and Alternative Energy: Opportunities & Challenges. 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 exist for the establishment of these new energy sources to become viable in the industry. Semester Hours: 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. Semester Hours: 3.

GEMM 6410 - People Management in the Global Energy Environment. Explains with 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. Semester Hours: 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. Semester Hours: 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. Semester Hours: 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. Semester Hours: 3.

GEMM 6470 - Energy Marketing. 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. Semester Hours: 3.

GEMM 6500 - Energy Accounting in 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. Semester Hours: 3.

GEMM 6600 - Financial Management and Hedging in the Global Energy Markets. 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. Semester Hours: 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 manager's students will be able to assess alternative capital sources to achieve their strategic objectives. The course will introduce effective investor communication techniques. Semester Hours: 3.

GEMM 6620 - Energy Asset Management. 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. Semester Hours: 3.

GEMM 6630 - Production and Supply Chain Management for the Energy Industry. The course focuses on managing the flow of information, materials, services and money in a way that maximizes efficiently of capital expenditures and production. New methods and traditional techniques in the supply chain regarding the energy industry will be reviewed as well as equipment management, scheduling, control operations, inventory and other macro/micro-logistics. Semester Hours: 3.

GEOG: Geography (Liberal Arts and Sciences)

GEOG 1102 - World Regional Geography: SS2. Analysis of the relationships of man and the landscape based on geographic distributions in the world. Semester Hours: 3.

GEOG 1111 - Freshman Seminar. Semester Hours: 1 to 3.

GEOG 1202 - Introduction to Physical Geography: SC2. 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. Semester Hours: 3.

GEOG 1302 - Introduction to Human Geography. Systematic introduction to basic concepts and approaches in human geographic analysis. Semester Hours: 3.

GEOG 1332 - Topics in Science. A series of five-week modules on various topics in physical geography. Section 001. Violent Storms. Analysis of the causes, characteristics, and regional patterns of thunderstorms, tornadoes and hurricanes, emphasizing the hazards associated with each type of storm. Section 002. Elementary Surveying. Introduces the various techniques of running a traverse, location of points by intersection and resection, determination of distance by pacing, chaining, stadia and trigonometry and carrying of elevations. Section 003. Basic Navigation. Introduces the principles of navigation using the sun as the celestial body. Emphasis is on determining latitude and longitude at solar noon. Section 004. Earthquakes. The characteristics, causes, and results of earth movements along faults. Section 005. Waves and Beaches. Analysis of wind-generated waves in the open ocean and the changes that occur as waves enter shallow water, forming surf. The tides and seismic sea waves are discussed for comparison. Section 006. Rivers and Flood Plains. Introduces the nature of stream channels and stream landscapes, with emphasis on the problems associated with man's occupation of such landscapes. Section 007. World Food and Hunger. Analysis of the world food problem with emphasis on the nutritional characteristics of major foods, the physical factors affecting food production, and the potential of the world's land for producing food. Section 008. Volcanoes. Why do some volcanoes erupt and some flow? Why do they occur where they do? How do they affect the environment and man? We discuss these aspects and other characteristics of volcanoes in this course section. Semester Hours: 1.

GEOG 1602 - Introduction to Urban Studies: SS2. Surveys the process of urbanization, emphasizing the development of American cities and using Denver as an example. Topics covered include the evolution of metropolitan form and land use patterns, cultural landscape formation, city planning and architectural design, and urban social and policy issues. Semester Hours: 3.

GEOG 2202 - Natural Hazards: SS2. Surveys those physical phenomena that often cause substantial damage when they occur in areas of human settlement. Semester Hours: 3.

GEOG 2939 - Internship/Cooperative Education. Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: 15 hours of 2.75 GPA.

GEOG 3080 - 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. Semester Hours: 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. Semester Hours: 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. Semester Hours: 3.

GEOG 3130 - Central America and the Caribbean. Surveys the physical environment and cultural development of Central America and the Caribbean Islands. Semester Hours: 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. Semester Hours: 3.
GEOG 3150 - Middle East. Physical, cultural, and economic approach to the arid lands of the Middle East, including Arab land of the Sahara. Semester Hours: 3.

GEOG 3160 - Geography of China. Geographic survey of the physical, cultural, and economic features characterizing the geography of China. Semester Hours: 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. Semester Hours: 3. Prerequisite: GEOG 1202 or permission of instructor.

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. Semester Hours: 3. Prerequisite: GEOG 1202 and/or GEOG 3232 or permission of instructor. Note: Taught in a seminar style with students giving presentations and reports on their findings about a given region.

GEOG 3302 - Water 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. Semester Hours: 3.

GEOG 3411 - Globalization and Regional Development. Addresses global political-structuring 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. Semester Hours: 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. Semester Hours: 3. Prerequisite: GEOG 1302 or 3411.

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. Semester Hours: 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. Semester Hours: 3. Prerequisite: GEOG 1302 or 2411.

GEOG 3840 - Independent Study. Semester Hours: 1 to 3.

GEOG 3939 - Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: Junior standing and 2.75 GPA.

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). Semester Hours: 3. Prerequisite: Vary with each topic, but no less than six hours in relevant social or physical science.

GEOG 4000 - Planning Methods I. Focuses on the application of statistical, quantitative, and mathematical techniques and computer applications for urban and regional planning and policy development. Major topics include types of data, sampling, basic probability distributions, hypothesis testing, regression and correlation, and an introduction to multivariate and cluster analysis. Applications in

planning and development are emphasized. Semester Hours: 3. Cross-listed with: URP 5510.

GEOG 4010 - Biogeochemical Cycles. Topics include an introduction to ecosystem structures and biosphere functions through the lens of soil ecology. The hydrologic cycle and global cycles of sulfur, nitrogen, and carbon are reviewed as they especially relate to climate variability. Semester Hours: 3. Prerequisite: GEOG 1202 or GEOG 3232 or permission of instructor. Cross-listed with: GEOL 4000, ENV5 5000.

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. Semester Hours: 3. Prerequisite: GEOG 1202 and 3232 or permission of instructor. Cross-listed with: ENV5 5020, GEOL 4020.

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. Semester Hours: 3. Prerequisite: GEOG 3080 or permission of instructor. Cross-listed with: GEOG 5060, GEOL 4060, GEOL 5060.

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. Semester Hours: 3. Prerequisite: GEOG 4060/5060 or GEOL 4060/5060 or permission of instructor. Cross-listed with: GEOG 5070, GEOL 4070, 5070.

GEOG 4080 - Introduction to GIS. Introduces various aspects of geographic information systems (GIS), including justification, definition of hardware/software, database design, and data conversion. GIS is a computer-based mapping system providing a graphical interface to locational and relational attribute data on facilities and land. Includes hands-on use of a geographic information system workstation. Semester Hours: 3. Prerequisite: GEOG 3080 or permission of instructor. Cross-listed with: GEOG 5080.

GEOG 4081 - Introduction to 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. Semester Hours: 3. Prerequisite: GEOG 3080. Cross-listed with: GEOG 5081.

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. Semester Hours: 3. Prerequisite: GEOG 4080 or GEOG 5080 or permission of instructor. Cross-listed with: GEOG 5085.

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. Semester Hours: 3. Prerequisite: GEOG 4080 or GEOG 5080 or permission of instructor. Cross-listed with: GEOG 5090.

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. Semester Hours: 3. Prerequisite: GEOG 4080 or GEOG 5080, computer science background, or permission of instructor. Cross-listed with: GEOG 5095.

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. Semester Hours: 3. Prerequisite: URP 5530 or permission of instructor. Cross-listed with: GEOG 5220, URP 6651.

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. Semester Hours: 3. Prerequisite: GEOG 2202 or permission of instructor. Cross-listed with: GEOG 5230.

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. Semester Hours: 3. Prerequisite: GEOG 4080 or GEOG 5080, public health background, or consent of instructor. Cross-listed with: GEOG 5235, HBSC 7235.

GEOG 4240 - Principles of Geomorphology. Systematic study of rock structures, weathering, mass wasting, fluvial, wind, glacial, shoreline processes, and the landforms they produce. Semester Hours: 3. Prerequisite: Introductory college-level geology or physical geography. Cross-listed with: GEOL 4630.

GEOG 4260 - Natural Resource Planning and Management.

Considers methods for managing renewable and non-renewable resources using both legislative and economic controls. The role of technology, ideologies, and equity are discussed. Decision making techniques are applied to problems of resource and environmental management. The ability to allocate and control resource usage to ensure sustainability are discussed. Semester Hours: 3. Cross-listed with: URP 6653.

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. Semester Hours: 3. Prerequisite: ENVS 1042 or permission of instructor. Cross-listed with: GEOG 5265.

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. Semester Hours: 3. Prerequisite: GEOG 1202 or permission of instructor. Cross-listed with: GEOL 4270.

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. Semester Hours: 3. Cross-listed with: GEOG 5335.

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. Semester Hours: 3. Cross-listed with: GEOG 5350.

GEOG 4400 - Regional Economic Development. Examines the economies of metropolitan, rural, state, and national regions, placing each within the fabric of global relations that direct capital, manage productive activities, and govern prosperity's geography. Organized both sectorally and spatially, the course addresses key sectors of the emerging global economy, as well as the rationale of the 'entrepreneurial' state at the public-private interface. Posits institutional approaches and professional roles in the management of regional economies. Seeks in theory a template of regional change, and both the means and purpose of policy intervention. Finds in strategic planning an integration of developmental and environmental perspectives. Semester Hours: 3. Prerequisite: URP 5520 or permission of instructor. Cross-listed with: URP 6671.

GEOG 4630 - Transportation Planning I: Transport Network

Analysis. Examines several important aspects of the transport network: accessibility and connectivity of nodes and linkages and the volume and direction of the flow of a transport network. Descriptive, predictive, and planning methods and models discussed include graph theoretical measures, connectivity matrices, gravity model, abstract mode model, entropy-maximization, trip generation model and flow allocation models. Semester Hours: 3. Prerequisite: URP 5510 or permission of instructor. Cross-listed with: URP 6673.

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. Semester Hours: 3. Cross-listed with: GEOG 5640.

GEOG 4670 - Transportation Planning II: Urban Transportation Planning. Examines major issues of transportation in urban development, the urban transportation system, the relationship between land use planning and transportation planning, urban transportation planning processes and selected issues. Introduces the use of two state-of-the-art multi-modal transportation computer programs—EMME2 and TransCAD. Semester Hours: 3. Prerequisite: URP 6673. Cross-listed with: URP 6674.

GEOG 4770 - 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. Semester Hours: 3. Prerequisite: College algebra and GEOG 3080, or consent of instructor. Cross-listed with: ENVS 5600, GEOL 4770, 5770.

GEOG 4840 - Independent Study. Independent research primarily for undergraduate majors. Semester Hours: 1 to 3. Prerequisite: Permission of department.

GEOG 4940 - Senior Seminar. Introduces students to the professional literature in the field. Various professionals and faculty lecture about geography/planning research and careers. Semester Hours: 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. Semester Hours: 3. Prerequisite: GEOG 4940 and junior or senior standing.

GEOG 4990 - Special Topics. Semester Hours: 3.

GEOG 4995 - Travel Study. Rigorous yet flexible fieldwork-based experience exploring geographical and environmental phenomena in diverse world locations. Course begins with intensive regional and methodological introductions, followed by on-location field investigations in environmental analyses, cultural studies, GIS applications, tourism evaluation and/or hazards assessment. Semester Hours: 3 to 9. Prerequisite: GEOG 1202 and GEOG 1302, or permission of instructor. Cross-listed with: ENVS 4995, ENVS 5995, and GEOG 5995.

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. Semester Hours: 3. Prerequisite: GEOG 3080 or permission of instructor. Cross-listed with: GEOG 4060, GEOL 4060, 5060.

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. Semester Hours: 3. Prerequisite: GEOG 5060/4060 or GEOL 5060/4060 or permission of instructor. Cross-listed with: GEOG 4070, GEOL 5070, 4070.

GEOG 5080 - Introduction to GIS. Introduces various aspects of geographic information systems (GIS), including justification, definition of hardware/software, database design, and data conversion. GIS is a

computer-based mapping system providing a graphical interface to locational and relational attribute data on facilities and land. Includes hands-on use of a geographic information system workstation. Semester Hours: 3. Cross-listed with: GEOG 4080.

GEOG 5081 - Introduction to 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. Semester Hours: 3. Prerequisite: GEOG 3080. Cross-listed with: GEOG 4081.

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. Semester Hours: 3. Prerequisite: GEOG 4080 or GEOG 5080 or permission of instructor. Cross-listed with: GEOG 4085.

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. Semester Hours: 3. Prerequisite: GEOG 4080 or GEOG 5080 or permission of instructor. Cross-listed with: GEOG 4090.

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. Semester Hours: 3. Prerequisite: GEOG 4080 or GEOG 5080, computer science background, or permission of instructor. Cross-listed with: GEOG 4095.

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. Semester Hours: 3. Prerequisite: URP 5530 or permission of instructor. Cross-listed with: GEOG 4220, URP 6651.

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. Semester Hours: 3. Prerequisite: GEOG 2202 or permission of instructor. Cross-listed with: GEOG 4230.

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. Semester Hours: 3. Prerequisite: GEOG 4080 or GEOG 5080, public health background, or consent of instructor. Cross-listed with: GEOG 4235, HBSC 7235.

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. Semester Hours: 3. Prerequisite: ENVS 1042 or permission of instructor. Cross-listed with: GEOG 4265.

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. Semester Hours: 3. Cross-listed with: GEOG 4335.

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. Semester Hours: 3. Cross-listed with: GEOG 4350.

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. Semester Hours: 3. Cross-listed with: GEOG 4640.

GEOG 5840 - Independent Study. Section 1, economic; 2, physical; 3, urban; 4, social; 5, quantitative; 6, transportation. Semester Hours: 1 to 3.

GEOG 5939 - Internship/Cooperative Education. 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. Semester Hours: 1 to 6. Prerequisite: Graduate standing.

GEOG 5995 - Travel Study. Rigorous yet flexible fieldwork-based experience exploring geographical and environmental phenomena in diverse world locations. Course begins with intensive regional and methodological introductions, followed by on-location field investigations in environmental analyses, cultural studies, GIS applications, tourism evaluation and/or hazards assessment. Semester Hours: 3 to 9. Prerequisite: GEOG 1202 and GEOG 1302, or permission of instructor. Cross-listed with: ENVS 4995, ENVS 5995, and GEOG 4995.

GEOG 6840 - Independent Study. Independent research for graduate major students. Semester Hours: 1 to 3. Prerequisite: Permission of department.

GEOG 6950 - Master's Thesis. Semester Hours: 6.

GEOG 8990 - Doctor's Thesis. Semester Hours: 1 to 8.

GEOL: Geology (Liberal Arts and Sciences)

GEOL 1022 - History of Life. Non-technical study of fossils through time and their relationships to environments through earth history. Includes discussion of evolution and extinction events and current controversies. Semester Hours: 3.

GEOL 1072 - Physical Geology: Surface Processes: SC1. Introductory course in physical geology that covers surface processes and landforms, and includes one all-day field trip. Semester Hours: 4. Note: Required for geology majors.

GEOL 1082 - Physical Geology: Internal Processes: SC1. Introductory course in physical geology that covers internal processes and properties of the earth's interior, with plate tectonics as the underlying theme. Includes one all-day field trip. Semester Hours: 4. Note: Required for geology majors.

GEOL 1111 - Freshman Seminar. Semester Hours: 1 to 3.

GEOL 1115 - Earth Sciences Content. Covers content areas of undergraduate earth sciences. Topics include physical geology; historical geology; oceanography; meteorology; and astronomy. Semester Hours: 1 to 3.

GEOL 1202 - Introduction to Oceanography. Surveys modern scientific knowledge of the world's oceans. Intended for non-science students, the course offers a non-quantitative introduction to the major facts and principles of physical, chemical, biological, and geological oceanography. The impact of natural and anthropic events on the marine environment are included. Semester Hours: 3.

GEOL 1302 - Introduction to Astrogeology. Surveys the geology of the planets and their environments in space, including the origin and destiny of the universe. Intended for non-majors, the course provides an introduction to the geological origin, evolution, structure, and geomorphology of the planets. Semester Hours: 3.

GEOL 1400 - Geology of the National Parks. Combines lecture and laboratory exercises to help students interpret Earth history using the national parks as examples. Students learn to identify the common rocks and minerals, and how to interpret topographic and geological maps. Semester Hours: 3.

GEOL 1402 - Introduction to the Ice Ages. Surveys the natural history of earth's ice ages, the processes that led to paleoclimatic change,

environmental changes, and the effects on the geological earth. Included are topics in ocean-atmosphere influences, glaciers, glacial geology, influences on world flora and fauna, extinction of pleistocene mammal populations and the emergence of hominids. Semester Hours: 3.

GEOL 1840 - Independent Study. Semester Hours: 1 to 3.

GEOL 2939 - Internship/Cooperative Education. Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: 15 hours of 2.75 GPA.

GEOL 3011 - Mineralogy. Principles of mineralogy, including crystallography, crystal chemistry, and a systematic study of the more important nonsilicate and silicate minerals. Origins and occurrences of minerals. Semester Hours: 4. Prerequisite: Physical geology and college-level chemistry.

GEOL 3032 - Geology of Colorado. Introductory course focused on the geology of Colorado. The course is divided into two parts: the first half covers general principles of geology, and the second is devoted to the observation of rock types, structures, and geologic relationships in the field. Discussion of plate tectonics, rock formation, construction and interpretation of geologic maps, the geologic time scale, geologic provinces of Colorado, evolution of major landforms, formation and development of mineral resources of Colorado, and current topics in environmental geology. Semester Hours: 3.

GEOL 3100 - Current Perspectives on the Evolution of Consciousness and Culture. Studies of evolution traditionally regard morphology (anatomy)/behavior and mind/consciousness as separate fields that belong either in biology/paleontology or in psychology/philosophy. The 'middle ground' behavior, anthropology, social systems, is also treated separately in most cases. Recent approaches tend toward a more holistic view using unifying principles and 'laws of nature' that show similar processes (dissipative effects, information theory, development theory) operating across all fields. Examines the relationships and common threads between the physical anatomical evolution of organisms and their behavior perception and consciousness. Semester Hours: 3. Prerequisite: Introductory course in evolution (biology/paleontology), psychology, philosophy, anthropology or permission of instructor. Cross-listed with: PHIL 3100 and RLST 4280.

GEOL 3102 - Dinosaurs Past and Present. A broad-based, non-technical new look at the world's most popular prehistoric animals. Stresses the rapid and perennial growth of knowledge about dinosaurs and the relevance of such knowledge in the 20th century. Semester Hours: 3. Prerequisite: Introductory geology and/or biology are recommended.

GEOL 3231 - Introductory Petrology. Introduces classification, distribution, and origin of igneous, metamorphic, and sedimentary rocks, including their identification in hand-held specimens. Semester Hours: 4. Prerequisite: Physical geology and mineralogy.

GEOL 3411 - Introductory Paleontology. Studies invertebrate fossils, including a survey of the organic world and its history in the geological past. Includes an introduction to evolution and paleoecology, and discussion of the uses of fossils in geologic correlations. Semester Hours: 4. Prerequisite: Introductory geology-surface processes, or an introductory biology class.

GEOL 3415 - Museum Studies in Paleontology. A practical laboratory-based course covering aspects of museum studies related to paleontological collections. Students learn how to stabilize and prepare bones removed from fossil quarries; learn molding and casting techniques for bones and fossils; assist with the cataloging and curation of the collection; and participate in designing museum displays. Semester Hours: 3. Prerequisite: At least one science class. Cross-listed with: ELED 5480, SECE 5480.

GEOL 3418 - Field Paleontology. Introduces methods of paleontological field techniques, including care and maintenance of a late Jurassic dinosaur quarry, field conservation techniques, quarry map-making and surveying, paleontological sampling, and fossil extraction. Students also contribute to research and fossil collections at UC Denver. Semester Hours: 1. Prerequisite: At least one science class.

GEOL 3421 - Sedimentation and Stratigraphy. Introduces the principles of sedimentology and stratigraphy. Emphasis is on dynamic

processes within sedimentary environments and the resulting stratigraphic record. Semester Hours: 4. Prerequisite: GEOL 1082 or equivalent.

GEOL 3840 - Independent Study. Semester Hours: 1 to 3.

GEOL 3939 - Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: Junior standing and 2.75 GPA.

GEOL 4000 - Biogeochemical Cycles. Topics include an introduction to ecosystem structures and biosphere functions through the lens of soil ecology. The hydrologic cycle and global cycles of sulfur, nitrogen, and carbon are reviewed as they especially relate to climate variability.

Semester Hours: 3. Prerequisite: GEOG 1202 or GEOG 3232 or permission of instructor. Cross-listed with: GEOG 4010, ENVS 5000.

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. Semester Hours: 3. Cross-listed with: ENVS 5020, GEOG 4020.

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. Semester Hours: 3. Prerequisite: Entry into MSES program, senior standing in sciences or geography, or permission of instructor. Cross-listed with: ENVS 5030 and GEOL 5030.

GEOL 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. Semester Hours: 3. Prerequisite: GEOG 3080 or consent of instructor. Cross-listed with: GEOL 5060, GEOG 4060, 5060.

GEOL 4111 - Field Geology. Introduces methods of geologic mapping in sedimentary, igneous and metamorphic rocks. Includes plane table surveying, Brunton and pace methods, and the use of aerial photographs. Semester Hours: 5. Prerequisite: GEOL 3011; GEOL 3231 and 3421 strongly recommended.

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. Semester Hours: 3. Prerequisite: GEOG 1202 or permission of instructor. Cross-listed with: GEOG 4270.

GEOL 4402 - 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. Semester Hours: 3. Prerequisite: Chemistry, physics, calculus or permission of instructor. Cross-listed with: ENVS 5403.

GEOL 4460 - Vertebrate Paleontology and Evolution. Surveys the evolutionary history of the backboned animals from primitive fish through dinosaurs to man. Includes paleoecology, functional morphology, and uses of vertebrate fossils in geologic correlations. Semester Hours: 3. Prerequisite: Introductory geology, biology or anthropology.

GEOL 4513 - Geology of the Grand Canyon. Raft down the Grand Canyon and examine the geology of igneous, sedimentary and metamorphic rocks from the Precambrian to the Holocene. Study marine and terrestrial fossils, migmatization and observe modern sedimentary processes. Semester Hours: 3. Prerequisite: Introduction to geology.

GEOL 4630 - Principles of Geomorphology. Systematic study of rock structures, weathering, mass wasting, fluvial, wind, glacial, shoreline processes, and the landforms they produce. Semester Hours: 3. Prerequisite: Introductory college-level geology or physical geography. Cross-listed with: GEOG 4240.

GEOL 4770 - 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. Semester Hours: 3. Prerequisite: College algebra and GEOG 3080, or consent of instructor. Cross-listed with: GEOL 5770, GEOG 4770, ENVS 5600.

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. Semester Hours: 4. Prerequisite: MATH 2411 and C E 2121. Cross-listed with: GEOL 5780 and C E 4780.

GEOL 4840 - Independent Study. Semester Hours: 1 to 3.

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. Semester Hours: 4. Prerequisite: Permission of project director.

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. Semester Hours: 4. Prerequisite: GEOL 5001 (or equivalent) or permission of project director.

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. Semester Hours: 3. Prerequisite: Entry into MSES program, senior standing in sciences or geography, or permission of instructor. Cross-listed with: GEOL 4030 and ENVS 5030.

GEOL 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. Semester Hours: 3. Prerequisite: GEOG 3080 or consent of instructor. Cross-listed with: GEOL 4060, GEOG 4060, 5060.

GEOL 5770 - 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. Semester Hours: 3. Prerequisite: College algebra and GEOG 3080, or consent of an instructor. Cross-listed with: GEOL 4770, GEOG 4770, ENVS 5600.

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. Semester Hours: 4 Cross-listed with: GEOL 4780 and C E 5780.

GEOL 5939 - Internship/Cooperative Education. Semester Hours: 1 to 6.

GEOL 5950 - Master's Thesis. Semester Hours: 1 to 8.

GEOL 6840 - Independent Study. Semester Hours: 1 to 3.

GEOL 6950 - Master's Thesis. Semester Hours: 1 to 8.

GEOL 6960 - Master's Project. Semester Hours: 1 to 8.

GER: German (Liberal Arts and Sciences)

GER 1000 - Germany and the Germans: AH1. Introduces the ways in which the various aspects of German culture help define German life and national identity. By examining art, music and media, primarily of the 20th century, students explore what it means to be German. Semester Hours: 3. Note: Taught in English.

GER 1010 - Beginning German I. Introduces basic grammar, sentence structure and speech patterns. Semester Hours: 5. 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.

GER 1020 - Beginning German II. (Continuation of GER 1010). Semester Hours: 5. Prerequisite: GER 1010 or one year of high school German. 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.

GER 1111 - Freshman Seminar. Semester Hours: 1 to 3.

GER 2110 - Intermediate German I. (Continuation of German 1020). Semester Hours: 3. Prerequisite: GER 1020 or two years of high school German. 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.

GER 2130 - Intermediate German II. A fourth-semester course designed for those majoring or minoring in International Affairs. Along with grammar review, the course deals with contemporary topics in cultural, political, economic and social affairs. Semester Hours: 3. Prerequisite: GER 2110 or placement by exam. Note: Open to all those wanting to satisfy a fourth semester language requirement to qualify for upper division German courses. Satisfies the language requirement for the minor in International Affairs, may be applied to the major and minor in German, and will satisfy the fourth-semester foreign requirement at most graduate schools.

GER 2150 - Intermediate German II: Grammar Review and Oral Practice. Prepares students for upper division. German language skills courses. Students practice abilities gained in previous semesters of language instruction, improve conversational abilities, develop skills using reference works, learn tactics for reading and discussing newspaper style German and develop written composition abilities. Semester Hours: 3. Prerequisite: GER 2110 or equivalent. 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. Taught in German.

GER 2210 - Readings and Translation. Stresses reading and translation skills rather than speaking. Students work with short German texts in a variety of areas: natural and social sciences, history and literature. Semester Hours: 3. Prerequisite: GER 1020. Note: Taught in English.

GER 2240 - Intermediate Composition and Vocabulary Building. A fourth-semester composition and vocabulary building course. Semester Hours: 3. Prerequisite: GER 2110 or 2210. Note: Taught in English.

GER 2840 - Independent Study. Semester Hours: 1 to 3.

GER 2939 - Internship/Cooperative Education. Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: 15 hours with 2.75 GPA.

GER 2995 - Travel Study Topics. For students doing travel study in Germany; register through the Office of International Education. Semester Hours: 1 to 15.

GER 3030 - Advanced Conversation: Idioms and Vocabulary Building.

An advanced conversation course, using small-group discussion, skits, and short oral presentations to improve fluency in spoken German and to build vocabulary. Semester Hours: 3. Prerequisite: GER 2130 or fourth semester equivalency.

GER 3050 - Phonetics and Pronunciation of German. Students acquire skills for articulating German with a high degree of accuracy, and systematically develop a more native-like pronunciation of German. Students learn basic linguistic principles for the purpose of gaining insight into the mechanics of spoken German. Semester Hours: 3. Prerequisite: GER 2130. Note: Taught in German.

GER 3060 - Advanced German Language Skills I. An advanced course in German language skills with equal emphasis devoted to speaking, listening, reading and writing. Students improve their cultural awareness, pronunciation, and vocabulary as well. Specific grammar topics include: subjunctive I and II, participles I and II, extended adjectives, verb tenses, gender of nouns, and reflexive. Semester Hours: 3. Prerequisite: GER 2130 or permission of instructor. Note: Primary language of instruction for this course is German.

GER 3070 - Advanced German Language Skills II. An advanced course in German language skills with equal emphasis devoted to speaking, listening, reading and writing. Students improve their cultural awareness, pronunciation and vocabulary. Specific grammar topics include: semantic categories, functions of nouns, determiners, adjectives, relative clauses, pronouns. Semester Hours: 3. Prerequisite: GER 2130 or permission of instructor. Note: Primary language of instruction for this course is German.

GER 3080 - Advanced German Language Skills III. An advanced course in German language skills with equal emphasis devoted to speaking, listening, reading and writing. Students improve their cultural awareness, pronunciation, and vocabulary as well. Specific grammar topics include: prepositions and idioms, 'da' compounds, German syntax, clause typology numerals, and time expressions. Semester Hours: 3. Prerequisite: GER 2130 or permission of instructor. Note: Primary language of instruction for this course is German.

GER 3090 - Advanced German Language Skills IV. An advanced course in German language skills with equal emphasis devoted to speaking, listening, reading, and writing. Students improve their cultural awareness, pronunciation and vocabulary. Specific grammar topics include: modal verbs, complex clause and sentence structure, 'werden,' passive voice, double infinitives, perfect infinitives, and dependent infinitives. Semester Hours: 3. Prerequisite: GER 2130 or permission of instructor. Note: Primary language of instruction for this course is German.

GER 3110 - Introduction to German Literature I. Selected readings from German short stories, drama, and poetry, primarily from the modern period. Emphasis on techniques of reading. Semester Hours: 3. Prerequisite: GER 2110. Note: Primary language of instruction for this course is German.

GER 3130 - Current Topics of the German-Speaking World. Combines discussion and writing on political, economic, and social conditions in contemporary Germany, Austria and Switzerland. Articles from current German newspapers, magazines, television broadcasts, and the World Wide Web are analyzed for a better understanding of how citizens of these countries see themselves and the world. Semester Hours: 3. Prerequisite: Any third-year German course.

GER 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. Semester Hours: 3. Prerequisite: Sophomore standing or permission of instructor.

GER 3230 - German Civilization I: From Medieval Through Age of Idealism. Selected highlights of major cultural aspects of the Middle Ages, the Reformation, the Enlightenment, and the Age of Idealism. Semester Hours: 3.

GER 3240 - German Civilization II: The Modern Age. Selected highlights of major cultural aspects of the later 19th century, the Wilhelminian period, the Weimar Republic, the Third Reich, and the period since 1945. Semester Hours: 3.

GER 3310 - Techniques of Translation. Trains students in strategic translation skills that aid in rapid comprehension of short German texts and the ability to render them into well written contemporary English. Students choose content areas of individual interest (e.g. history, literature, chemistry). Semester Hours: 3. Prerequisite: GER 2130 or permission of instructor.

GER 3512 - Faust in Literature and Music. Surveys the Faust legend in literature and music. Includes works by Marlowe, Goethe, Berlioz, Schumann, Gounod, Boito and others. Semester Hours: 3.

GER 3540 - German Cinema and Society. Studies several key German films from 1918 to the present that illuminate the political/cultural discourses of their times. Readings from historical and film-critical texts aid in contextualizing the films. Semester Hours: 3. Note: Taught in English.

GER 3840 - Independent Study. Semester Hours: 1 to 3.

GER 3939 - Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: Junior standing and 2.75 GPA.

GER 3995 - Travel Study Topics. For students doing travel study in Germany; register through the Office of International Education. Semester Hours: 1 to 15.

GER 4050 - Advanced German Phonetics and Language History. Students develop advanced phonetic skills for analyzing the sounds and orthography of German. They apply these skills by examining the diachronic (historic) developments in the grammatical and phonological structures of German over the last two millennia. Semester Hours: 3. Prerequisite: GER 3050 or equivalent. Note: Taught in German.

GER 4840 - Independent Study. Semester Hours: 1 to 3.

GER 4995 - Travel Study Topics. For students doing travel study in Germany; register through the Office of International Education. Semester Hours: 1 to 15.

GER 5995 - Travel Study Topics. For students doing travel study in Germany; register through the Office of International Education. Semester Hours: 1 to 15.

Global Energy Management: GEMM (Business)

HBSC: Health and Behavioral Sciences (Liberal Arts and Sciences)

HBSC 1111 - Freshman Seminar. Semester Hours: 3.

HBSC 2001 - Introduction to Community and Population Health Science: SS3. Introduces undergraduate students to the mission, history, knowledge-base, values, concepts, and tools of community and population health science, a field that broadly encompasses health and the socio-behavioral sciences, and forms the core of public health. Provides an overview of the principal strategies and methods of public health. Semester Hours: 3.

HBSC 2051 - Introduction to Population Studies. Examines current issues in population growth, fertility, mortality and migration in the United States and globally. Introduces students to the basic tools of demography and encourages them to think critically about the causes and consequences of population change. Semester Hours: 3.

HBSC 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. Semester Hours: 3. Cross-listed with: ETST 3002.

HBSC 3010 - Evolution of Human Sexuality. Surveys the biological and social evolution of human sexuality from an interdisciplinary perspective. Encourages critical thinking about human sexual behavior and challenge assumptions about sexuality. Students explore what happens when sexual behaviors that have evolved over the millennia mix with the cultural, political, and economic influences imposed by contemporary civilization. Semester Hours: 3. Prerequisite: Introductory courses in anthropology, biology, psychology, sociology or political science.

HBSC 3021 - Fundamentals of Health Promotion. Provides an overview of the field of health promotion, including an introduction to key theories and methods, as well as exposure to the breadth of programs and diversity of settings through several case studies. Includes attention to health behaviors as contributors to current public health problems and community-based approaches to health promotion in addressing them. Semester Hours: 3.

HBSC 3031 - Health, Human Biology and Behavior. Introduces the study of human health and well-being, and the allied disciplines of epidemiology and demography. The course considers the nature of disease, health problems related to nutrition and the physical environment, and morbidity and mortality from an integrated 'biobehavioral' perspective. Semester Hours: 3.

HBSC 3041 - Health, Culture and Society. A critical, holistic interpretation of health, illness, and human bodies that emphasizes power as a key social-structural factor in health and societal responses to illness. Explores those areas of social and cultural life where power differences are most evident in their impact on health. Semester Hours: 3.

HBSC 3200 - Human Migration: Nomads, Sojourners, and Settlers. Explores the relationship between human migration, voluntary and forced, and social organization and culture in the modern world. Case studies include pastoralists, foragers, refugees, immigrants, sojourners, and settlers and their impact on health, culture, identity, ethnicity, tradition and nationality. Semester Hours: 3. Cross-listed with: ANTH 3200.

HBSC 3939 - Cooperative Education. Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: Junior standing and 2.75 GPA.

HBSC 4001 - 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. Semester Hours: 3. Prerequisite: Upper division standing and course in basic statistical methods. Cross-listed with: HBSC 5001.

HBSC 4010 - Global Health Studies I: The Biocultural Basis of 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. Semester Hours: 3. Prerequisite: Upper division and/or graduate standing. Cross-listed with: HBSC 5010, ANTH 4010 and 5014. Note: The first of a two-course sequence in medical anthropology and global health studies; the second is HBSC 4020.

HBSC 4020 - 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 inter-relationship of health, foreign policy and global security. Semester Hours: 3. Prerequisite: Upper division and/or graduate standing. Cross-listed with: HBSC 5020, ANTH 4020 and 5024.

HBSC 4021 - Community Health Assessment. Introduces applied methods of public health, including: analyzing community-level assessment data, developing a causal 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. Semester Hours: 3. Prerequisite: Upper division standing, a course in statistics, and an introductory course in epidemiology (HBSC 4001, 5001). Cross-listed with: HBSC 5021.

HBSC 4031 - Ethnographic Research in Public Health. Qualitative, ethnographic tools for practical applications in public health, including methods of direct observation, informant interviews, focus groups, structured ethnographic methods, rapid assessment and participatory action research. Basic analytic strategies, including review of computer software, coding and data display techniques. Semester Hours: 3. Cross-listed with: HBSC 5031.

HBSC 4060 - Evolutionary Medicine. Applies evolutionary principles to an understanding of human health and illness. The view complements perspectives on health and disease emanating from biological and social sciences, but considers the health or disease process from the perspective of pathogen and host, current and previous environments, and various phases of the life cycle. Semester Hours: 3. Prerequisite: ANTH 1303. Cross-listed with: HBSC 5060, ANTH 4060 and 5060.

HBSC 4080 - 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. Semester Hours: 3. Prerequisite: HBSC/ANTH 4010/5014, HBSC/ANTH 4020/5024, HLTH 6070 or equivalent. Cross-listed with: HBSC 5080, ANTH 4080 and 5080.

HBSC 4090 - Political Economy of Drug Culture. An anthropological study of how illegal drug use impacts the social, political, economic and medical sectors of any community. Examines the interplay between these sectors and drug users through the lens of political economy. Semester Hours: 3. Prerequisite: ANTH 2102. Cross-listed with: HBSC 5090.

HBSC 4110 - Public Health Perspectives on Family Violence. Public health views family violence from a prevention perspective. Our exploration of child abuse, intimate partner violence, and other forms of family violence will complement other disciplinary approaches by focusing heavily on the community and social factors that contribute to abusive relationships. Theories of power and coercion and approaches to researching these issues will be analyzed and discussed through our exploration of the various forms of family violence. Semester Hours: 3. Prerequisite: Advanced undergraduate standing. Cross-listed with: HBSC 5110.

HBSC 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. Semester Hours: 3. Cross-listed with: HBSC 5200.

HBSC 4620 - Health Risk Communication. Acquaints students with contemporary theory, research, and practice in health risk communication. Semester Hours: 3. Cross-listed with: HBSC 5620, CMMU 4620, 5620, and ENVS 5620.

HBSC 4999 - 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. Semester Hours: 3. Prerequisite: Junior or senior standing or permission of instructor. Cross-listed with: HBSC 5999.

HBSC 5001 - 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. Semester Hours: 3. Prerequisite: Upper division standing and course in basic statistical methods. Cross-listed with: HBSC 4001.

HBSC 5010 - Global Health Studies I: The Biocultural Basis of 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. Semester Hours: 3. Prerequisite: Upper division and/or graduate standing. Cross-listed with: HBSC 4010, ANTH 4010 and 5014. Note: The first of a two-course sequence in medical anthropology and global health studies; the second is HBSC 5020.

HBSC 5020 - 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 inter-relationship of health, foreign policy and global security. Semester Hours: 3. Prerequisite: Upper division and/or graduate standing. Cross-listed with: HBSC 4020, ANTH 4020 and 5024.

HBSC 5021 - Community Health Assessment. Introduces applied methods of public health, including: analyzing community-level assessment data, developing a causal 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. Semester Hours: 3. Prerequisite: Upper division standing, a course in statistics, and an introductory course in epidemiology (HBSC 5001, 4001). Cross-listed with: HBSC 4021.

HBSC 5031 - Ethnographic Research in Public Health. Qualitative, ethnographic tools for practical applications in public health, including methods of direct observation, informant interviews, focus groups, structured ethnographic methods, rapid assessment and participatory action research. Basic analytic strategies, including review of computer software, coding and data display techniques. Semester Hours: 3. Cross-listed with: HBSC 4031.

HBSC 5060 - Evolutionary Medicine. Applies evolutionary principles to an understanding of human health and illness. The view complements perspectives on health and disease emanating from biological and social sciences, but considers the health or disease process from the perspective of pathogen and host, current and previous environments, and various phases of the life cycle. Semester Hours: 3. Prerequisite: ANTH 1303. Cross-listed with: HBSC 4060, ANTH 4060 and 5060.

HBSC 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. Semester Hours: 3. Prerequisite: HBSC/ANTH 5014/4010, HBSC/ANTH 5024/4020, HLTH 6070 or equivalent. Cross-listed with: HBSC 4080, HBSC 5080 and 4080.

HBSC 5090 - Political Economy of Drug Culture. An anthropological study of how illegal drug use impacts the social, political, economic and medical sectors of any community. Examines the interplay between these sectors and drug users through the lens of political economy. Semester Hours: 3. Prerequisite: ANTH 2102. Cross-listed with: HBSC 4090.

HBSC 5110 - Public Health Perspectives on Family Violence. Public health views family violence from a prevention perspective. Our exploration of child abuse, intimate partner violence, and other forms of family violence will complement other disciplinary approaches by focusing heavily on the community and social factors that contribute to abusive relationships. Theories of power and coercion and approaches to researching these issues will be analyzed and discussed through our exploration of the various forms of family violence. Semester Hours: 3. Prerequisite: Graduate standing. Cross-listed with: HBSC 4110.

HBSC 5200 - 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. Semester Hours: 3. Cross-listed with: HBSC 4200.

HBSC 5620 - Health Risk Communication. Acquaints students with contemporary theory, research, and practice in health risk communication. Semester Hours: 3. Cross-listed with: HBSC 4620, CMMU 5620, 4620, and ENVS 5620.

HBSC 5939 - Cooperative Education. Semester Hours: 1 to 6.

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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: HBSC 4999.

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. Semester Hours: 3. Prerequisite: Graduate standing. Cross-listed with: HBSC 7320, ANTH 6041.

HBSC 6840 - Independent Study. Semester Hours: 1 to 3.

HBSC 7001 - Colloquium Series in the Health and Behavioral Sciences. Bi-weekly lectures given by Health and Behavioral Sciences faculty, advanced graduate students and alums, on selected and current topics in the health and behavioral sciences. Required of all first and second year students in HBSC; may be taken up to three times for credit. Semester Hours: 1.

HBSC 7011 - Theoretical Perspectives in Health and Behavioral Science I. 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; cross-cultural 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. Semester Hours: 3. Prerequisite: Admission to the Health and Behavioral Sciences program. Note: Part I of a required, two-semester, interdisciplinary, team-taught, seminar-format course that meets three hours a week for the academic year.

HBSC 7021 - Theoretical Perspectives in Health and Behavioral Science II. Reviews multiple approaches and strategies for understanding and changing the health of systems, organizations, communities and individuals. Course is intended to give students content knowledge and practical skills for assessing, planning, and implementing change processes. Semester Hours: 3. Prerequisite: HBSC 7011 and admission to the Health and Behavioral Sciences program. Note: Part II of two-semester seminar course that meets three hours a week for the academic year.

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. Semester Hours: 3. Prerequisite: Admission to the Health and Behavioral Sciences program.

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. Semester Hours: 3. Prerequisite: Admission to the Health and Behavioral Sciences program.

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. Semester Hours: 3. Cross-listed with: ANTH 6063.

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. Semester Hours: 3. Prerequisite: HBSC 5001 or equivalent.

HBSC 7111 - Applications of the Health and Behavioral Sciences.

Students focus on eight or nine specific health problems, applying multiple social and behavioral science perspectives in pursuit of a truly interdisciplinary understanding of the most significant dimensions of each problem. Guest experts provide 'grand rounds' type presentations on each selected topic. Semester Hours: 3. Prerequisite: HBSC 7041.

HBSC 7121 - Dissertation Proposal and Research. Semester Hours: 6-8.

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. Semester Hours: 3. Cross-listed with: ENVS 6210.

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. Semester Hours: 3. Prerequisite: GEOG 4080 or GEOG 5080, public health background, or consent of instructor. Cross-listed with: GEOG 4235, GEOG 5235.

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. Semester Hours: 3. Prerequisite: A basic statistics course and graduate standing or permission of instructor. Cross-listed with: ENVS 6230.

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. Semester Hours: 3. Prerequisite: Graduate standing. Cross-listed with: HBSC 6320, ANTH 6041.

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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: CE 5494, ENVS 6200.

HBSC 7360 - Toxicology. Introduces the field of toxicology. Emphasizes the mechanisms by which chemicals produce toxic effects and the methods for assessing toxicity. Semester Hours: 3. Prerequisite: One year college chemistry and one year college biology. Cross-listed with: ENVS 6220. Note: Designed for students in the environmental sciences and occupational health fields.

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. Semester Hours: 1 to 3. Prerequisite: Graduate standing.

HBSC 8990 - Doctoral Dissertation. Semester Hours: 1 to 10. Prerequisite: Admission to the Health and Behavioral Sciences program.

Health Administration: HLTH (Business)**Health and Behavioral Sciences: HBSC (Liberal Arts and Sciences)****HIST: History (Liberal Arts and Sciences)**

HIST 1016 - World History to 1500. Surveys the rise of civilizations and their interactions from prehistoric to modern times. The emphasis is on the understanding of the various styles or characteristics of civilizations within a global context. Semester Hours: 3.

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. Semester Hours: 3.

HIST 1111 - Freshman Seminar. Semester Hours: 1 to 3.

HIST 1211 - Western Civilization I. Introduces ancient Mediterranean civilization and the birth of Europe. Covers topics on economics and society, political organization, intellectual history, and art from 3000 B.C. to A.D.1500. Semester Hours: 3.

HIST 1212 - Western Civilization II. Introduces modern European civilization and its spread over the world. Covers topics on economics and society, political organization, intellectual history, and art from A.D. 1500 to the 20th century. Semester Hours: 3.

HIST 1361 - U.S. History to 1876: HI1. 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. Semester Hours: 3.

HIST 1362 - U.S. History Since 1876: HI1. 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. Semester Hours: 3.

HIST 1381 - Paths to the Present I: HI1. Examines several topics of profound interest to historian's 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. Semester Hours: 3.

HIST 1382 - Getting Here: Paths to the Present II: HI1. How do historians work? An evaluation of several significant topics in the history of Europe, the U.S., and the non-Western world. Semester Hours: 3.

HIST 2939 - Internship/Cooperative Education. Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: 15 hours of 2.75 GPA.

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. Semester Hours: 3. Note: This course should be taken as early as possible, and must be taken before HIST 4839.

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. Semester Hours: 3.

HIST 3230 - The American Presidency. Explores the presidency in U.S. History. Topics include; ideological and constitutional foundations; expansion of presidential power in domestic politics and international relations; evolution of presidential campaigns; and dimensions of presidential leadership in politics, society and culture. Semester Hours: 3.

HIST 3231 - Famous U.S. Trials. History of the origins and development of the American constitution, with the famous trials and landmark Supreme Court decisions. Semester Hours: 3.

HIST 3232 - The American Colonies to 1750. The maturation of the American colonies within the British Empire, the development of commercial and intellectual centers, the creation of uniquely American politics, and the unfolding of critical differences between North and South. Semester Hours: 3.

HIST 3235 - U.S. Labor History, 1800 to the Present. Explores the experiences, contributions, and struggles of working-class Americans

from the Civil War to the present. Areas of focus include pre-industrial and post-industrial labor, slavery, agricultural labor, gender and working class culture outside of the work place. Particular attention is paid to immigration, ethnicity, race and gender, as they relate to the history of America's laboring class. Semester Hours: 3. Prerequisite: Upper division standing.

HIST 3343 - Women in U.S. History. An analysis of women's place in society, in the work place, and in the political arena over the last 300 years. Semester Hours: 3. Cross-listed with: WGST 3343.

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. Semester Hours: 3.

HIST 3347 - African-American History, 1619-Present. Explores the African-American experience, including definitions of citizenship, strategies for protest and resistance, models of leadership, religious life and cultural expression, divisions of class, color and gender. Semester Hours: 3.

HIST 3348 - The African-American Protest Tradition, 1865 - Present. Examines a series of influential African-American activists and considers such themes as intra-racial divisions, Pan-Africanism, black nationalism, the use of the courts and legal efforts, and black conservatism. Semester Hours: 3.

HIST 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. Semester Hours: 3. Cross-listed with: ETST 3350.

HIST 3360 - Denver History. Introduces the social, political, economic, and cultural life of this mile high metropolis. Founded in the 1858 gold rush, Denver has grown into a five-county metropolis of over two million. Explore this boom and bust history in lectures, slide shows and walking tours. This course offers students a chance to do their own primary source research project, as well as exams and book reports. Semester Hours: 3. Note: Open to all students.

HIST 3364 - Native Americans and Spaniards in North America. Examines the interactions between Native Americans and Spanish invaders beginning in the 16th century. The course explores the impact of colonialism in what is today the American Southwest. Focuses on Native American adaptation and resistance to the European presence. Semester Hours: 3.

HIST 3365 - Aztlan in the United States: Chicano History from 1821. Explores the impact of U.S. rule on the Southwest, paying particular attention to legal, economic, and social changes that created new political and cultural identities in the Southwest. Semester Hours: 3. Cross-listed with: ETST 3365.

HIST 3366 - Environmental History of North America. Examines the conversation that the peoples of North America have had with the earth, from Indian prehistory to modern industrial civilization. Out of the people-land dialogue has emerged a variety of cultures, some of which, as we shall see, successfully adapted to their environment, while others failed. Semester Hours: 3. Prerequisite: HIST 1361, 1362, 1381 or 1382.

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. Semester Hours: 3. Cross-listed with: ETST 3396.

HIST 3451 - Introduction to African History. By looking at specific examples of the cultural, political, and economic experience of African society, this course attempts to introduce and make comprehensive the diverse history of the people of Africa. Semester Hours: 3.

HIST 3460 - Introduction to Latin American History. Surveys the historical development of the modern Latin American countries, beginning with the independence movements of the early 19th century. Emphasizes the 20th century issues and problems that have characterized these countries and affected their relations with the United States. Semester Hours: 3.

HIST 3470 - Introduction to Asian History. Introduces the origin and development of civilization in China, Japan and Korea. Explores the relationship between culture and civilization. Readings are drawn from literature, religion, philosophy, anthropology and history. Semester Hours: 3.

HIST 3480 - Introduction to European History. Students are introduced to the major themes of European history and culture, from the Enlightenment to the present. Semester Hours: 3.

HIST 3481 - Greece and the Hellenistic World. A history of the Greek-speaking world, from the Bronze Age depicted in Homer's epics to Rome's conquest of the eastern Mediterranean (c.2000-27 BC). The political, intellectual, socioeconomic, and military history of the eastern Mediterranean, with an emphasis on Greece. Semester Hours: 3.

HIST 3482 - Rome: City and Empire. Pagan Rome from its earliest beginnings to the rise of Christianity. Emphasis is on the military, socioeconomic, and political history of Rome, its empire in Italy, and its domination of the Mediterranean World (ca. 800 B.C. to A.D. 300). Semester Hours: 3.

HIST 3483 - Introduction to Modern South Asia. Surveys the social, economic, and political processes that shaped modern South Asia. Considers issues in contemporary political debates within their original historical contexts and trace the power of relationships that affected changes, long-term continuities, and revivals. Semester Hours: 3.

HIST 3484 - British Isles To 1714. A sampler of the rich, diverse, and dramatic history of the peoples of the British Isles. State formation, economic and social change and cultural values are several of the themes threaded through this survey course. Semester Hours: 3.

HIST 3485 - British Isles Since 1714. This course examines the dramatic rise of the British industrial, commercial, and political empire during the 18th and 19th centuries and its equally dramatic decline in the 20th century. Semester Hours: 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. Semester Hours: 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. Semester Hours: 3.

HIST 3606 - Science, Technology, and Society in the Modern World. Examines the relationships among science, technology, and society from the early 19th century to the present. Semester Hours: 3.

HIST 3706 - The Age of Revolution. Examines revolutions in selected societies around the world during the period from 1750 to 1950. The specific revolutions chosen may vary, but representative upheavals in both the Western and non-Western worlds are examined. Semester Hours: 3. Prerequisite: Any lower-level history course.

HIST 3810 - Topics. Topics in history with varying subtitles reflecting course content. Semester Hours: 3.

HIST 3840 - Independent Study. Semester Hours: 1 to 3.

HIST 3939 - Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: Junior standing and 2.75 GPA.

HIST 3995 - Travel Study Topics. Created for students doing travel study in a foreign country; register through the Office of International Education. Semester Hours: 1 to 15.

HIST 4020 - Medieval Europe. Surveys the general history of Europe from the fall of Rome to the opening of modern Europe. Semester Hours: 3. Cross-listed with: HIST 5020.

HIST 4021 - Renaissance Europe. Explores the late 13th through the early 16th centuries, when European art and culture changed dramatically against a background of economic expansion, social and religious unrest, and when princes ruled in the interests of their dynastic states. Semester Hours: 3. Cross-listed with: HIST 5021.

HIST 4022 - Reformation Europe. Between the early 16th and the middle 17th centuries, Europe was torn by explosive ideological conflicts, resulting in religious upheaval, political revolution, and civil

and international wars, but also underwent important experiments in representative government and economic controls. Semester Hours: 3. Cross-listed with: HIST 5022, RLST 3080.

HIST 4024 - Nineteenth Century Europe. A general study of the evolution of Europe from 1789 to 1900. Covers the French Revolution, industrialization, romanticism, nationalism, realism, socialism, and imperialism in the context of European history. Semester Hours: 3. Cross-listed with: HIST 5024.

HIST 4025 - Twentieth Century Europe. A general study of the evolution of Europe since 1900. Covers militarism, fascism, communism, and existentialism in the context of European history. Semester Hours: 3. Cross-listed with: HIST 5025.

HIST 4027 - The Enlightenment: Eighteenth Century Intellectual History. Studies the transformation of the European and American intellectual world in the late 17th and 18th centuries. Focuses on the novel ideas, institutions and discursive practices of the philosophies in Europe and America. Themes include the popularization of scientific thinking, rationalism, deism and secularization, the public sphere, popular sovereignty and confidence in the future. Semester Hours: 3. Prerequisite: Previous introductory history course or other introductory humanities course. Cross-listed with: HIST 5027.

HIST 4028 - After the Revolution: Nineteenth Century Intellectual History. Romanticism and other 19th century reactions to the dislocation engendered by the bourgeois revolutions and industrialization. Focuses on intellectual and cultural responses to social and economic change, ideologies, and social theories. Topics include romanticism, conservatism, liberalism, Marxism, the neo-enlightenment, ideas of progress and Darwinism. Semester Hours: 3. Cross-listed with: HIST 5028.

HIST 4029 - Fin de Siecle: Late Nineteenth and Early Twentieth Century Intellectual History. The crisis of confidence in Europe and America in the late 19th and early 20th centuries. Focuses on aesthetic and philosophical disillusionment and attempts to reorient European and American thinking, as well as upon reactions to World War I. Topics include Nietzsche, psychoanalysis, surrealism, and other intellectual and artistic movements. Semester Hours: 3. Prerequisite: Previous introductory history course or other introductory humanities course. Cross-listed with: HIST 5029.

HIST 4030 - 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. Semester Hours: 3. Cross-listed with: HIST 5030.

HIST 4031 - 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. Semester Hours: 3. Prerequisite: HIST 1212. Cross-listed with: HIST 5031.

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. Semester Hours: 3. Prerequisite: A course in world history and one in macroeconomics or permission of instructor. Cross-listed with: HIST 5032.

HIST 4034 - Core Themes in European History. Core themes in modern Europe, 1750 to the present. Semester Hours: 3. Cross-listed with: HIST 5034.

HIST 4045 - Tudor-Stuart England. England's rise from obscurity in 1487 to the dawn of her age of European and world dominance in the early 18th century. Family life and popular culture as well as Henry VIII, Queen Elizabeth, Parliament, and Cromwell. Semester Hours: 3. Prerequisite: Upper division standing. Cross-listed with: HIST 5045.

HIST 4046 - 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? Semester Hours: 3. Prerequisite: Upper division and/or graduate standing. Cross-listed with: HIST 5046.

HIST 4051 - Great Britain: 1760-1914. Studies Britain's long 19th century, with a focus on the social consequences of industrialization, state growth and imperialism. Examines who benefited and who lost as a result of the social, economic, political, and cultural changes of the era. Semester Hours: 3. Prerequisite: Upper division and/or graduate standing. Cross-listed with: HIST 5051.

HIST 4053 - British Empire. Examines the 19th and 20th century British empire, addressing social, cultural and political themes. Explores the development and collapse of the empire, British imperial identity, relationships between race, gender, class, and the ways in which the colonizers and the colonized experienced empire. Semester Hours: 3. Prerequisite: Upper division and/or graduate standing. Cross-listed with: HIST 5053.

HIST 4055 - 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. Semester Hours: 3. Cross-listed with: HIST 5055.

HIST 4061 - French Revolution and Napoleon. An analysis of the revolutionary movement in France and Europe from the 1780s to the 1820s. Semester Hours: 3. Cross-listed with: HIST 5061.

HIST 4062 - 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. Semester Hours: 3. Cross-listed with: HIST 5062.

HIST 4071 - Modern Germany. Surveys the major political, institutional, social, economic, and cultural developments that have occurred in Germany since the late 18th century. Semester Hours: 3. Prerequisite: Upper division and/or graduate standing. Cross-listed with: HIST 5071.

HIST 4074 - Post-War Germany. Historical survey of Germany since the second world war, with an emphasis on culture and society. Semester Hours: 3. Prerequisite: Upper division and/or graduate standing. Cross-listed with: HIST 5074.

HIST 4075 - Travel Stories and Origins of Cultural Anthropology. Examines the early history of cultural anthropology by means of classic travel literature. Semester Hours: 3. Cross-listed with: HIST 5075.

HIST 4076 - 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. Semester Hours: 3. Cross-listed with: HIST 5076.

HIST 4082 - Reform and Revolution in Russia: The 1860s to 1917. Emphasis upon Russia's attempts to modernize, beginning with great reforms of the 1860s and 1870s; increasing polarization of government and opposition groups. Examines governmental point of view through several monographs and revolutionary theory, including those of Marx, Engels, Lenin and Trotsky. Semester Hours: 3. Cross-listed with: HIST 5082.

HIST 4083 - 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. Semester Hours: 3. Cross-listed with: HIST 5083.

HIST 4086 - Eastern Europe. Studies the countries of Eastern Europe from their origins in the Middle Ages to the present. Semester Hours: 3. Cross-listed with: HIST 5086.

HIST 4133 - Management of Material Culture and Museum Collections. Introduces the rudiments of material culture analysis and management. While primarily for those interested in working in history museums, the course is also appropriate for students who want to understand the place of artifacts in studying history. Semester Hours: 3. Cross-listed with: HIST 5133.

HIST 4201 - Core Themes in U.S. History. This course surveys major themes in U.S. history. Semester Hours: 3. Cross-listed with: HIST 5201.

HIST 4210 - 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. Semester Hours: 3. Cross-listed with: HIST 5210.

HIST 4212 - U.S. Civil War and Reunion. 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. Semester Hours: 3. Cross-listed with: HIST 5212.

HIST 4213 - 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. Semester Hours: 3. Cross-listed with: HIST 5213.

HIST 4216 - History of American Popular Culture. Explores the evolution of film, radio, television, and popular music from the 1940s to the 1980s. The course uses these and other forms of popular art to examine American history in this era. The course focuses on the shifting trends in popular culture, how that culture reflects the larger themes in American history, and how these media have impacted the national experience. Semester Hours: 3. Cross-listed with: HIST 5216.

HIST 4217 - 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. Semester Hours: 3. Cross-listed with: HIST 5217. Note: Open to all students.

HIST 4219 - 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 amidst general prosperity. Semester Hours: 3. Cross-listed with: HIST 5219.

HIST 4220 - 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. Semester Hours: 3. Cross-listed with: HIST 5220.

HIST 4222 - 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. Semester Hours: 3. Cross-listed with: HIST 5222.

HIST 4223 - 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. Semester Hours: 3. Cross-listed with: HIST 5223.

HIST 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. Semester Hours: 3. Cross-listed with: HIST 5225.

HIST 4226 - U.S. Business History. Surveys the major changes in business practices from colonial times to the present. Primary emphasis is placed on the Industrial Revolution and after. Topics include the emergence of major personalities in the Industrial Revolution; the rise of giant corporations; the response of industrial labor unions; government intervention and regulations and the emergence of the post-industrial society. Semester Hours: 3. Cross-listed with: HIST 5226.

HIST 4227 - American West. Introduces the diverse peoples, places, and approaches to the development of the trans-Missouri West. Semester Hours: 3. Cross-listed with: HIST 5227.

HIST 4228 - Western Art and Architecture. Introduces art and architecture of the American West, emphasizing their historical context. Students are required to do book reports and a research paper. Course includes walking tours and museum visits. Semester Hours: 3. Cross-listed with: HIST 5228.

HIST 4229 - Colorado Historic Places. Introduces community architecture and history for all students. Students learn how to survey, describe, and designate significant historical structures and districts. Semester Hours: 3. Cross-listed with: HIST 5229.

HIST 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. Semester Hours: 3. Cross-listed with: HIST 5230 and WGST 4230.

HIST 4231 - History in Museums. Designed to teach students about preserving, studying, interpreting, assembling, and exhibiting artifacts for instruction and enjoyment. There are numerous on-site visits to a variety of museums. Through projects, students actually participate in aspects of museum work. Semester Hours: 3. Cross-listed with: HIST 5231.

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HIST 4234 - 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. Semester Hours: 3. Cross-listed with: HIST 5234.

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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. Semester Hours: 3. Cross-listed with: HIST 5240. Note: Open to all students.

HIST 4242 - 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; identify and recruit an interview subject; research the subject background; design and conduct a recorded oral history interview; supervise interview transcription; and prepare a final report to accompany the interview transcripts. Semester Hours: 3. Cross-listed with: HIST 5242.

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HIST 4346 - Medicine and Society: the Ancients to the Present. Surveys change and continuity in definitions of health and illness, interactions between patients and practitioners, the practice of medical authority, and the relationships between science, clinical medicine, and the provision of health care. Semester Hours: 3. Prerequisite: Upper division and/or graduate standing. Cross-listed with: HIST 5346.

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HIST 4416 - The Age of Imperialism. Examines causes, character, and consequences of imperialism in the industrial era (ca. 1840-1975). Through intense study of selected cases, students gain an understanding of the different dynamics and varieties of imperialist control. Semester Hours: 3.

HIST 4417 - Commodities and Globalization: Dessert in World History. Traces the impact of 'dessert commodities' (sugar, cacao,

vanilla and coffee) on Latin America during an early period of globalization (nineteenth century). Explores cultural shifts in North Atlantic countries that created the incessant demand for dessert. Semester Hours: 3. Prerequisite: Senior or graduate student standing. Cross-listed with: HIST 5417.

HIST 4418 - Textiles and Trade, Culture and Cloth: The Fabric of Premodern World History. Uses cloth to explore the interconnections that shaped premodern world history, considering the ways that the production, exchange, and consumption of cloth were tied to specific forms of political power, social and religious organization, and long distance economic relationships. Semester Hours: 3. Cross-listed with: HIST 5418.

HIST 4420 - 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. Semester Hours: 3. Cross-listed with: HIST 5420.

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. Semester Hours: 3. Cross-listed with: HIST 5421.

HIST 4431 - 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. Semester Hours: 3. Cross-listed with: HIST 5431.

HIST 4451 - Southern Africa. An in-depth history of the clash of peoples and cultures in Africa south of the Zambesi 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. Semester Hours: 3. Cross-listed with: HIST 5451.

HIST 4455 - African Struggle for Independence. An assessment of African leadership from the colonial era to the present. Semester Hours: 3. Cross-listed with: HIST 5455.

HIST 4460 - The Islamic Golden Age. The Islamic golden age before European expansion was characterized by sophisticated business institutions, scholarship, new technologies, and arts. Merchants and scholars helped create a global system by moving amongst regional political Muslim states. The class asks: What roles did Islam play in connecting diverse societies across broad regions? What characterized these territories? Semester Hours: 3. Cross-listed with: HIST 5460. Note: This class is not a religious studies course. It covers the history of Muslim societies rather than the history of Islam as a religion.

HIST 4461 - The Modern Middle East. Semester Hours: 3. Cross-listed with: HIST 5461.

HIST 4471 - 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. Semester Hours: 3. Cross-listed with: HIST 5471.

HIST 4472 - 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. Semester Hours: 4 Cross-listed with: HIST 5472.

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. Semester Hours: 3. Cross-listed with: HIST 5475.

HIST 4501 - World History for Educators. Introduces world history for candidates for teaching positions. Discussion of themes, problems of research and interpretation, and relevant instructional methods. Semester Hours: 3. Prerequisite: Upper division standing. Cross-listed with: HIST 5501.

HIST 4503 - Topics in History of Science. Themes vary from year to year. Possible topics: Darwinism, Nature of Memory, Time and Space, Origins. Semester Hours: 3. Prerequisite: Upper division and/or graduate standing. Cross-listed with: HIST 5503.

HIST 4504 - 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. Semester Hours: 3. Cross-listed with: HIST 5504.

HIST 4621 - 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. Semester Hours: 3. Prerequisite: Upper division and/or graduate standing. Cross-listed with: HIST 5621.

HIST 4810 - Special Topics. Semester Hours: 3. Cross-listed with: HIST 5810.

HIST 4839 - History Seminar. Covers the use of documentary sources and historical criticism, with students utilizing these skills in a historical research paper. Semester Hours: 3. Prerequisite: HIST 3031. Note: Required for history majors. Preferably taken in the senior year.

HIST 4840 - Independent Study. Semester Hours: 1 to 3.

HIST 4849 - Independent Study History Honors Research Paper. Students competing for history honors must take this course to prepare their honors paper. The course requires students to produce a finished research paper of professional quality under the direction of a history faculty member. Semester Hours: 3. Prerequisite: Open to advanced history majors only.

HIST 5020 - Medieval Europe. Surveys the general history of Europe from the fall of Rome to the opening of modern Europe. Semester Hours: 3. Cross-listed with: HIST 4020.

HIST 5021 - Renaissance Europe. Explores the late 13th through the early 16th centuries, when European art and culture changed dramatically against a background of economic expansion, social and religious unrest, and when princes ruled in the interests of their dynastic states. Semester Hours: 3. Cross-listed with: HIST 4021.

HIST 5022 - Reformation Europe. Between the early 16th and the middle 17th centuries, Europe was torn by explosive ideological conflicts, resulting in religious upheaval, political revolution, and civil and international wars, but also underwent important experiments in representative government and economic controls. Semester Hours: 3. Cross-listed with: HIST 4022, RLST 3080.

HIST 5024 - Nineteenth Century Europe. A general study of the evolution of Europe from 1789 to 1900. Covers the French Revolution, industrialization, romanticism, nationalism, realism, socialism, and imperialism in the context of European history. Semester Hours: 3. Cross-listed with: HIST 4024.

HIST 5025 - Twentieth Century Europe. A general study of the evolution of Europe since 1900. Covers militarism, fascism, communism, and existentialism in the context of European history. Semester Hours: 3. Cross-listed with: HIST 4025.

HIST 5027 - The Enlightenment: Eighteenth Century Intellectual History. The transformation of the European and American intellectual world in the late 17th and 18th centuries. Focuses on the novel ideas, institutions and discursive practices of the philosophies in Europe and America. Themes include the popularization of scientific thinking, rationalism, deism and secularization, the public sphere, popular sovereignty and confidence in the future. Semester Hours: 3. Prerequisite: Previous introductory history course or other introductory humanities course. Cross-listed with: HIST 4027.

HIST 5028 - After the Revolution: Nineteenth Century Intellectual History. Romanticism and other 19th century reactions to the dislocation engendered by the bourgeois revolutions and industrialization. Focuses on intellectual and cultural responses to social and economic change, ideologies, and social theories. Topics include romanticism, conservatism,

liberalism, Marxism, the neo-enlightenment, ideas of progress, and Darwinism. Semester Hours: 3. Cross-listed with: HIST 4028.

HIST 5029 - Fin de Siecle: Late Nineteenth and Early Twentieth Century Intellectual History. The crisis of confidence in Europe and America in the late 19th and early 20th centuries. Focuses on aesthetic and philosophical disillusionment and attempts to reorient European and American thinking, as well as upon reactions to World War I. Topics include Nietzsche, psychoanalysis, surrealism, and other intellectual and artistic movements. Semester Hours: 3. Prerequisite: Previous introductory history course or other introductory humanities course. Cross-listed with: HIST 4029.

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. Semester Hours: 3. Cross-listed with: HIST 4030.

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. Semester Hours: 3. Prerequisite: HIST 1212. Cross-listed with: 4031.

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. Semester Hours: 3. Prerequisite: A course in world history and one in macroeconomics or permission of instructor. Cross-listed with: HIST 4032.

HIST 5034 - Core Themes in European History. Core themes in modern Europe, 1750 to the present. Semester Hours: 3. Cross-listed with: HIST 4034.

HIST 5045 - Tudor-Stuart England. England's rise from obscurity in 1487 to the dawn of her age of European and world dominance in the early 18th century. Family life and popular culture as well as Henry VIII, Queen Elizabeth, Parliament, and Cromwell. Semester Hours: 3. Prerequisite: Upper division standing. Cross-listed with: HIST 4045.

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? Semester Hours: 3. Prerequisite: Upper division and/or graduate standing. Cross-listed with: HIST 4046.

HIST 5051 - Great Britain: 1760-1914. Studies Britain's long 19th century, with a focus on the social consequences of industrialization, state growth and imperialism. Examines who benefited and who lost as a result of the social, economic, political, and cultural changes of the era. Semester Hours: 3. Prerequisite: Upper division and/or graduate standing. Cross-listed with: HIST 4051.

HIST 5053 - British Empire. Examines the 19th and 20th century British empire, addressing social, cultural, and political themes. Explores the development and collapse of the empire, British imperial identity, relationships between race, gender, and class, and the ways in which the colonizers and colonized experienced empire. Semester Hours: 3. Prerequisite: Upper division and/or graduate standing. Cross-listed with: HIST 4053.

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. Semester Hours: 3. Cross-listed with: HIST 4055.

HIST 5061 - French Revolution and Napoleon. An analysis of the revolutionary movement in France and Europe from the 1780s to the 1820s. Semester Hours: 3. Cross-listed with: HIST 4061.

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. Semester Hours: 3. Cross-listed with: HIST 4062.

HIST 5071 - Modern Germany. Surveys the major political, institutional, social, economic, and cultural developments that have occurred in Germany since the late 18th century. Semester Hours: 3. Prerequisite: Upper division and/or graduate standing. Cross-listed with: HIST 4071.

HIST 5074 - Post-War Germany. Historical survey of Germany since the second world war, with an emphasis on culture and society. Semester Hours: 3. Prerequisite: Upper division and/or graduate standing. Cross-listed with: HIST 4074.

HIST 5075 - Travel Stories and Origins of Cultural Anthropology. Examines the early history of cultural anthropology by means of classic travel literature. Semester Hours: 3. Cross-listed with: HIST 4075.

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. Semester Hours: 3. Cross-listed with: HIST 4076.

HIST 5082 - Reform and Revolution in Russia: The 1860s to 1917. Emphasis upon Russia's attempts to modernize, beginning with great reforms of the 1860s and 1870s; increasing polarization of government and opposition groups. Examines governmental point of view through several monographs and revolutionary theory, including those of Marx, Engels, Lenin and Trotsky. Semester Hours: 3. Cross-listed with: HIST 4082.

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. Semester Hours: 3. Cross-listed with: HIST 4083.

HIST 5086 - Eastern Europe. Studies the countries of Eastern Europe from their origins in the Middle Ages to the present. Semester Hours: 3. Cross-listed with: HIST 4086.

HIST 5133 - Management of Material Culture and Museum Collections. Introduces the rudiments of material culture analysis and management. While primarily for those interested in working in history museums, the course is also appropriate for students who want to understand the place of artifacts in studying history. Semester Hours: 3. Cross-listed with: HIST 4133.

HIST 5201 - Core Themes in U.S. History. This course surveys major themes in U.S. history. Semester Hours: 3. Cross-listed with: HIST 4201.

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. Semester Hours: 3. Cross-listed with: HIST 4210.

HIST 5212 - U.S. Civil War and Reunion. 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. Semester Hours: 3. Cross-listed with: HIST 4212.

HIST 5213 - The Gilded Age and Early Twentieth 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. Semester Hours: 3. Cross-listed with: HIST 4213.

HIST 5216 - History of American Popular Culture. Explores the evolution of film, radio, television, and popular music from the 1940s to the 1980s. The course uses these and other forms of popular art to examine American history in this era. The course focuses on the shifting trends in popular culture, how that culture reflects the larger themes in American history, and how these media have impacted the national experience. Semester Hours: 3. Cross-listed with: HIST 4216.

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. Semester Hours: 3. Cross-listed with: HIST 4217. Note: Open to all students.

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. Semester Hours: 3. Cross-listed with: HIST 4219.

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. Semester Hours: 3. Cross-listed with: HIST 4220.

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. Semester Hours: 3. Cross-listed with: HIST 4222.

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. Semester Hours: 3. Cross-listed with: HIST 4223.

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. Semester Hours: 3. Cross-listed with: HIST 4225.

HIST 5226 - U.S. Business History. Surveys the major changes in business practices from colonial times to the present. Primary emphasis is placed on the Industrial Revolution and after. Topics include the emergence of major personalities in the Industrial Revolution; the rise of giant corporations; the response of industrial labor unions; government intervention and regulation; and the emergence of the post-industrial society. Semester Hours: 3. Cross-listed with: HIST 4226.

HIST 5227 - American West. Introduces the diverse peoples, places, and approaches to the development of the trans-Missouri West. Semester Hours: 3. Cross-listed with: HIST 4227.

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. Semester Hours: 3. Cross-listed with: HIST 4228.

HIST 5229 - Colorado Historic Places. Introduces community architecture and history for all students. Students learn how to survey, describe, and designate significant historical structures and districts. Semester Hours: 3. Cross-listed with: HIST 4229.

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. Semester Hours: 3. Cross-listed with: HIST 4230 and WGST 4230.

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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; identify and recruit an interview subject; research the subjects' background; design and conduct a recorded oral history interview; supervise interview transcription; prepare a final report to accompany the interview transcripts. Semester Hours: 3. Cross-listed with: HIST 4242.

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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

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HIST 5346 - Medicine and Society: The Ancients to the Present. Surveys change and continuity in definitions of health and illness, interactions between patients and practitioners, the practice of medical authority, and the relationships between science, clinical medicine, and the provision of health care. Semester Hours: 3. Prerequisite: Upper division and/or graduate standing. Cross-listed with: HIST 4346.

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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. Semester Hours: 3. Prerequisite: Upper division and/or graduate standing. Cross-listed with: HIST 4415.

HIST 5417 - Commodities and Globalization: Dessert in World History. Traces the impact of 'dessert commodities' (sugar, cacao, vanilla and coffee) on Latin America during an early period of globalization (nineteenth century). Explores cultural shifts in North Atlantic countries that created the incessant demand for dessert. Semester Hours: 3. Prerequisite: Senior or graduate student standing. Cross-listed with: HIST 4417.

HIST 5418 - Textiles and Trade, Culture and Cloth: The Fabric of Premodern World History. Uses cloth to explore the interconnections that shaped premodern world history, considering the ways that the production, exchange, and consumption of cloth were tied to specific forms of political power, social and religious organization, and long distance economic relationships. Semester Hours: 3. Cross-listed with: HIST 4418.

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. Semester Hours: 3. Cross-listed with: HIST 4420.

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. Semester Hours: 3. Cross-listed with: HIST 4421.

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. Semester Hours: 3. Cross-listed with: HIST 4431.

HIST 5451 - Southern Africa. An in-depth history of the clash of peoples and cultures in Africa south of the Zambesi 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. Semester Hours: 3. Cross-listed with: HIST 4451.

HIST 5455 - African Struggle for Independence. An assessment of African leadership from the colonial era to the present. Semester Hours: 3. Cross-listed with: HIST 4455.

HIST 5460 - The Islamic Golden Age. The Islamic golden age before European expansion was characterized by sophisticated business institutions, scholarship, new technologies, and arts. Merchants and scholars helped create a global system by moving amongst regional political Muslim states. The class asks: What roles did Islam play in connecting diverse societies across broad regions? What characterized these territories? Semester Hours: 3. Cross-listed with: HIST 4460. Note: This class is not a religious studies course. It covers the history of Muslim societies rather than the history of Islam as a religion.

HIST 5461 - The Modern Middle East. Semester Hours: 3. Cross-listed with: HIST 4461.

HIST 5464 - Problems and Methods in Teaching History and Social Studies I. Introduces students to problems and methods in secondary education history and social studies teaching. This course focuses primarily on the teaching of history. Semester Hours: 3. Note: Open to students in the Initial Professional Teacher Education program or a relevant graduate program, and to practicing teachers.

HIST 5465 - Problems and Methods in Teaching History and Social Studies II. Introduces students to problems and methods in secondary education history and social studies teaching. This course focuses broadly on the teaching of all the social studies fields, including history, economics, government, and geography. Semester Hours: 3. Prerequisite: HIST 5464. Note: Open to students in the Initial Professional Teacher Education program or a relevant graduate program, and to practicing teachers.

HIST 5466 - Teaching About Ethnicity, Race, and Prejudice. Examines the history of ethnic identity and race relations in North America and applies that knowledge to teaching practices. Questions how teachers should approach the topics of race, ethnicity, and discrimination in our collective history and society. Semester Hours: 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. Semester Hours: 3. Cross-listed with: HIST 4471.

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. Semester Hours: 4. Cross-listed with: HIST 4472.

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. Semester Hours: 3. Cross-listed with: HIST 4475.

HIST 5501 - World History for Educators. Introduces world history for candidates for teaching positions. Discussion of themes, problems of research and interpretation, and relevant instructional methods. Semester Hours: 3. Prerequisite: Upper division standing. Cross-listed with: HIST 4501.

HIST 5502 - World History For Educators Workshops. Designed for world history teachers who wish to enhance their knowledge of world history content and pedagogy. If taken in total, the course is comparable to a college survey course in world history plus teaching guides. Semester Hours: 1.

HIST 5503 - Topics in History of Science. Themes vary from year to year. Possible topics: Darwinism, Nature of Memory, Time and Space, Origins. Semester Hours: 3. Prerequisite: Upper division and/or graduate standing. Cross-listed with: HIST 4503.

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. Semester Hours: 3. Cross-listed with: HIST 4504.

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. Semester Hours: 3. Prerequisite: Upper division and/or graduate standing. Cross-listed with: HIST 4621.

HIST 5810 - Special Topics. Semester Hours: 3. Cross-listed with: HIST 4810.

HIST 5840 - Independent Study. Semester Hours: 1 to 3.

HIST 5850 - History in the Community: History Day Mentoring. Under direction of UCD history faculty, students participate in the Denver Public Schools National History Day program. They gain teaching experience by mentoring DPS students in preparation of History Day projects, and may also participate in judging local and state History Day contests. Semester Hours: 1 to 3. Prerequisite: Permission of department chair.

HIST 5939 - Internship/Cooperative Education. Semester Hours: 1 to 6.

HIST 5995 - Travel Study Topics. Created for students doing travel study in a foreign country; register through the Office of International Education. Semester Hours: 1 to 15.

HIST 6013 - Historiography. Semester Hours: 3.

HIST 6645 - Archival Management. Studies theory and principles pertaining to the management of current and non-current records, archival (public) materials and manuscript (private) documents, as well as the administration of archival manuscript depositories for housing records of historical value. Semester Hours: 3.

HIST 6840 - Independent Study. Semester Hours: 1 to 3.

HIST 6920 - Readings in European History. Semester Hours: 3.

HIST 6925 - Readings in Early U.S. History. Semester Hours: 3.

HIST 6926 - Readings in Later U.S. History, 1865-1932. Semester Hours: 3.

HIST 6927 - Readings in Public History. Semester Hours: 3.

HIST 6929 - Readings in Later U.S. History, 1929 to the Present. Semester Hours: 3.

HIST 6931 - Readings: Special Subjects in History. Readings in topics in history with varying subtitles reflecting course content. Semester Hours: 3. Prerequisite: Graduate standing.

HIST 6939 - Cooperative Education. Semester Hours: 1 to 6.

HIST 6950 - Master's Thesis. 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. Semester Hours: 1 to 6. Prerequisite: Permission of instructor.

HIST 6980 - Seminar in European History. Semester Hours: 3.

HIST 6981 - Seminar in British History. Semester Hours: 3.

HIST 6986 - Seminar in Later U.S. History. Semester Hours: 3.

HIST 6989 - Seminar: Special Subjects in History. Semester Hours: 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. Semester Hours: 3.

HIST 6993 - Seminar: History of Technology. Explores American and worldwide cases, modern and pre-modern, of technological development through seminar readings and individual research. Considers how technologies evolve within historical contexts and how societies demonstrate values and beliefs as they manipulate nature, building lifestyles and social orders. Semester Hours: 3.

HLTH: Health Administration (Business)

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. Semester Hours: 3. When Offered: *Fall*.

HLTH 6040 - Health Care Financial Management. Theory of insurance applied to healthcare, including benefits design and co-payments. Existing and proposed competition in insurance markets, including rating methodologies and selection issues. Managed care and medical spending accounts as responses to problems with traditional insurance. Managerial accounting methods useful for analyzing contracts and managing profitability are presented. Semester Hours: 3. When Offered: *Fall*. Prerequisite: BUSN 6550 and 6621 or permission of instructor.

HLTH 6055 - Transformational Leadership/Metaphysical Management. Focuses on the manager's ability to generate transformational changes within the organization. In order to heal the organization, the manager must become a transformational leader, skilled in metaphysical as well as traditional management skills. Transformation means to change the structure of the organization - to move it to a higher form. In this course, we focus on characteristics of transformational leaders and metaphysical management, a spiritual process that expands the awareness of everyone in the organization. Semester Hours: 3. When Offered: *Fall*.

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. Semester Hours: 3. When Offered: *Fall*.

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. Semester Hours: 3. When Offered: *Spring*.

HLTH 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. Semester Hours: 3. When Offered: *Fall*.

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. Semester Hours: 3. Prerequisite: HLTH 6010 or permission of instructor.

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. Semester Hours: 3. When Offered: *Spring*.

HLTH 6800 - Special Topics. 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. Semester Hours: 3. When Offered: *Offered irregularly*. Prerequisite: Prerequisites vary according to topics and instructor requirements.

HLTH 6840 - Independent Study. Instructor approval required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. 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. Semester Hours: 3. Prerequisite: HLTH 6010 or permission of instructor.

HON: Honors (Liberal Arts and Sciences)

HON 1111 - Honors Gateway Freshman Seminar. Serves as the preliminary course required for a student's application to the college honors program. This seminar explores one major intellectual theme with readings, discussion, and field work in the community. Semester Hours: 1 to 3. Note: Offered every term.

HUM: Humanities (Liberal Arts and Sciences)

HUM 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. Semester Hours: 3.

HUM 3250 - Introduction to Law Studies. Introduces students to the materials and methods of law studies. Students learn how to read case law, brief a case, make a course outline, analyze fact patterns, and perform legal research and writing projects. Semester Hours: 3.

HUM 5000 - 19th Century Philosophy. Covers the systematic work of such German idealists as Hegel, Fichte, and Schelling, as well as responses to those systems by such authors as Marx, Kierkegaard, and Nietzsche. Semester Hours: 3. Prerequisite: PHIL 3002 or 3022. Cross-listed with: PHIL 4000/5000 and S SC 5000.

HUM 5013 - Philosophical Problems in the Social Sciences and the Humanities. Presents an overview of key theoretical issues currently emerging across academic disciplines. Examines questions about reality, knowledge, ethics that affect social research and writing in the humanities. Readings explore how contemporary philosophical and cultural discourses have altered theory and method. Assignments include influential theoretical pieces by key historical and contemporary thinkers, examples of application in social research, and interpretations of thought and affect in cultural contexts. Semester Hours: 3. Cross-listed with: PHIL/ S SC 5013.

HUM 5020 - Elements of Social Thought. Introduces students to the disciplines that comprise the social sciences (classical anthropology, sociology, sociology of religion, philosophy of history, political theory, classical psychology, etc.). Provides necessary tools for interdisciplinary students to understand the social infrastructure of contemporary society. Semester Hours: 3. Cross-listed with: S SC 5020 and PHIL 5020.

HUM 5025 - Methods and Texts of the Humanities. Exposes the beginning graduate student to exemplary works and methodologies of select humanistically oriented disciplines, such as philosophy, fine arts, literature, history, communication, music, and theatre. Semester Hours: 3.

HUM 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. Semester Hours: 3. Prerequisite: An introductory course in philosophy. Cross-listed with: PHIL 4101, 5101, S SC 5101.

HUM 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. Semester Hours: 3. Cross-listed with: PHIL 4220/5220.

HUM 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. Semester Hours: 3. Cross-listed with: PHIL 4242, PHIL 5242, S SC 5242.

HUM 5250 - 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. Semester Hours: 3. Cross-listed with: PHIL 4250/5250 and S SC 5250.

HUM 5520 - The City Beautiful: Art, Architecture and Theory in Urban History. How did cities develop and what were the buildings that filled these spaces? Posing this question initially, this course takes a case-study approach to surveying the concerns confronting different cultures as they developed their urban environments sociologically, anthropologically, architecturally and spatially. Semester Hours: 3. Cross-listed with: S SC 5520.

HUM 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. Semester Hours: 3. Cross-listed with: PHIL 5550 and S SC 5550.

HUM 5600 - Philosophy of Religion. Nature of religion and methods of studying it. Semester Hours: 3. Cross-listed with: PHIL 4600, 5600, RLST 4060, 5060, and S SC 5600.

HUM 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. Semester Hours: 3. Cross-listed with: PHIL 5650 and S SC 5650.

HUM 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. Semester Hours: 3. Prerequisite: Upper-division undergraduate or graduate standing.

HUM 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. Semester Hours: 3. Cross-listed with: S SC 5720.

HUM 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. Semester Hours: 3. Cross-listed with: PHIL 5755, S SC 5750.

HUM 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. Semester Hours: 3. Cross-listed with: PHIL 4833/5833 and S SC 5833.

HUM 5840 - Independent Study. Semester Hours: 1 to 3.

HUM 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. Semester Hours: 3. Cross-listed with: PHIL 4920, 5920, S SC 5920.

HUM 5924 - Directed Research and Reading in Interdisciplinary Humanities. Provides background reading, theory and research approaches for students to develop a thesis, project, or an individualized theme for the oral exam based on their interdisciplinary focus. Semester Hours: 3.

HUM 5933 - Philosophy of Eros. Why is philosophy an erotic activity, and what are the implications of this insight? We will explore these issues, first, by reading Plato's erotic dialogues: *Lysis*, *Symposium* and *Phaedrus*. Then we will focus on Freud's influential (and controversial) appropriation of Plato's thought in the writings that span his career, from *The Interpretation of Dreams* (1900) to *Civilization and its Discontents* (1930) and beyond. Finally, we will survey post-Freudian theories of eros, such as Michel Foucault's *History of Sexuality*, as well as the more recent contributions of thinkers such as Jonathan Lear, Thomas Nagel, Martha Nussbaum and Slavoj Žižek. Semester Hours: 3. Cross-listed with: PHIL 4933, PHIL 5933, S SC 5933, and WGST 4933.

HUM 5939 - Internship/Cooperative Education. Semester Hours: 1 to 6.

HUM 5950 - Master's Thesis. Semester Hours: 1 to 8.

HUM 5960 - Master's Project. Semester Hours: 1 to 8.

HUM 5984 - Topics: Interdisciplinary Humanities. Semester Hours: 3.

Information Systems: ISMG (Business)

Initial Professional Teacher Education: IPTE (Education)

Initial Teacher Education: ITE (Education)

Instructional Technology: IT (Education)

INTB: International Business (Business)

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, that they are all interrelated. Semester Hours: 3.

INTB 3901 - The Construction of the European Union. An overview of past and future development in Europe, including economic, political, and social aspects from the point of view of EU members, bordering countries, and world powers. The single market and its repercussions for businesses and the impact of the creation of a single market are studied. Offered through the ACI Semester in Paris program. Semester Hours: 3. Prerequisite: Acceptance to the ACI program.

INTB 3902 - Intercultural Management: European Values and Behavior. An in-depth study of European cultural differences and what unites the European nations. Histories and cultures of European countries are used to understand differences in communication, management, and organizational development. Case studies provide a synthesis of European and U.S. management practices. Offered through the ACI Semester in Paris program. Semester Hours: 3. Prerequisite: Acceptance to the ACI program.

INTB 3903 - International Business Law. Provides a legal framework necessary for international business transactions and judicial risks. Combining theory and case studies, the course covers contract law, dispute settlement, and international business specific operations: international sales, distribution and exclusive concession contracts, franchise contracts, commercial agency contracts, and technology transfer contracts. Offered through the ACI Semester in Paris program. Semester Hours: 3. Prerequisite: BLAW 3000 and acceptance to the ACI program.

INTB 3904 - International Negotiation. Studies the position of the company in the international marketing process; general knowledge of negotiators' external environments; preparation of a negotiation and the negotiating process; and expression of each party within the context of a contract. Offered through the ACI Semester in Paris program. Semester Hours: 3. Prerequisite: Acceptance to the ACI program.

INTB 3905 - International Marketing and Distribution. A practical view of the development of foreign markets, emphasizing strategic decisions of international development and analysis of company expertise regarding preferences and entrance into the marketplace. Problems pertaining to implementation of international sales policies and evolution of product distribution are also studied. Offered through the ACI Semester in Paris program. Semester Hours: 3. Prerequisite: MKTG 3000 and acceptance to the ACI program.

INTB 3906 - International Communication and Consumer Behavior. Examines the influence of culture on purchasing and consuming as well as the importance of cultural values in consumer behavior. Provides the necessary framework to understand the current global market situation (product development, global market structures, global marketing strategies). An analysis of communication and advertising in an international context. Semester Hours: 3. Prerequisite: MKTG 3000 and acceptance to the ACI program.

INTB 3907 - European Marketing and Management of a Product Line. Trains students to analyze the main characteristics and trends of the European marketing environment and business development. With extensive use of case studies, it examines such issues as European product launches. Semester Hours: 3. Prerequisite: MKTG 3000 and acceptance to the ACI program.

INTB 3908 - Organizations and Culture. Introduces a range of ideas about organizations and how they work. Issues of internationalization in the context of organizational structure and culture, covering such topics as the global-local dilemma, the 'transnational' approach and structural criteria. Modern organizational challenges assessed: innovation and technology. Semester Hours: 3. Prerequisite: MGMT 3000 and acceptance to ACI program.

INTB 3909 - Single Market, European Law and Euroland. Overview of past and future steps in the development of Europe, economics, political and social aspects from the point of view of EU members, bordering countries (Central Europe) and world powers (United States, Japan and Asia). The single market and its repercussions for business (free access to the market, common rules, single currency) and the impact of the single market on their strategies. Semester Hours: 3. Prerequisite: Acceptance to the ACI program.

INTB 3910 - International Corporate Finance. The objective of this seminar is to provide an overview of international corporate finance, understand the main differences in accounting standards, interpret and critically analyze the financial reports issued by international firms, and have a working knowledge of cost accounting principles. Semester Hours: 3. Prerequisite: FNCE 3100 and acceptance to the ACI program.

INTB 3911 - The United States Of Europe. The objectives of this seminar are to allow students to obtain a practical knowledge of and develop a thorough understanding of the integrative process taking place among several European countries, and to give them a unique chance to become familiar with the various political, economical, legal, cultural, and human aspects of the European community being developed and institutionalized, on a brand new, historical, and transnational level. Semester Hours: 3. Prerequisite: Acceptance to the ACI program.

INTB 3939 - Internship/Cooperative Education. Supervised experiences involving the application of concepts and skills in an employment situation. Semester Hours: 1 to 3. Prerequisite: Senior standing and a 3.5 GPA.

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. Semester Hours: 3. Prerequisite: MGMT 3000 and junior standing. Cross-listed with: MGMT 4400.

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. Semester Hours: 3. Prerequisite: Topics very depending on the topic and the instructor requirements.

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. Semester Hours: 3. Prerequisite: Topics vary depending on the topic and the instructor requirements.

INTB 5939 - Internship/Cooperative Education. Supervised experiences involving the application of concepts and skills in an employment situation. Semester Hours: 1 to 3. Prerequisite: 21 semester hours and a 3.5 grade-point average.

INTB 6000 - Introduction to International Business. An overview of the international business environment, the impact of environmental factors on international business operations, and the identification of current and complex managerial issues facing organizations engaged in international business. Semester Hours: 3. Prerequisite: Completion or waiver of CBK or completion of nine graduate credit hours.

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. Semester Hours: 3. Prerequisite: INTB 6000 or permission of instructor.

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.). Semester Hours: 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.) Semester Hours: 3.

INTB 6026 - International Marketing. Explores problems, practices, and strategies involved in marketing goods and services internationally. Emphasizes analysis of uncontrollable environments, legal systems, and economic conditions, as they affect international marketing planning. (This course qualifies as an international elective for the MS in International Business program.). Semester Hours: 3. When Offered: Fall, Spring. Prerequisite: BUSN 6560. Cross-listed with: MKTG 6020. Note: Students cannot receive credit for both MKTG 6020 and INTB 6026.

INTB 6040 - International Human Resources Management. 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). Semester Hours: 3. Prerequisite: MGMT 6380 or BUSN 6520 (or equivalent). Cross-listed with: MGMT 6040.

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.). Semester Hours: 3.

INTB 6080 - Global Competition. Focuses on the dynamics of the interface between international business operations and their market environments. It addresses the changing structure of international competitive environments and its implications for companies engaged in international business. It examines various approaches to and issues in structuring international business deals in dynamic global competitive environments. (This course qualifies as an international elective for the MS in International Business program.). Semester Hours: 3. Prerequisite: INTB 6000 or permission of instructor.

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). Semester Hours: 3. Prerequisite: BUSN 6560. Cross-listed with: MKTG 6080. Note: Students cannot receive credit for both MKTG 6080 and INTB 6082.

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. Semester Hours: 3. Cross-listed with: MKTG 6094. Note: It is recommended for students to take BUSN 6560 or INTB 6000 prior to this course.

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. Semester Hours: 3. Prerequisite: INTB 6000 and 18 graduate credit hours.

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, 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. (This course qualifies as an international elective for the MS in International Business program.). Semester Hours: 3. When Offered: *Spring*. Prerequisite: BUSN 6550 or equivalent. Cross-listed with: ACCT 6370 and ACCT 4370. Note: Students cannot receive credit for both INTB 6370 and ACCT 6370.

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. Semester Hours: 3. Prerequisite: BUSN 6640. Cross-listed with: FNCE 6370.

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). Semester Hours: 3. Prerequisite: BUSN 6640. Cross-listed with: FNCE 6411. Note: Students cannot receive credit for both FNCE 6411 and INTB 6411.

INTB 6750 - Research Methods in International Business. Focuses on three major issues: (1) research design from an international management perspective 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. Semester Hours: 3. Prerequisite: INTB 6000 and BUSN 6530 or equivalent.

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.). Semester Hours: 3. Prerequisite: Topics vary depending on topic and instructor requirements.

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.). Semester Hours: 1 to 8.

INTB 6950 - Master's Thesis. Semester Hours: 1 to 8. Prerequisite: INTB 6750.

International Business: INTB (Business)

IPTE: Initial Professional Teacher Education (Education)

IPTE 4000 - Elementary Literacy Instruction and Assessment.

Designed to prepare teacher candidates to develop an appreciation, understanding, and application of literacy assessment and instruction in the elementary classroom. Teachers learn how to use the results of various types of assessment to create a reading and writing program that addresses the literacy needs of all children. The course assist teachers in learning how to integrate the teaching of reading and writing across content areas. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship or permission of instructor is required. Admission into the IPTE Program. Cross-listed with: IPTE 5000.

IPTE 4001 - Elementary Literacy Assessment and Instruction

Teaching Lab. Designed to support novice and experienced teachers in examining student reading and writing performance data and using the data to plan instruction that assist students meeting reading and writing standards. Conducted by teacher experts in literacy; labs utilize classroom data from the elementary students the lab participants are teaching. Semester Hours: 1. Prerequisite: Concurrent enrollment in an internship or IPTE 4000 or IPTE 5000 or permission of instructor is required. Admission into the IPTE Program. Cross-listed with: IPTE 5001.

IPTE 4002 - Math Instruction and Assessment. Designed to prepare elementary teachers to teach mathematics in elementary school and to apply the six principles of the National Council of Teachers of Mathematics (NCTM), (equity, curriculum, teaching, learning, assessment and technology) to the four areas of mathematical learning, (number sense, statistics and probability, geometry and measurement, and mathematical functions). Teachers explore ways to help all elementary students become flexible and resourceful problem solvers in mathematics. Semester Hours: 2. Prerequisite: MATH 3040. Concurrent enrollment in an internship or permission of an instructor is required. Admission into the IPTE Program. Cross-listed with: IPTE 5002.

IPTE 4004 - Science In the Elementary Curriculum. Designed to support elementary teachers in developing an understanding and appreciation of active science explorations in elementary classrooms, learning various methods of teaching and assessing science that prepare students to meet science content standards, developing authentic applications of science, and integrating science with other elementary content areas, including literacy and math, to support more holistic learning. Semester Hours: 2 Cross-listed with: IPTE 5004.

IPTE 4005 - Social Studies In the Elementary Curriculum. Designed to prepare elementary teachers to support students' learning related to the Colorado social studies standards. The course includes attention to social studies curriculum and teaching resources, approaches and strategies for effective teaching and assessment of social studies content, and to the teaching of literacy and math within social studies content. The course also helps teachers understand how to model democratic ideals in a classroom. Semester Hours: 2 Cross-listed with: IPTE 5005.

IPTE 4006 - Integrated Science and Social Studies in the Elementary Curriculum. Designed to support elementary teachers in developing an understanding and appreciation of active science and social studies explorations in elementary classrooms, learning various methods of teaching and assessing science and social studies that prepare students to meet content standards, developing authentic applications and integrating with other elementary content areas, including literacy and math, to support more holistic learning. Semester Hours: 4 Cross-listed with: IPTE 5006.

IPTE 4020 - Exploring Diversity in Content and Pedagogy I. An essential feature of standards-based curriculum design and instruction is the ability of teachers to draw from students' previous experience, help students make connections between new information and previous knowledge and skills, and support students in transferring new information to real-life contexts and environments. The purpose of the year-long two-part workshop is to guide teacher candidates through a process for achieving these outcomes for all students utilizing curriculum that integrates reading, writing, math, science, social studies, movement, and the expressive arts. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship. Admission into the IPTE Program. Cross-listed with: IPTE 5020.

IPTE 4025 - 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 are emphasized as is the use of assessment information to guide instruction for students. Instructional strategies for special populations, especially speakers of English as a second language, are also addressed. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship or permission of instructor required. Admission into the IPTE Program. Cross-listed with: IPTE 5025.

IPTE 4026 - Content Literacy Assessment and Instruction Teaching Lab. The secondary literacy teaching lab is designed to support novice and experienced teachers from all content areas in examining students' reading and writing performance data and using the data to plan instruction that assist secondary students in meeting reading and writing standards through work in content area classes. Conducted by teacher experts who possess knowledge of literacy strategies useful in content area teaching, labs utilize the data from the students that the lab participants are teaching. Semester Hours: 1. Prerequisite: IPTE 4025

and IPTE 4910 or teaching experience. Concurrent enrollment in an internship or permission of instructor required. Admission into the IPTE Program. Cross-listed with: IPTE 5026.

IPTE 4050 - Planning for the First Year of Teaching. Designed to assist those who are about to enter into their first year of teaching in planning for the first year, with a focus on: 1) creating community; 2) professional learning; and 3) curriculum and instruction. Semester Hours: 1 Cross-listed with: IPTE 5050.

IPTE 4120 - Negotiating the Classroom Culture with Children. A central purpose of classroom management is to establish and maintain a learning environment that fosters both effective and efficient instruction in the context of a positive social culture that models democratic ideals for students. This course focuses on the dimensions of classroom life as they are directly influenced by the social and cultural background of elementary students. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship. Admission into the IPTE Program. Cross-listed with: IPTE 5120.

IPTE 4121 - Negotiating the Classroom Culture with Adolescents. A central purpose of classroom management is to establish and maintain a learning environment that fosters both effective and efficient instruction in the context of a positive social culture that models democratic ideals for students. This course focuses on the dimensions of classroom life as they are directly influenced by the social and cultural background of middle and high school students. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship is required. Admission into the IPTE Program. Cross-listed with: IPTE 5121.

IPTE 4130 - Democratic Schooling: Issues of Laws and Ethics. Designed to provide an understanding of the legal, social, ethical, and democratic context of schools, the teacher's legal and ethical role in schools, and to examine the related issues that currently face teachers, parents, students, legislators and administrators. The aim is to facilitate the clarification of a personal value system through readings and discussions of the foundations of schooling in America. Semester Hours: 3. Cross-listed with: IPTE 5130.

IPTE 4300 - Curriculum and Methods in Secondary Math. Focuses on the development of competencies in consultation and collaboration. The overall purpose is to encourage the development of understanding and skills that enhance teachers' 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/observation skills, conferencing, facilitating meetings, and interacting with others while respecting diverse discourses and multicultural backgrounds. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship or permission of instructor required. Admission into the IPTE Program. Cross-listed with: IPTE 5300.

IPTE 4350 - Modern Trends in Science Education. Recent developments in theory, curriculum, methods, politics, and materials in secondary science are examined for their contribution to the objectives of science education. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship or permission of instructor is required. Admission into the IPTE Program. Cross-listed with: IPTE 5350.

IPTE 4351 - Inquiry Science Methods. Designed to provide an in-depth study of inquiry science methods and how inquiry science supports standards-based education. The course provides a review of research on the pedagogy that supports student understanding, problem solving and creativity through the use of inquiry science. Participants learn a variety of methods, techniques and resources for teaching inquiry science, understand the processes of 'doing' science, and develop lessons that actively engage students in science in their own classrooms. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship or permission of instructor is required. Admission into the IPTE Program. Cross-listed with: IPTE 5351.

IPTE 4401 - Assessment In Math Education. Applied examination of traditional and alternative assessment techniques and practices in mathematics. Primary focus of the course is the questions teachers ask to

probe mastery and understanding of standards-based mathematics and what to look for in student responses to those questions. Topics including the history of assessment of mathematical understanding, types of mathematical knowledge, performance, authentic assessment, traditional assessment techniques, interactive interviews, CSAP math tests, language and culture as factors in mathematics, recent research, and the influence of technology on assessment. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship or permission of instructor required.

Admission into the IPTE Program. Cross-listed with: IPTE 5401.

IPTE 4460 - Thoughtful Inquiry In Teaching Social Studies: Culture, People and Change. Focuses on the themes of culture, people, and change, this course equips secondary teachers with the skills and knowledge needed to plan and implement secondary social studies curriculum using integrated methodology. Additionally, this course increases teachers' understanding regarding the role of social studies education in the school curriculum and familiarizes teachers with problems, issues, and trends associated with social studies curricula.

Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship or permission of instructor required. Cross-listed with: IPTE 5460.

IPTE 4465 - Thoughtful Inquiry In Teaching Social Studies: Power, Technology and Society. Focuses on the themes of power, technology, and society, this course equips secondary teachers with the knowledge and skills needed to plan and implement secondary social studies curriculum using integrated methodology. Additionally, this course increases teachers' understanding regarding the role of social studies education in the school curriculum and familiarizes teachers with problems, issues, and trends associated with social studies curricula.

Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship or permission of instructor required. Cross-listed with: IPTE 5465.

IPTE 4740 - Adolescent Literature. Reading and evaluation of fiction and non-fiction appropriate for students in middle and senior high school. Emphasis is on modern literature written for students from a variety of ethnic backgrounds. Course is also appropriate for teachers working with adults to improve their reading. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship or permission of instructor required. Admission into the IPTE Program. Cross-listed with: IPTE 5740.

IPTE 4760 - 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. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship or permission of instructor is required. Admission into the IPTE Program. Cross-listed with: IPTE 5760.

IPTE 4910 - Internship and Site Seminar 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 (e.g., general special education, bilingual education, Title I services, etc.). Semester Hours: 2. Cross-listed with: IPTE 5910.

IPTE 4911 - Internship and Site Seminar 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 (e.g., general and special education, bilingual education, Title I services, etc.). 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 School Internship Handbook. In partner schools, the partner school site coordinator and the site professor are responsible for coaching and supervising teacher candidates and for supporting the clinical teachers in their work with teacher candidates. Site coordinators and professor conduct site seminars focused on providing teacher candidates with information about the partner school context and support for success within that context. In internships outside of partner school settings, cooperating teachers, district coordinators, and/or university professors work with teacher candidates in the classroom and

in seminars. Semester Hours: 2. Prerequisite: IPTE 4910 with a 'B' or better. Admission into the IPTE Program. Cross-listed with IPTE 5911.

IPTE 4912 - Internship and Site Seminar 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 (e.g., general and special education, bilingual education, Title I services, etc.). 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 School Internship Handbook. In partner schools, the partner school site coordinator and the site professor are responsible for coaching and supervising teacher candidates and for supporting the clinical teachers in their work with teacher candidates. Site coordinators and professor conduct site seminars focused on providing teacher candidates with information about the partner school context and support for success within that context. In internships outside of partner school settings, cooperating teachers, district coordinators, and/or university professors work with teacher candidates in the classroom and in seminars. Semester Hours: 3. Prerequisite: IPTE 4911 with a 'B' or better. Admission into the IPTE Program. Cross-listed with IPTE 5912.

IPTE 4913 - Internship and Site Seminar IV. 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 (e.g., general and special education, bilingual education, Title I services, etc.). 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 School Internship Handbook. In partner schools, the partner school site coordinator and the site professor are responsible for coaching and supervising teacher candidates and for supporting the clinical teachers in their work with teacher candidates. Site coordinators and professor conduct site seminars focused on providing teacher candidates with information about the partner school context and support for success within that context. In internships outside of partner school settings, cooperating teachers, district coordinators, and/or university professors work with teacher candidates in the classroom and in seminars. Semester Hours: 6. Prerequisite: IPTE 4912, with a 'B' or better, passing score on the PLACE/PRAXIS content exam and satisfactory progress in the program. Cross-listed with IPTE 5913.

IPTE 4915 - Internship and Seminar I. Teachers working in their own classrooms while earning an initial teaching license engage in assessment, instruction, management, and collaborate with their colleagues across the full range of educational programs in their school (e.g., general and special education, bilingual education, Title I services, etc.). They also participate in the activities of a school community (the school and the community in which the school exist). Supervision and coaching of the teacher is negotiated by the employing district and the university but is likely to be a joint responsibility of district or school and university personnel. Teachers attend monthly seminars focused on current challenges and/or performance-based assessments. Semester Hours: 4. Prerequisite: Continuing contract as a teacher, satisfactory completion of the preceding internship, and concurrent enrollment in scheduled IPTE coursework.

IPTE 4916 - Internship and Seminar II. Teachers working in their own classrooms while earning an initial teaching license engage in assessment, instruction and management and collaborate with their colleagues across the full range of educational programs in their school (e.g., general and special education, bilingual education, Title I services, etc.). They also participate in the activities of a school community (the school and the community in which the school exist). Supervision and coaching of the teacher is negotiated by the employing district and the university but is likely to be a joint responsibility of district or school and university personnel. Teachers attend monthly seminars focused on current challenges and/or on performance-based assessments. Semester Hours: 4. Prerequisite: IPTE 4915 and continuing contract as a teacher.

IPTE 4917 - Internship and Seminar III. Teachers working in their own classrooms while earning an initial teaching license engage in assessment, instruction and management and collaborate with their colleagues across the full range of educational programs in their school (e.g., general and special education, bilingual education, Title I services, etc.). They also participate in the activities of a school community (the school and the community in which the school exist). Supervision and coaching of the teacher is negotiated by the employing district and the university but is likely to be a joint responsibility of district or school and university personnel. Teachers attend monthly seminars focused on current challenges and/or on performance-based assessments. Semester Hours: 4. Prerequisite: Continuing contract as a teacher, satisfactory completion of the preceding internship, and concurrent enrollment in scheduled IPTE coursework.

IPTE 4918 - Internship and Seminar IV. Teachers working in their own classrooms while earning in initial teaching license engage in assessment, instruction and management and collaborate with their colleagues across the full range of educational programs in their school (i.e., general and special education, bilingual education, Title I services, etc.). They also participate in the activities of a school community (the school and the community in which the school exist). Supervision and coaching of the teacher is negotiated by the employing district and the university but is likely to be a joint responsibility of district or school and university personnel. Teachers attend monthly seminars focused on current challenges and/or on performance-base assessments. Semester Hours: 4. Prerequisite: A continuing teaching contract; satisfactory completion of the preceding internships and coursework and concurrent enrollment in scheduled coursework or permission of instructor.

IPTE 5000 - Elementary Literacy Instruction and Assessment. Designed to prepare teacher candidates to develop an appreciation, understanding, and application of literacy assessment and instruction in the elementary classroom. Teachers learn how to use the results of various types of assessment to create a reading and writing program that addresses the literacy needs of all children. The course assist teachers in learning how to integrate the teaching of reading and writing across content areas. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship or permission of instructor is required. Cross-listed with: IPTE 4000.

IPTE 5001 - Elementary Literacy Assessment and Instruction Teaching Lab. Designed to support novice and experienced teachers in examining student reading and writing performance data and using the data to plan instruction assist students in meeting reading and writing standards. Conducted by teacher experts in literacy; labs utilize classroom data from the elementary students the lab participants are teaching. Semester Hours: 1. Prerequisite: Concurrent enrollment in an internship or IPTE 5000 or IPTE 4000 or permission of an instructor is required. Cross-listed with: IPTE 4001.

IPTE 5002 - Math Instruction and Assessment. Designed to prepare elementary teachers to teach mathematics in elementary school and to apply the six principles of the National Council of Teachers of Mathematics (NCTM), (equity, curriculum, teaching, learning, assessment and technology) to the four areas of mathematical learning, (number sense, statistics and probability, geometry and measurement, and mathematical functions). Teachers explore ways to help all elementary students become flexible and resourceful problem solvers in mathematics. Semester Hours: 2. Prerequisite: MATH 3040. Concurrent enrollment in an internship or permission of an instructor is required. Cross-listed with: IPTE 4002.

IPTE 5004 - Science In the Elementary Curriculum. Designed to support elementary teachers in developing an understanding and appreciation of active science explorations in elementary classrooms, learning various methods of teaching and assessing science that prepare students to meet science content standards, developing authentic applications of science, and integrating science with other elementary content areas, including literacy and math, to support more holistic learning. Semester Hours: 2 Cross-listed with: IPTE 4004.

IPTE 5005 - Social Studies In the Elementary Curriculum. Designed to prepare elementary teachers to support students' learning related to the Colorado social studies standards. The course includes attention to social studies curriculum and teaching resources, approaches and strategies for effective teaching and assessment of social studies content, and to the teaching of literacy and math within social studies content. The course also helps teachers understand how to model democratic ideals in a classroom. Semester Hours: 2 Cross-listed with: IPTE 4005.

IPTE 5006 - Integrated Science and Social Studies in the Elementary Curriculum. Designed to support elementary teachers in developing an understanding and appreciation of active science and social studies explorations in elementary classrooms, learning various methods of teaching and assessing science and social studies that prepare students to meet content standards, developing authentic applications and integrating with other elementary content areas, including literacy and math, to support more holistic learning. Semester Hours: 04-Jan Cross-listed with: IPTE 4006.

IPTE 5020 - Exploring Diversity in Content and Pedagogy I. An essential feature of standards-based curriculum design and instruction is the ability of teachers to draw from students' previous experience, help students make connections between new information and previous knowledge and skills, and support students in transferring new information to real-life contexts and environments. The purpose of the year-long two-part workshop is to guide teacher candidates through a process for achieving these outcomes for all students utilizing curriculum that integrates reading, writing, math, science, social students, movement, and the expressive arts. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship. Cross-listed with: IPTE 4020.

IPTE 5025 - 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 are emphasized as is the use of assessment information to guide instruction for students. Instructional strategies for special populations, especially speakers of English as a second language, are also addressed. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship or permission of instructor required. Cross-listed with: IPTE 4025.

IPTE 5026 - Content Literacy Assessment and Instruction Teaching Lab. The secondary literacy teaching lab is designed to support novice and experienced teachers from all content areas in examining students' reading and writing performance data and using the data to plan instruction that assist secondary students in meeting reading and writing standards through work in content area classes. Conducted by teacher experts who possess knowledge of literacy strategies useful in content area teaching, labs utilize the data from the students that the lab participants are teaching. Semester Hours: 1. Prerequisite: IPTE 5025 and 5910 or teaching experience. Concurrent enrollment in an internship or permission of instructor required. Cross-listed with: IPTE 4026.

IPTE 5050 - Planning for the First Year of Teaching. Designed to assist those who are about to enter into their first year of teaching in planning for the first year, with a focus on: 1) creating community; 2) professional learning; and 3) curriculum and instruction. Semester Hours: 1. Prerequisite: IPTE 5913 with a grade of 'B' or better. Cross-listed with: IPTE 4050.

IPTE 5070 - Teacher Inquiry I. The teachers develop a greater understanding of strategies and methods for conducting classroom and beyond-the-classroom inquiry that help them explore important questions about teaching and learning. Semester Hours: 2. Prerequisite: IPTE 5913 with a grade of 'B' or better.

IPTE 5071 - Teacher Inquiry II. Part II: Teachers conduct school and/or community-based inquiries in collaboration with each other and/or with their mentor teachers. Teachers share their clinical findings with their new school colleagues. Semester Hours: 1. Prerequisite: IPTE 5070.

IPTE 5080 - Principles and Practice of Change. Teachers read widely from the literature on the societal, institutional, managerial, and political contexts of change in schooling. They examine their roles as instructional

leaders, reflective practitioners and change agents as they use scholarly treatment of these topics in their daily work. Semester Hours: 3.

Prerequisite: IPTE 5912 with a grade of 'B' or better.

IPTE 5120 - Negotiating the Classroom Culture with Children. A central purpose of classroom management is to establish and maintain a learning environment that fosters both effective and efficient instruction in the context of a positive social culture that models democratic ideals for students. This course focuses on the dimensions of classroom life as they are directly influenced by the social and cultural background of elementary students. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship. Cross-listed with: IPTE 4120.

IPTE 5121 - Negotiating the Classroom Culture with Adolescents. A central purpose of classroom management is to establish and maintain a learning environment that fosters both effective and efficient instruction in the context of a positive social culture that models democratic ideals for students. This course focuses on the dimensions of classroom life as they are directly influenced by the social and cultural background of middle and high school students. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship. Cross-listed with: IPTE 4121.

IPTE 5130 - Democratic Schooling: Issues of Laws and Ethics. Designed to provide an understanding of the legal, social, ethical, and democratic context of schools, the teacher's legal and ethical role in schools, and to examine the related issues that currently face teachers, parents, students, legislators and administrators. The aim is to facilitate the clarification of a personal value system through readings and discussions of the foundations of schooling in America. Semester Hours: 3. Cross-listed with: IPTE 4130.

IPTE 5300 - Curriculum and Methods in Secondary Math. Focuses on the development of competencies in consultation and collaboration. The overall purpose is to encourage the development of understanding and skills that enhance teachers' 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/observation skills, conferencing, facilitating meetings, and interacting with others while respecting diverse discourses and multicultural backgrounds. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship or permission of instructor required. Cross-listed with: IPTE 4300.

IPTE 5350 - Modern Trends in Science Education. Recent developments in theory, curriculum, methods, politics, and materials in secondary science are examined for their contribution to the objectives of science education. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship or permission of instructor is required. Cross-listed with: IPTE 4350.

IPTE 5351 - Inquiry Science Methods. Designed to provide an in-depth study of inquiry science methods and how inquiry science supports standards-based education. The course provides a review of research on the pedagogy that supports student understanding, problem solving and creativity through the use of inquiry science. Participants learn a variety of methods, techniques and resources for teaching inquiry science, understand the processes of 'doing' science, and develop lessons that actively engage students in science in their own classrooms. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship or permission of instructor is required. Cross-listed with: IPTE 4351.

IPTE 5401 - Assessment In Math Education. Applied examination of traditional and alternative assessment techniques and practices in mathematics. A primary focus of the course is the questions teachers ask to probe mastery and understanding of standards-based mathematics and what to look for in student responses to those questions. Topics including the history of assessment of mathematical understanding, types of mathematical knowledge, performance, authentic assessment, traditional assessment techniques, interactive interviews, CSAP math tests, language and culture as factors in mathematics, recent research, and the influence of technology on assessment. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship or permission of instructor required. Cross-listed with: IPTE 4401.

IPTE 5460 - Thoughtful Inquiry In Teaching Social Studies:

Culture, People and Change. Focuses on the themes of culture, people, and change, this course equips secondary teachers with the skills and knowledge needed to plan and implement secondary social studies curriculum using integrated methodology. Additionally, this course increases teachers' understanding regarding the role of social studies education in the school curriculum and familiarizes teachers with problems, issues, and trends associated with social studies curricula. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship or permission of instructor required. Cross-listed with: IPTE 4460.

IPTE 5465 - Thoughtful Inquiry In Teaching Social Studies: Power, Technology and Society. Focuses on the themes of power, technology, and society, this course equips secondary teachers with the knowledge and skills needed to plan and implement secondary social studies curriculum using integrated methodology. Additionally, this course increases teachers' understanding regarding the role of social studies education in the school curriculum and familiarizes teachers with problems, issues, and trends associated with social studies curricula. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship or permission of instructor required. Cross-listed with: IPTE 4465.

IPTE 5690 - Curriculum and Methods in Foreign Language. Methodology to teaching French, German, and Spanish in an urban setting. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship required.

IPTE 5691 - Curriculum and Methods in Foreign Language II. Methodology to teaching French, German, and Spanish in an urban setting. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship required.

IPTE 5740 - Adolescent Literature. Reading and evaluation of fiction and non-fiction appropriate for students in middle and senior high school. Emphasis is on modern literature written for students from a variety of ethnic backgrounds. Course is also appropriate for teachers working with adults to improve their reading. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship or permission of instructor required. Cross-listed with: IPTE 4740.

IPTE 5760 - 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. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship or permission of instructor is required. Cross-listed with: IPTE 4760.

IPTE 5840 - Independent Study. Semester Hours: 1 to 4.

IPTE 5910 - Internship and Site Seminar 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 (e.g., general special education, bilingual education, Title I services, etc.). 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 School Internship Handbook. In partner schools, the partner school site coordinator and the side professor are responsible for coaching and supervising teacher candidates, and for supporting the clinical teachers in their work with teacher candidates. Site coordinators and professor conduct site seminars focused on providing teacher candidates with information about the partner school context and support for success within that context. In internships outside of partner school settings, cooperating teachers, district coordinators, and/or university professors work with teacher candidates in the classroom and in seminars. Semester Hours: 2 Cross-listed with: IPTE 4910.

IPTE 5911 - Internship and Site Seminar 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 (e.g., general and special education, bilingual education, Title I services, etc.). 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 School Internship Handbook. In partner schools, the partner school site coordinator and the site professor are responsible for coaching and supervising teacher candidates and for supporting the clinical teachers in their work with teacher candidates. Site coordinators and professor conduct site seminars focused on providing teacher candidates with information about the partner school context and support for success within that context. In internships outside of partner school settings, cooperating teachers, district coordinators, and/or university professors work with teacher candidates in the classroom and in seminars. Semester Hours: 2. Prerequisite: IPTE 5910 with a 'B' or better. Cross-listed with: IPTE 4911.

IPTE 5912 - Internship and Site Seminar 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 (e.g., general and special education, bilingual education, Title I services, etc.). 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 School Internship Handbook. In partner schools, the partner school site coordinator and the site professor are responsible for coaching and supervising teacher candidates and for supporting the clinical teachers in their work with teacher candidates. Site coordinators and professor conduct site seminars focused on providing teacher candidates with information about the partner school context and support for success within that context. In internships outside of partner school settings, cooperating teachers, district coordinators, and/or university professors work with teacher candidates in the classroom and in seminars. Semester Hours: 3. Prerequisite: IPTE 5911 with a 'B' or better. Cross-listed with: IPTE 4912.

IPTE 5913 - Internship and Site Seminar IV. 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 (e.g., general and special education, bilingual education, Title I services, etc.). 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 School Internship Handbook. In partner schools, the partner school site coordinator and the site professor are responsible for coaching and supervising teacher candidates and for supporting the clinical teachers in their work with teacher candidates. Site coordinators and professor conduct site seminars focused on providing teacher candidates with information about the partner school context and support for success within that context. In internships outside of partner school settings, cooperating teachers, district coordinators, and/or university professors work with teacher candidates in the classroom and in seminars. Semester Hours: 6. Prerequisite: IPTE 5912, with a 'B' or better, passing score on the PLACE/PRAXIS content exam and satisfactory progress in the program. . Cross-listed with: IPTE 4913.

IPTE 5915 - Internship and Seminar I. Teachers working in their own classrooms while earning an initial teaching license engage in assessment, instruction, management, and collaborate with their colleagues across the full range of educational programs in their school (e.g., general and special education, bilingual education, Title I services, etc.). They also participate in the activities of a school community (the school and the community in which the school exist). Supervision and coaching of the teacher is negotiated by the employing district and the university but is likely to be a joint responsibility of district or school and university personnel. Teachers attend monthly seminars focused on current challenges and/or performance-based assessments. Semester Hours: 4. Prerequisite: Continuing contract as a teacher, satisfactory completion of the preceding internship, and concurrent enrollment in scheduled IPTE coursework.

IPTE 5916 - Internship and Seminar II. Teachers working in their own classrooms while earning an initial teaching license engage in assessment, instruction and management and collaborate with their colleagues across the full range of educational programs in their school (e.g., general and special education, bilingual education, Title I services, etc.). They also participate in the activities of a school community (the school and the community in which the school exist). Supervision and coaching of the teacher is negotiated by the employing district and the university but is likely to be a joint responsibility of district or school and university personnel. Teachers attend monthly seminars focused on current challenges and/or on performance-based assessments. Semester Hours: 4. Prerequisite: IPTE 5915 and continuing contract as a teacher.

IPTE 5917 - Internship and Seminar III. Teachers working in their own classrooms while earning an initial teaching license engage in assessment, instruction and management and collaborate with their colleagues across the full range of educational programs in their school (e.g., general and special education, bilingual education, Title I services, etc.). They also participate in the activities of a school community (the school and the community in which the school exist). Supervision and coaching of the teacher is negotiated by the employing district and the university but is likely to be a joint responsibility of district or school and university personnel. Teachers attend monthly seminars focused on current challenges and/or on performance-based assessments. Semester Hours: 4. Prerequisite: Continuing contract as a teacher, satisfactory completion of the preceding internship, and concurrent enrollment in scheduled IPTE coursework.

IPTE 5918 - Internship and Seminar IV. Teachers working in their own classrooms while earning in initial teaching license engage in assessment, instruction and management and collaborate with their colleagues across the full range of educational programs in their school (i.e., general and special education, bilingual education, Title I services, etc.). They also participate in the activities of a school community (the school and the community in which the school exist). Supervision and coaching of the teacher is negotiated by the employing district and the university but is likely to be a joint responsibility of district or school and university personnel. Teachers attend monthly seminars focused on current challenges and/or on performance-base assessments. Semester Hours: 4. Prerequisite: A continuing teaching contract; satisfactory completion of the preceding internships and coursework and concurrent enrollment in scheduled coursework or permission of instructor.

IPTE 5919 - Second Endorsement Internship or Guest Student Teaching. A specially arranged internship for those seeking a second endorsement in an area in which they are already teaching or wish to teach and/or for those from another state who wish to do their student teaching in Colorado and transfer credits back to their home institution. The number of credits and possible fee is arranged according to circumstances. Semester Hours: 4 to 12. Prerequisite: Letter from employing district certifying employment in teaching field for which licensure is sought or a letter from home institution certifying readiness to student teach.

ISMG: Information Systems (Business)

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. Semester Hours: 3.

ISMG 2075 - Introduction to Microsoft Access. Introduction to Microsoft Access prepares students to use databases 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. Semester Hours: 1. Prerequisite: Computer Competency.

ISMG 2200 - Introduction to Business Programming. Examines how business applications are developed. Emphasis is placed on developing complete and user-friendly programming solutions to business problems. Students are introduced to an object-oriented programming language for implementing event-driven business problem solutions. Semester Hours: 3. Prerequisite: ISMG 2050.

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. Semester Hours: 3. When Offered: *Spring*. Prerequisite: ISMG 2050.

ISMG 3000 - Principles of Information Systems. 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. Semester Hours: 3. When Offered: *Fall, Spring, Summer*. Prerequisite: ISMG 2050. Note: Fall, Spring. Business core course, therefore a grade of 'C' or better must be earned to satisfy graduation requirements.

ISMG 3100 - Information Technology Hardware and Software. Provides the hardware/software technology background to enable systems development personnel to understand tradeoffs in computer architecture for effective use in business environment. System architecture for single user, central, and networked computing systems; single and multi-user operating systems. Semester Hours: 3. Prerequisite: ISMG 3000.

ISMG 3200 - Programming, Data, File and Object Structures. Provides an understanding of algorithm development, programming, computer concepts, and the design and application of data and file structures. Includes an understanding of the logical and physical structure of both programs and data. The 'JAVA' programming language will be used as the vehicle for investigating a variety of data structure topics. Topics include: data structures and representation; characters, records, files and multimedia; precision of data; information representation, organization and storage; algorithm development; object representation compared to conventional data flow notation; programming control structures; program correctness, verification, and validation; file structures and representation. Semester Hours: 3. Prerequisite: ISMG 2200.

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 multimedia content; Oracle forms and reports, XML, and content management. Semester Hours: 3. When Offered: *Fall*. Prerequisite: ISMG 2800 (strictly enforced).

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. Semester Hours: 3. When Offered: *Spring*. Prerequisite: ISMG 3500.

ISMG 3939 - Internship/Cooperative Education. Supervised experiences involving the application of concepts and skills in an employment situation. Semester Hours: 1 to 3. Prerequisite: Senior standing and 3.5 GPA.

ISMG 4200 - Building Business Applications. Examines how business technologies are designed and implemented. Usability, logic, and platform selection issues are highlighted through the development of simple business systems. Includes Windows interface design; storing, retrieving, and manipulating information; real time decision making; task automation through iteration; platform selection (mobile, desktop or web); and web programming. Semester Hours: 3. When Offered: *Fall*.

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. Semester Hours: 3. When Offered: *Spring*.

ISMG 4500 - Database Management and Applications. The success of today's business often hinges on the ability to turn mountains of data into critical information and to utilize the critical information to make the right decisions quickly and efficiently. This course introduces students to the basic principles of data management and utilization. Topics include data modeling, normalization and database design, query formulation using SQL and QBE and interface design. Actual database management systems products (e.g. ORACLE and ACCESS) are utilized to demonstrate the design of database applications in management, marketing, finance, accounting and other business areas. Each student will also design a working database system as a project. Semester Hours: 3. Prerequisite: ISMG 3000.

ISMG 4600 - System Analysis and Design. Provides an understanding of the system development and maintenance process. It enables students to evaluate and choose a system development methodology. Topics include: systems development life cycle phases, structured analysis and design, object-oriented analysis and design; prototyping, joint application development (JAD) and structured walk-through; communication, interviewing, interpersonal and presentation skills; risk and feasibility analysis, project management, systems operations and support. Semester Hours: 3. Prerequisite: ISMG 3000.

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. Semester Hours: 3. When Offered: *Spring*. Prerequisite: ISMG 4200.

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. Semester Hours: 3. Prerequisite: ISMG 2050, FNCE 3000 and ISMG 3000 (or ACCT 3054) with a grade of 'C' or better. Cross-listed with: FNCE 4750.

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. Semester Hours: 3. Prerequisite: MKTG 3000 and ISMG 3000. Cross-listed with: MKTG 4760.

ISMG 4780 - Accounting IS Processes and Control. 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. Semester Hours: 3. Prerequisite: Completion of ACCT 2200 and 2220 with a grade of 'C' or better. Strictly enforced. Cross-listed with: ACCT 4780, 6510 and ISMG 6510.

ISMG 4800 - eBusiness Systems Development. Students analyze business problems and develop data-driven eBusiness applications to solve them. Development skills include presenting and receiving information through a web site, validating entered information and storing entered information in text files or databases. Students develop an understanding of the principles of web page and web site design; standard object models, Hypertext Markup Language, client scripting and server programs for database and file access; testing, software quality assurance; and the process of publishing Web pages. Semester Hours: 3. Prerequisite: ISMG 2200.

ISMG 4840 - Independent Study. 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 life cycle; 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. Semester Hours: 3. Prerequisite: ISMG 2200. Cross-listed with: MGMT 4900. Note: Successful completion of this course meets the educational requirements to sit for both the PMP and CAPM exams.

ISMG 4950 - Special Topics. This course varies from offering to offering. Typically, it is a research-oriented course exploring new developments in information systems. Semester Hours: 3. When Offered: *Seldom offered*. Prerequisite: Prerequisites vary according to topic.

ISMG 5939 - Internship/Cooperative Education. Supervised experiences involving the application of concepts and skills in an employment situation. Semester Hours: 1 to 3.

ISMG 6020 - Net Programming Fundamentals. This course is designed to provide a thorough introduction to the .Net programming environment. C# is studied as the target object-oriented programming language. Principles of object-oriented programming are demonstrated using programming constructs taken from the business domain. Students are required to apply this knowledge through a series of C# programming exercises, which includes developing Windows Forms applications for the desktop and mobile platforms. Semester Hours: 3. When Offered: *Spring*. Prerequisite: JAVA programming language such as ISMG 3200 or C programming language such as ISMG 2200.

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. Semester Hours: 3. When Offered: *Spring*.

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. Semester Hours: 3. When Offered: *Spring*.

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 (e.g. ORACLE and ACCESS) 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. Semester Hours: 3. When Offered: *Fall*.

ISMG 6120 - Internet and Mobile Technologies. Telecommunications fundamentals including data, voice, image and video. The concepts models, architectures, protocols, standards, and security for the design, implementation, and management of digital networks. Essentials of local area networks (LAN), metropolitan area networks (MAN), and wide area networks (WAN). Transmission, switching efficiency, regulatory, and technical environments. Topics include IT architecture, enterprise information architecture, servers & Web services, layered network architecture, convergence and network protocols, wireless technology, network security, enterprise network design. Semester Hours: 3. When Offered: *Fall*.

ISMG 6140 - Distributed Object Systems Development. Provides a thorough introduction to distributed object. Distributed systems concepts, models, architectures, protocols, standards and security for the design and implementation of intra-organization and inter-organization applications. Legacy integration, electronic commerce. Coverage includes the J2EE and Net distributed object architectures and standards. Semester Hours: 3. Prerequisite: ISMG 6020 and 6080.

ISMG 6180 - Information Systems Management and Strategy. The effective use of information technology requires the alignment of competitive strategies, business processes, and IT applications. In this course, we take a top management perspective to the development of policies and plans that maximize the contribution of IT to organizational

goals. We begin by examining the systems that support the operational, administrative, and strategic needs of organizations. We then investigate the approaches used to manage the IT function, taking into account legacy and emerging technologies. The vital role of the CIO and project champions are explored. Semester Hours: 3. When Offered: *Fall, Spring*. Cross-listed with: BUSN 6610. Note: Students cannot receive credit for both ISMG 6180 and BUSN 6610.

ISMG 6220 - Business Intelligence Systems. Covers technical and managerial issues associated with the development and the use of decision support systems, expert systems, impacts and the future of MSS are discussed. The DSS component covers decision theory, model management, and business intelligence with an emphasis on how decision-making can be supported using data warehouses, OLAP, and data mining and visualization tools. The ES component focuses on knowledge acquisition, representation, reasoning, and using advanced intelligent systems over the web. In addition, collaboration, communication, enterprise decision support systems integration, impacts, and the future of MSS are discussed. Semester Hours: 3. When Offered: *Spring, Summer*.

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. Semester Hours: 3. When Offered: *Fall*. Prerequisite: ISMG 6080.

ISMG 6260 - Software Project Management. Managing processes related to initiating, planning, executing, and controlling software coverage development projects. Provides an in-depth coverage of software project management methodologies, project integration, metrics, and tools for software sizing, costs, quality control, risk management, and capability maturity methodologies, CMM, and existing metrics and tools for measurement program in order to collect necessary data from ongoing projects, to validate and interpret the collected data, and to maintain a corporate measurement database for projecting future software project's size, cost, and schedule. Semester Hours: 3. When Offered: *Fall*. Prerequisite: ISMG 6020 and 6060.

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. Semester Hours: 3. When Offered: *Fall*. Prerequisite: ISMG 6080 and ISMG 6020.

ISMG 6400 - Global eBusiness. The objective of this course is to examine the evolution of e-business in a global context. Topics include Internet business models, the importance of e-business design, e-business architecture and infrastructure; online Customer Relationship Management (CRM); Supply Chain Management (SCM) Systems; e-Procurement, electronic marketplaces and exchanges; the role of Enterprise Resource Planning (ERP) systems as the e-business backbone; e-business strategy; Application Service Providers (ASPs); risks and issues that need to be addressed; and the prediction of future global e-business trends. Semester Hours: 3. When Offered: *Spring*. Prerequisite: ISMG 6180 or BUSN 6610 (6810).

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 e-business. 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. Semester Hours: 3. When Offered: *Fall*. Prerequisite: ISMG 6180 or BUSN 6610 (6810).

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. Semester Hours: 3. When Offered: *Spring*. Prerequisite: ISMG 6180 or BUSN 6610 (6810).

ISMG 6440 - Knowledge Management. Knowledge management is a discipline that promotes an integrated approach to identifying, retrieving, sharing, and evaluating an enterprise's information and knowledge assets. Topics include artificial intelligence, information distribution, knowledge creation, motivating a knowledge sharing culture and other advanced methods for managing and using knowledge. Semester Hours: 3. When Offered: *Fall*. Prerequisite: BUSN 6610 (6810).

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. Semester Hours: 3. When Offered: *Fall*. Prerequisite: BUSN 6610 or 6810.

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. Semester Hours: 3. When Offered: *Fall*. Prerequisite: ISMG 6180 or BUSN 6610 (6810).

ISMG 6480 - Data Warehousing and Administration. Management of large, complex databases involves technical skills and background needed by information systems professionals as well as tactical and strategy issues faced by information technology managers. This course provides conceptual knowledge, practical skills and policy background for prospective information and systems professionals and information technology managers. The course covers conceptual and product material about database integrity, index structures, query optimization, transaction management, data warehouses, object databases, and distributed databases. Assignments and projects involve Oracle skills for database administration and tactical or strategic issues faced by information technology management. Semester Hours: 3. When Offered: *Spring*. Prerequisite: ISMG 6080.

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 is used to present concepts and techniques for evaluating the adequacy of system processes and controls. Semester Hours: 3. Cross-listed with: ACCT 6510, 4780 and ISMG 4780.

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. Semester Hours: 3. When Offered: *Spring*.

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 enterprise systems and systems integration. Next the course looks at 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. Semester Hours: 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 Oracle e-Business Suite, a finance and business intelligence software tool that provides modules for financial reporting, analysis, budgeting, and planning. These tools 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 in corporate finance departments. Semester Hours: 3.

ISMG 6840 - Independent Study. Instructor approval required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Semester Hours: 1 to 8.

ISMG 6950 - Master's Thesis. 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. Semester Hours: 3. Prerequisite: MS in C.S.E. or I.S.

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. Semester Hours: 3. Prerequisite: C SC 5451. Cross-listed with: C SC 7002.

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. Semester Hours: 3. When Offered: *Fall*. Prerequisite: Admission into the CSIS PhD program and knowledge of basic statistics. Cross-listed with: C SC 7200.

ISMG 7210 - Topics In Analytical Research In Management Information Systems. Provides a detailed coverage of selected analytical research in information systems. Semester Hours: 3. Prerequisite: Admission to the CSIS PhD program. Cross-listed with: C SC 7210.

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. Semester Hours: 3. Prerequisite: Admission to the CSIS PhD program. Cross-listed with: C SC 7211.

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 PhD 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. Semester Hours: 3. Prerequisite: BUSN 6530 (or equivalent) and either PhD student status or permission of instructor. Cross-listed with: DSCI 6220.

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. Semester Hours: 3. Prerequisite: C SC 5451. Cross-listed with: C SC 7654.

ISMG 7800 - Special Topics. A variety of advanced topics are offered at the PhD level in this course. Consult the current 'Schedule Planner' for semester offering. Semester Hours: 3. When Offered: *Spring*.

ISMG 7840 - Independent Study: Pre-Dissertation Research. Conduct pre-dissertation research under the supervision of a faculty member. Semester Hours: 3. Prerequisite: BUSN 6530.

ISMG 8990 - Dissertation Development. Supports development of a dissertation in conjunction with a student's advisor. Semester Hours: 1 to 15. Prerequisite: Completion of first year and second year papers (ISMG 7840).

IT: Instructional Technology (Education)

IT 5110 - Instructional Development and Production. Systematic analysis, design, development, production, and evaluation of instructional units and materials. Apply systems design model and instructional theories to the development of learning resources. Topics include needs assessment; learner, content, goal and environment analyses; instructional strategies; and formative evaluation. Semester Hours: 3.

IT 5120 - Instructional Models, Strategies and Tactics. Instructional development principles and procedures for developing instructional sequences for facts, concepts, procedures and principles. Application of different instructional and development models. Semester Hours: 3.

IT 5130 - Instructional Message Design. Principles and practices for designing instructional messages based upon the cognitive sciences. Design topics include: navigation, screen and page, and integration of media. Semester Hours: 3.

IT 5140 - Performance Technology. Analysis to determine whether human performance problems are problems that can be solved by instruction or by other means, such as organizational redesign, incentives, or performance support systems. Semester Hours: 3.

IT 5160 - Managing Information and Learning Technology Programs. Problems in the organization and administration of information learning and technology programs and projects. Topics include project management, personnel administration, budget development, resource planning, and team collaboration. Semester Hours: 3.

IT 5310 - Producing Educational Materials. Design and production of materials such as videos, multimedia, presentations and websites to support learning goals. Semester Hours: 3.

IT 5330 - Digital Storytelling. Introduction to methods and strategies for design and production of digital stories. Topics include principles of design, procedures of the development process, use of stories for education and personal development and introduction to multimedia tools for storytelling. Review of historical significance and future significance of digital storytelling within a variety of professional contexts. Semester Hours: 2.

IT 5340 - Digital Storytelling in the Curriculum. Integration of digital stories in the curriculum. Review of settings and purposes for educational uses of digital stories. Methods re-using and presenting stories for instruction; facilitating student creation of stories; developing instructional units; preparing an implementation plan for adoption of digital storytelling in a school or organization. Semester Hours: 3.

IT 5350 - Leadership for Digital Storytelling. Train the trainer workshop for digital storytelling. Includes practice and training in facilitation methods in narrative/group workshop methods as well as

technical software instruction. Additional activities include review of storytelling principles and values; additional practice in digital story design and production; presentation and sharing of digital stories; and review of uses in different settings. Semester Hours: 3.

IT 5370 - Digital Video For Interactivity. Digital video design and production for online and multimedia instruction. Topics include needs assessment and media selection; scripting and design; shooting; lighting; sound; editing; formats and conversion; and multimedia integration. Semester Hours: 3.

IT 5410 - Designing Text and Graphics for Instruction. Instructional, structural, and typographic principles and techniques for designing text and illustration-based instructional materials, including programmed instruction, job aids, diagrams, documents, user manuals and online text. Semester Hours: 3.

IT 5510 - Integrating Technology In The Curriculum. Principles and practices of technology integration in K12 classrooms and schools. Topics include: support for standards-based curriculum; evaluation and selection of resources; roles of technology in support of learning; teacher and learner roles; adapting to constraints; communications and information sharing; and social, ethical, legal and human issues such as equity, access, gender and culture. Semester Hours: 3.

IT 5520 - Technologies for Learning and Productivity. Using a wide variety of technological tools, including word processing, database, spreadsheet, graphics, presentation, and communications software, facilitate learning and manage the instructional process. Semester Hours: 3.

IT 5600 - Multimedia Authoring. Teaches the use of multimedia authoring tools to develop multimedia instruction or World Wide Web resources. Skills include: producing programs to meet educational needs; integrating digital content into office applications and multimedia resources. Semester Hours: 3. Prerequisite: Basic computer experience with word processing, database or spreadsheet programs.

IT 5610 - Principles for Designing Multimedia. Theory and practice of designing effective instruction for World Wide Web and multimedia delivery. Semester Hours: 3. Prerequisite: IT 5600.

IT 5640 - Technology of Student-Centered Learning Environments. Theory and principles behind complex learning environments aimed at developing student responsibility, collaborative learning, and higher order thinking methods for technology support are examined. Semester Hours: 3.

IT 5650 - Policies and Planning for eLearning Programs. Methods and strategies for planning, implementing and evaluating distance-learning programs. Review of trends and issues currently affecting distance-learning programs and delivery of online education. Semester Hours: 3.

IT 5660 - Designing and Teaching in eLearning Environments. In this hands-on course, students will learn to use tools and strategies to design and teach in eLearning environments. The course covers critical aspects of designing and teaching an online course, such as planning a successful online learning experience (both group-paced and self-paced instruction); designing eLearning materials and resources; being an effective online teacher, including leading, managing and assessing online discussions (both asynchronous and synchronous); getting the most out of a course management system; and assessing course effectiveness. Semester Hours: 6.

IT 5670 - Developing eLearning Instruction. In this applied course, students will build an online learning course (as planned during IT 5660) while developing basic skills with XHTML, CSS and Web and multimedia eLearning authoring tools. Students will learn how to enhance online courses by incorporating interactivity, content management and multimedia design strategies. Semester Hours: 6. Prerequisite: IT 5660 or permission of instructor.

IT 5680 - Integrating Media in eLearning Environments. Students will acquire advanced skills with Web and multimedia eLearning authoring tools as they complete an online course (as planned during IT 5660 and developed in IT 5670). Students will be involved in peer review of online learning course products developed by other students in the course. Semester Hours: 6. Prerequisite: IT 5660 and 5670 or permission of instructor.

IT 5690 - Enhancing Web-based Learning Environments With JavaScript and PHP Programming. Using JavaScript and PHP, this course teaches the technologies behind Web design that turn static HTML pages into interactive Web applications. Issues to consider with each technology are explored so intelligent decisions can be made when adopting a particular technology for use in a Web site. Semester Hours: 4. Prerequisite: IT 5660, 5670 and 5680 or permission of instructor.

IT 5710 - Telecommunications and Networking in Education. Overview of computer-mediated communications (CMC) and networking and applications to education. Topics include: operating systems; hardware/software troubleshooting; networking in education and classroom and lab management. Semester Hours: 3. Prerequisite: Basic computer experience with word processing, database or spreadsheet programs.

IT 5830 - Information and Learning Technologies Workshop. Specific titles vary depending upon the specific skill areas within information and learning technologies. Semester Hours: 2 to 4.

IT 5840 - Independent Study. Semester Hours: 1 to 4.

IT 5990 - Special Topics in Instructional Technology. Semester Hours: 1 to 6.

IT 5998 - Professional Development Activities. Provides guidance for professional development through participation in appropriate state, regional, and national conferences for meeting leaders and colleagues while upgrading professional knowledge and skills in the field. Semester Hours: 1 to 2. Prerequisite: Enrollment in a graduate IT program or a professional in a field related to the conference.

IT 6110 - Managing Instructional Development. Organization, supervision and budgeting of instructional development projects in training and education. Semester Hours: 3.

IT 6120 - Design Studio For Project Management and Collaboration. Collaborative management of instructional-design projects meeting demonstrated needs in real-life settings. Skills include: management of time, personnel and resources; meeting client needs and expectations; communication with team and client; information design; interaction design and project problem solving. Semester Hours: 2 to 6. Prerequisite: IT 5110 and 5120 or permission of instructor.

IT 6130 - Implementing and Evaluating Instruction. Methods for implementing instructional materials in field settings; evaluating materials for learning impact and program revision. Semester Hours: 3.

IT 6515 - Leadership for Learning Technologies Integration. Leadership for integrating technology into a standards-based curriculum. Through mentoring, service, or training, model and assist teachers and administrators in adopting technologies and information resources to support learning and assessment activities. Semester Hours: 3.

IT 6530 - Development Projects in Information and Learning Technologies. The creation and application of instructional systems combining unique instructional advantages of technologies to emphasize high levels of interactivity. Advanced projects must meet specific objectives to cover program design and development, hardware and software configurations, delivery systems and learners. Project topics vary. Semester Hours: 3. Prerequisite: IT 5110 and 5600.

IT 6720 - Research in Information and Learning Technologies. Analysis, evaluation, and production of research in instructional technology. Develop recommendations for action based on research findings. Semester Hours: 3.

IT 6730 - Comparative Models of Instructional Design. Advanced seminar in analyzing the theoretical foundations and the instructional implications of different models and theories of instructional design. Semester Hours: 3.

IT 6740 - Learning Processes Applied to Instructional Technology. Principles of learning and instruction for technology-mediated learning. Topics include case-based and project-based teaching and other inquiry-learning strategies; tutorial and direct-instruction; and self-directed learning. Semester Hours: 2 to 3

IT 6750 - Current Trends and Issues in Instructional Technology. Seminar examining definitions, history and current trends and issues in the practice of instructional technology. (Topics vary.). Semester Hours: 3.

IT 6760 - Advanced Seminar in Instructional Design and Development.

Topical seminars to investigate issues, new models, or techniques in the field of instructional design and development. Semester Hours: 3.

IT 6840 - Independent Study. Semester Hours: 1 to 4.**IT 6930 - Internship in Information and Learning Technologies.**

Placement in a business, school or field setting where professional skills are applied to assess needs and design, develop and evaluate an instructional system. Semester Hours: 1 to 4.

IT 6950 - Master's Thesis. A master's thesis is part of the degree track options for use in conjunction with, or in lieu of, comprehensive exams. Credit hours, topic, and work load are determined by the student's advisor. Semester Hours: 4. Prerequisite: Completion of all other course requirements and permission of advisor.

IT 6960 - Master's Project. Credit hours, topic, and work load are determined by the student's advisor. Semester Hours: 1 to 4. Prerequisite: Completion of all other course requirements and permission of advisor.

IT 6999 - Leadership and Practice in Information and Learning Technologies. Reflective examination of the adoption and use of information and learning technologies in applied settings. Topics include change strategies, system analysis, planning and evaluating technology use, and roles of technology specialists. Semester Hours: 3.

ITE: Initial Teacher Education (Education)

ITE 4700 - Instructional Teamwork Academy. The academy consists of four modules of varying length for a total of 15 clock hours of instructional time. The course consists of introductory material regarding teamwork, delineation of roles and responsibilities, classroom instruction, and behavior management. Semester Hours: 1.

ITE 4710 - Student Supervision Academy. The focus of the 15 clock hour academy is the effective management of large groups of students on playgrounds, in lunchrooms, halls, locker rooms, parking lots where buses are loading, on buses and in other instructional settings. Semester Hours: 1.

ITE 4720 - Interpersonal Skills Academy. The focus of this 15 hour academy is on developing effective interpersonal skills that are necessary for working as part of a team. Throughout this academy importance of issues of diversity based on culture, experience and gender in communication and conflict resolution processes is highlighted. Semester Hours: 1.

ITE 4730 - Personal Growth and Development Academy. This 15 contact hour academy covers self-appraisals, participation in the evaluation process and plan for continued professional growth and development, stress- management strategies and using creativity in dealing with problematic situations. Semester Hours: 1.

ITE 4740 - Behavior Management Academy. This 15 contact hour academy focuses on methods and techniques that paraeducators can use with students whose behaviors are challenging and on the role they play in assisting the professional members of their team with behavior challenges. Semester Hours: 1.

ITE 4750 - Instructional Strategies Academy. This academy gives the paraeducator knowledge and skills in analyzing the teaching environment and individual student needs for the particular level of support, degree of adaptation or accommodation or modification and instructional method that would best facilitate learning. Semester Hours: 1.

ITE 4760 - Instructional Technology Academy. This 15 contact hour academy is intended to provide paraeducators with skills in operating typical school- wide technologies. The focus is on examining the types of technology used daily, as well as those types that they may not currently have skills in using but which can broaden their repertoire of available skills. Semester Hours: 1.

ITE 4770 - Vocabulary and Comprehension. Paraeducators are provided with the skills needed to assist classroom teachers in meeting literacy needs of students in the areas of vocabulary and comprehension. Skills applicable to assisting diverse populations such as special education, Title 1, ELA, and General Education. Semester Hours: 1.

ITE 4780 - Assisting with Phonemic Awareness and Phonics in the Classroom. This academy provides the paraeducator with skills and techniques needed to assist literacy needs of diverse populations of students with phonemic awareness and phonics as it relates to the early, emergent and fluent reader. Semester Hours: 1.

ITE 4790 - Assisting with Reading Fluency in the Classroom. This academy provides the paraeducator with skills needed to assist literacy needs of diverse populations of students in the area of reading fluency. It covers important fluency concepts and terms and the use of a variety of research-based instructional techniques that improve fluency at the word, phrase, sentence and connected text levels. Semester Hours: 1.

ITE 4800 - Grades K-4 Mathematics. This academy is designed to provide paraeducators with the skills and knowledge needed to assist students, grades K through four, with mathematics skills taught in the classroom. The course content is designed and adapted from standards recommended by the National Council of Teachers of Mathematics. It includes the specific skill building area of number sense, computational techniques, algebraic thinking, geometry, measurement, data and probability as they apply to grades K-4 learners. Semester Hours: 1.

ITE 4810 - Number Theory and Rational Numbers. This academy provides paraeducators with the skills and knowledge needed to assist students with specific mathematics skills typically taught in grades five through eight. This academy solidifies the concepts learned in assisting with K-4 math and provides a base for assisting with high school mathematics. It includes the specific skill building areas of number sense; computational techniques for fractions, decimals and percents and their related applications as they apply to intermediate and middle school learners. The course content is designed and adapted from the standards recommended by the National Council of Teachers of Mathematics. Semester Hours: 1.

ITE 4820 - Algebraic Concepts and Spatial Reasoning. This academy provides paraeducators with the skills and knowledge needed to assist students, grades 5-8, with the mathematics skills taught in the classroom. The course content is designed and adapted from standards recommended by the National Council of Teachers of Mathematics. It includes the specific skill building areas of real number building properties; graphical representations; algebraic concepts and problem solving; data and probability; and spatial reasoning skills as they apply to intermediate and middle school learners. Semester Hours: 1.

ITE 5022 - Learning and Classroom Management Strategies for Secondary Schools. Provides knowledge to create and manage classrooms conducive to the well-being and learning of a diverse student population. Included are instructional strategies for addressing content standards, managing curriculum, instruction, assessments, classrooms, and individual behaviors. Semester Hours: 3.

ITE 5023 - Literacy Strategies for Secondary Schools. Provides knowledge and practice using specific literacy methods and assessment, to enhance content learning, and meet reading and writing standards. Instructional strategies for special needs and language-minority students are also emphasized. Semester Hours: 3.

ITE 5025 - Reading Instruction and Assessment K-5. Using and expanding upon background knowledge from prerequisites, participants learn about specific reading instruction and assessment routines and techniques. Through guided in-school placements, student's link course readings, discussion and practice, focus on improving their instruction, and the assessment or instruction cycle. Semester Hours: 3. Prerequisite: ITE 5000, 5010 and 5020.

ITE 5800 thru 5805 - Special Topics in Education. Addresses a specific topic that is current and relevant to the needs of a specific group of educators and/or an educational context. Semester Hours: 1 to 4.

ITE 5840 - Independent Study. Semester Hours: 1 to 4.

LA: Landscape Architecture (Architecture and Planning)

LA 5501 - Landscape Architecture Design Studio 1. Introduction to basic strategies, methods and techniques of landscape architectural design with emphasis in theory, history, analysis and criticism. First in a three studio course sequence. Semester Hours: 6.

LA 5502 - Landscape Architecture Design Studio 2. Strategies, methods and techniques of landscape architectural design with emphasis in more complex issues, design processes and development and the application of theory and research. Second in a three studio course sequence. Semester Hours: 6. Prerequisite: LA 5501 or permission of department chair.

LA 5503 - Landscape Architecture Design Studio 3. Problem-based studio covering the approaches, technologies and means for planning and designing sites to accommodate an intensive development program on a particular site within a regional context. Covers issues definition, site analysis, programming, development of design strategies, evaluation site planning, placemaking, regionalism and communication. Semester Hours: 6. Prerequisite: LA 5501 and LA 5502 or permission of department chair.

LA 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. Semester Hours: 3.

LA 5521 - History of Landscape Architecture. Investigates architectural thought from antiquity to the present. Begins with a review of Greek ideals and proceeds—through an appreciation of landscape and nature as essential cultural constituents—with a survey of major themes such as Renaissance Humanism, Enlightenment, Rationalism, Romantic Historicism, Neo-Medievalism, the varieties of Modernism, Neo-Eclecticism and the most recent directions in landscape and garden design. Semester Hours: 3.

LA 5532 - Landform Manipulation. Focuses on the fundamental technical aspects of landscape architectural design and implementation of related topography, grading and drainage design, landform manipulation, earthwork calculations, and road alignment. Semester Hours: 3. Note: Course is to be taken with LA 6641, Computer Applications in Landscape Architecture.

LA 5572 - Landscape Ecology. Focuses on the study of physiography, cultural factors, and aesthetic criteria in relation to landscape, spatial organization, and urban and regional structure. Emphasizes continuity and change in an ecology of both natural and man-made landscape. Semester Hours: 3.

LA 5573 - Applied Advanced Landscape Ecology Workshop. Issues of sustainability and designing or planning at multiple and temporal scales (watershed, regional, site) provides basis for advanced studies in ecological-based design, planning, and restoration to accomplish project goals with minimal ecological impact. Semester Hours: 3. Prerequisite: LA 5572.

LA 6520 - Landscape Architecture in Other Cultures. Various studies of landscape architecture and urbanism in foreign countries. Semester Hours: 1 to 9.

LA 6604 - Landscape Architecture Design Studio 4. Advanced landscape architecture design studio covering situations of urbanization and change of various scales and complexities. This is the first in a two studio course sequence. Semester Hours: 3. Prerequisite: LA 5501, 5502, 5503 or permission of department chair.

LA 6605 - Landscape Architecture Design Studio 5. Advanced landscape architecture design studio covering situations of urbanization and change of various scales and complexities. This is the second in a two studio course sequence. Semester Hours: 3. Prerequisite: LA 5501, 5502, 5503, 6604 or permission of department chair.

LA 6606 - Landscape Architecture Design Studio 6. Advanced landscape architecture design studio covering situations of urbanization and change of various scales and complexities. This is the first in a two studio course sequence. Semester Hours: 6. Prerequisite: LA 5501, LA 5502, LA 5503, LA 6604, LA 6605 or permission of department chair.

LA 6607 - Landscape Architecture Design Studio 7. Advanced landscape architecture design studio covering situations of urbanization and change of various scales and complexities. This is the second in a two studio course sequence. Semester Hours: 3. Prerequisite: LA 5501, 5502, 5503, 6604, 6605, 6606 or permission of department chair.

LA 6608 - Landscape Architecture Design Studio 8. Advanced design studio that reflects topical situations in landscape architectural practice and/or applied research interests of instructor. This is the first in a two studio sequence. Semester Hours: 3. Prerequisite: LA 5501, 5502, 5503, 6604, 6605, 6606, 6607 or permission of department chair.

LA 6620 - Landscape Architecture Theory and Criticism. Focuses on exploring and assessing current state of theory in landscape architecture and related design disciplines and the ideas undergoing contemporary design approaches. Narrative and explanatory theories are the objects of study. Emphasis is placed on history and pedagogic theories and their theories and relationships to other disciplines such as art, ecology, geography, architecture and anthropology. Semester Hours: 3.

LA 6622 - Visual Quality Analysis. Introduces a range of philosophies, methods, and techniques in visual landscape analysis. Emphasis is placed on application of methods and techniques, urban and regional context and scale, as well as visual impact assessment and simulation. Semester Hours: 3.

LA 6624 - The Built Environment in Other Cultures I: Research Design. Intends to broaden students' perspectives by asking them to examine design within another culture. Students prepare 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. Semester Hours: 3. Cross-listed with: ARCH 6624.

LA 6625 - Landscape Architecture Field Studies. Critical field evaluation of built works of landscape architecture including field measurement, mappings, sketches, photography, written evaluations and applied projects. Semester Hours: 3.

LA 6631 - Landscape Construction Materials and Methods. Develops understanding of detailed design processes, construction materials and selection of construction methods and documents. Typically taken with LA 6605 and 6606 LA Design Studios 5 and 6. Semester Hours: 3.

LA 6632 - Site Planning. Focuses on the site planning process, including research and data gathering, data analysis and synthesis, design analysis and its relationship to building program and concept, and design synthesis of site and preparation of site plan. Design through grading, representation, manipulation and calculation of road work, utilities, and other site features. Vertical and horizontal alignment, earthwork and cost computation, and integration with existing and proposed features or systems are covered. Semester Hours: 3.

LA 6641 - Computer Applications in Landscape Architecture. Introduces digital technologies and methods commonly used in Landscape Architecture including primarily CADD, visualization, simulation, graphic design, GIS and other emerging applications. Includes hands-on exercises. Semester Hours: 3.

LA 6642 - Landscape Architecture Digital Design Workshop. Introduces surveys, and provides hands-on experiences in the disciplines, principles, software, and theories for engaging digital design in landscape architectural practice and research. Semester Hours: 3. Prerequisite: LA 6641.

LA 6670 - Plants in Design. Focuses on the study of design methods used in landscape architecture. Formal design principles, spatial sequencing, and plant functions are applied in design studies, based on botanical aesthetic traits and physical requirements of a wide variety of plant material. Semester Hours: 3.

LA 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. Semester Hours: 3.

LA 6686 - Special Topics in Landscape Architecture. Various topical concerns are offered in landscape architecture history, theory, elements,

concepts, methods, implementation strategies, and other related areas. Semester Hours: 1 to 6.

LA 6710 - Landscape Representation. Focuses on developing understanding of various advanced analog and digital techniques for application in landscape analysis and design. Semester Hours: 3. Prerequisite: LA 5510.

LA 6711 - Advanced Landscape Architectural Graphics Workshop. Focuses on developing expertise in various drawing, reprographics, digital, and photographic techniques used in practice for enhanced effectiveness in graphic communication. Semester Hours: 3. Prerequisite: LA 5510.

LA 6712 - Green Roof-Design. 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. Semester Hours: 3.

LA 6720 - Finding Common Ground. Focuses on principles and societal variables that influence the structure of urban neighborhood space through research application. Semester Hours: 3. Prerequisite: LA 6640.

LA 6721 - Regionalism. Explores environmental and cultural factors that shape regionally responsive design. Semester Hours: 3. Prerequisite: LA 5521 and 6620 or permission of instructor.

LA 6722 - 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. Semester Hours: 3.

LA 6723 - Cinema and the Landscape. Explores landscapes in conjunction with cinema, examining the processes, images, stereotypes, and myths associated with the historical development of film and the creation of film theory within a context of space, race and representation. Interconnects film theory and criticism and landscape architecture, through the creation of short digital essays that examine the complexity of issues related to spatial meaning. Semester Hours: 3.

LA 6724 - American Landscape Arch. Introduces the origins, theories and practitioners of landscape architecture in the United States from the founding of the ASLA in 1899 through the 1980's. This period drew from many realms, including the arts, land ethics, political ideologies, and social agendas. The material covered offers a base for understanding trends and ideas embedded within or underpinning the contemporary American landscape. Semester Hours: 3. Prerequisite: LA 5521.

LA 6750 - Professional Practice. Focuses on studies in the professional practice of landscape architecture and related professions and case problems in initiating and managing a professional practice. Explores the essential elements of professional practice and equips students with the fundamental knowledge and skills requisite to an understanding of and participation in the conduct of practice in landscape architecture. Covers organization of the landscape office, professional services of landscape architects, fee structures and fee management, contracts, legal rights and responsibilities, management, marketing, and delivery of professional services. Semester Hours: 3.

LA 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. Semester Hours: 1 to 3. Prerequisite: Permission of instructor.

LA 6910 - Teaching Assistantship. Work with a faculty member in a course to assist with course preparation and delivery. Semester Hours: 3. Prerequisite: Permission of program chair and instructor.

LA 6930 - Landscape Architecture Internship. Designed to provide professional practice experience. The student is placed in a landscape architectural and/or design office by the College and receive credit instead of pay. Must complete the second-year level before taking this course. Semester Hours: 3.

LA 6949 - Research Tools, Strategies and Methods. Introduces the thesis in landscape 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 to be undertaken in their final semester in the program. Semester Hours: 3.

LA 6950 - Thesis Research. The student works closely with a landscape architecture faculty advisor and thesis committee to develop the thesis proposal through focused research. Research might entail both written and graphic inquiry leading to specific products with conclusive ideas that set the stage for the completion of the thesis in the following semester. Part of the Landscape Architecture Thesis sequence. Semester Hours: 3. Prerequisite: LA 6949 and permission of department chair.

LA 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. Semester Hours: 6. Prerequisite: LA 6949 and LA 6950.

Language, Literacy and Culture: LLC (Education)

LATN: Latin (Liberal Arts and Sciences)

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. Semester Hours: 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. Semester Hours: 5. Prerequisite: LATN 1010 or equivalent.

LATN 1050 - Vocabulary for Professionals. Studies English words derived from Latin and Greek by analyzing their component parts (prefixes, stems, and suffixes). Semester Hours: 3. Cross-listed with: ENGL 1050.

LATN 1100 - Building Vocabulary From Greek and Latin Words. Students learn to decipher unfamiliar words by breaking them down to their Latin or Greek roots. Semester Hours: 3. Prerequisite: None.

LATN 2010 - Intermediate Latin I. Introduces advanced Latin grammar, vocabulary, syntax, and stylistics of Latin prose via readings in Caesar, Cicero and Livy. Includes review of basic Latin grammar, plus introduction to Latin prose composition and Latin rhetoric. Emphasis on historical, cultural, social context of authors and works. Semester Hours: 3. Prerequisite: LATN 1020 or equivalent.

LATN 2020 - Intermediate Latin II. (Continuation of LATN 2010.) Completes the presentation of advanced Latin grammar, vocabulary, syntax, and stylistics of Latin prose. Continues the study of Latin prose composition and Latin rhetoric with emphasis on historical, cultural, and social context of authors and works. Semester Hours: 3. Prerequisite: LATN 2010 or equivalent.

LATN 2840 - Independent Study. Semester Hours: 1 to 3.

LLC: Language, Literacy and Culture (Education)

LLC 1111 - Introduction to College Literacy for Migrant Populations.

An introductory course designed to provide a college-level reading/writing and artistic experience for high school aged migrant student populations. Students are apprenticed in philosophic, social scientific and legal modes of reasoning and writing in concert with the fundamentals of drawing and painting. Semester Hours: 3.

LLC 4810 - Orientation to Bilingual Education. This academy provides a basic introduction to bilingual education programs. The content consists of introductory material regarding the legal and historical foundations of bilingual education, bilingual and ESL program model overviews, materials to address cultural issues in the classroom, and introductory information regarding human growth and development. Semester Hours: 1.

LLC 4820 - Language Development and Acquisition. This academy provides a basic introduction to bilingual and English as a second language education programs. The content consists of introductory material regarding second language acquisition theories and stages, factors that influence learning a second language in schools and informal assessment among other. Semester Hours: 1.

LLC 4825 - Techniques in Teaching English as a Second Language. Develops skills in using a variety of classroom techniques to teach English as a second language. The course is a practical presentation of ESL methods and techniques. Examples of classroom practices are taken from the full educational spectrum, from public schools to pre-university intensive courses on adult education. Semester Hours: 3. Cross-listed with: LLC 5820.

LLC 4830 - Instructional Delivery Methods for Second Language Learners. This academy provides more in-depth information on different instructional methods and how to apply them in working with English language learners. It looks into practical strategies for modifying lessons using sheltered instruction in order to accommodate the students' linguistic and academic needs (dominance vs. proficiency). Semester Hours: 1.

LLC 4910 - CO-TOP Practicum. The CO-TOP Paraeducator Certification requires 2 credit hours of field experience, each credit hour representing at least 90 hours in the field. Field experiences should balance out a person's previous experience to create a more marketable set of skills and a range of skills across ages, disabilities, grade levels and types of programs or philosophical bases. Each practicum participant is provided a practicum handbook. The handbook outlines all components of the practicum experience. The handbook is made available to each participant at the time of registration for the experience. Semester Hours: 2. Prerequisite: Students need to have taken at least 10 CO-TOP academies before they are eligible to take the practicum course.

LLC 5020 - Workshop in Literacy and Language Teaching. 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, student interaction with and response to materials; and techniques to assess and evaluate students reading. Semester Hours: 3.

LLC 5028 - Adolescent Literacy, Part I. Focuses on supporting adolescents' developing literacy understandings across content areas in the upper elementary grades through high school. Importance is placed on putting new teaching practices in place. Attention is given to both reading and writing with emphasis on before and during strategies and supports. Semester Hours: 3.

LLC 5029 - Adolescent Literacy, Part II. The second in a sequence of courses focusing on adolescents' developing literacy understandings across content areas in upper elementary grades through high school. Attention is given to comprehension and critical thinking including revision and editing strategies, assessment, unit planning, the research

cycle, using technology, and putting new teaching practices in place. Semester Hours: 3.

LLC 5030 - Language/Literacy Acquisition Part I. This course is designed to help teachers understand the relationship between language and literacy acquisition. The focus is on both first and second language acquisition and the interaction of two languages and its impact on the acquisition of literacy in young children. The course lays the foundation for an understanding of the nature of the relationship between cognition and language; language acquisition from the perspective of the individuals within their respective linguistic communities and how literacy is acquired within increasingly broader sociolinguistic contexts. Students explore areas of literacy (reading and writing) and responsive teaching, particularly in diverse school settings with the understanding that diversity of culture, language, gender orientation, abilities and economics is the growing norm in our schools. Topics of interest to the lab are literacy development, language acquisition, assessment, culturally responsive teaching practices, professional development and school reform. Semester Hours: 3.

LLC 5035 - Language and Literacy: Acquisition, Processes, and Cognition, Part II. This course is the second of a two-part sequence in language and literacy. Students examine research and develop practices relating to language and literacy acquisition, in particular by linguistically diverse learners in community and classroom contexts. Focuses on learners' development of academic literacy and participation in a second language and culture. Semester Hours: 3. Prerequisite: LLC 5030.

LLC 5040 - Multicultural Education. Designed for veteran and novice teachers to gain an understanding of the broad fields of literacy and language education. Participants examine key educational philosophies based on the writings of important scholars in the field, on topics such as the politics of literacy, the nature of literacy and literacy/cultural identity. The course examines current thought concerning literacy and language learning and teaching from a variety of perspectives and contexts, including the classroom context. Semester Hours: 3.

LLC 5050 - Linguistic and Cultural Issues in Linking Assessment and Instruction. This course provides general orientation to the assessment of linguistically and culturally diverse students. Focus is on using assessment to guide and instruction and includes examination of assessment of oral and written language, attitude and classroom arrangements. Includes analysis of assessment tools used to assess gifted and talented students and those used with students during the special education testing procedure. Semester Hours: 3.

LLC 5055 - Linking Assessment and Instruction in Language and Literacy, Part I. This is the first of a two-part sequence on linking assessment to curriculum and instruction. Focus is on both monolingual speakers of English and second language learners. Assessments include both oral and written language (reading and writing) as well as attitudinal measures and classroom arrangements. Semester Hours: 3.

LLC 5060 - Linking Assessment and Instruction in Language and Literacy, Part II. This is the second of a two-part sequence on linking assessment to curriculum development and instruction. The focus is on both monolingual speakers of English and second language learners. Semester Hours: 3. Prerequisite: LLC 5030, 5055 and 5140.

LLC 5070 - Linguistic Analysis of English: Implications for Teaching. 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 sociolinguistic 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). Students gain a working knowledge of English grammar, including grammatical terms, categories, patterns and rules - especially those forms and functions that are important and/or problematic for second language learners of English. Semester Hours: 3.

LLC 5080 - Teachers as Readers and Writers. Teachers engage in experiences designed to expand and improve their own literacy interests, abilities, and attitudes. Literacy experiences include readers' workshop,

writers' workshop, literature studies, and authors' circles. In addition, teachers reflect on their own and classmates' experiences as a basis for planning literacy experiences in school classrooms. Semester Hours: 3.

LLC 5100 - Theories and Methods of Second Language Teaching. Provides an overview of approaches to second language teaching.

Emphasis is on development of a personal philosophy of second language teaching. Topics covered include first and second language acquisition, contributions of psychology and linguistics, and current practices and trends in language teaching. Semester Hours: 3.

LLC 5140 - Multicultural Education. Develops an understanding of the pluralistic nature of U.S. society 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. Participants study themselves and their students as cultural beings and develop an understanding of how their own cultural identity affects their teaching. This course fulfills the culture requirement for SEHD 'core courses'. It also fulfills the culture requirement for the Colorado LDE Endorsement and the LDE Master's Concentration. It may also serve as an elective in the LDE Master's concentration. Semester Hours: 3. Note: LLC 5140, LLC 5150, LLC 5160—Each of these three courses satisfies the requirements for the Colorado Endorsement in Linguistically Diverse Education and the BESL Master's concentration. The content of the courses are related, but the focus of each course is sufficiently different that students in the Master's program may use a second or third course in the sequence as an elective.

LLC 5150 - Culture of the Classroom. Provides a classroom-focused examination on linguistic and cultural diversity. The legal history of language and literacy education in the U.S., Colorado and local school districts is studied with a focus on implications for instructional practice. Participants become familiar with research and theory on the roles of cultures in the classroom and gain skills that support differentiated instruction for diverse students. This course fulfills the culture requirement for the Colorado LDE Endorsement and the BESL Master's concentration. It may also serve as an elective in the BESL Master's concentration. Semester Hours: 3. Note: LLC 5140, LLC 5150, LLC 5160—Each of these three courses satisfies the requirements for the Colorado Endorsement in Linguistically Diverse Education and the BESL Master's concentration. The content of the courses are related, but the focus of each course is sufficiently different that students in the Master's program may use a second or third course in the sequence as an elective.

LLC 5160 - Historical and Legal Foundations of Bilingual Education. Comprehensive survey of education programs for language minority students. Includes an overview of U.S. and Colorado history and legislation related to bilingual education and second language education. Presents various models, philosophies and theoretical underpinnings of education for language minority students. Develops skills in critical comparison of approaches to second language education in relation to student populations. This course fulfills the culture requirement for the Colorado LDE Endorsement and the LDE Master's concentration. It may also serve as an elective in the LDE Master's concentration. Semester Hours: 3. Note: LLC 5140, LLC 5150, LLC 5160—Each of these three courses satisfies the requirements for the Colorado Endorsement in Linguistically Diverse Education and the BESL Master's concentration. The content of the courses are related, but the focus of each course is sufficiently different that students in the Master's program may use a second or third course in the sequence as an elective.

LLC 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. Semester Hours: 3.

LLC 5180 - Working with Communities and Families. This course will focus on the importance of understanding and connecting with the community and families of the students in a school, by exploring the socio-cultural histories of students and communities. We will develop practical strategies and activities to uncover the rich resources that

diverse students and families bring to schools as well as to connect and collaborate with the community organizations and activities to increase student engagement and relevance. Semester Hours: 3. Prerequisite: LLC 5170.

LLC 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. Semester Hours: 3. Prerequisite: LLC 5170 and 5180.

LLC 5210 - Literacy Development PreK-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. Semester Hours: 3.

LLC 5220 - Literacy Routines and Assessment, PreK-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. Semester Hours: 3. Prerequisite: LLC 5210.

LLC 5230 - Early Literacy Instruction. Participants will examine PreK-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. Semester Hours: 3.

LLC 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. Semester Hours: 3.

LLC 5700 - Language and Literacy Portfolios: Development, Reflection and Empowerment. In this course, teachers learn: (1) to compile and assess student portfolios to inform instruction and communicate progress, and (2) to experience developing personal portfolios with particular focus on self-reflection and empowerment over the course of the master's degree program. Semester Hours: 3.

LLC 5710 - Primary Literacy: Pre-3rd Grade. Provides teachers with a basic understanding of reading and writing development in preschool and early primary grades. Specific strategies are considered for using and teaching reading and writing in early primary grades. Semester Hours: 3.

LLC 5720 - Writing: Process, Development, and Teaching Grades 3-12. This course presents current theories of writing development as they relate to classroom practices. Participants in the course will use these theories to help analyze the writings of students in real classrooms. Understanding of the theories will also be increased through direct participation in personal writing, conferencing with other course members, revision of pieces, and the sharing of final products. Semester Hours: 3.

LLC 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. Semester Hours: 3.

LLC 5740 - Adolescent Literature. Reading and evaluating fiction and non-fiction appropriate for students in middle and senior high school. Emphasis is on modern literature written for students from a variety of ethnic backgrounds. This course is also appropriate for teachers working with adults learning English. Semester Hours: 3.

LLC 5750 - Children's Literature in Spanish. Taught in Spanish, this course presents children's literature from Spanish speaking countries and Spanish speaking authors, along with teaching methodologies and avenues of further research in the field. Semester Hours: 3. Prerequisite: Senior-level proficiency in Spanish.

LLC 5760 - Theory and Methods of English Education. 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. Semester Hours: 3.

LLC 5770 - Effective Literacy Instruction for Second Language Learners. Students explore and critique various methods and strategies

for teaching reading and writing to non-native English speakers. Students acquire a foundation in written language acquisition for both first and second language learners. Semester Hours: 3.

LLC 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. Semester Hours: 3.

LLC 5790 - Children's Literature Through the Ages. A basic children's literature course which looks at the historical development of children's literature. This course also looks at various genre in children's literature, how to critique and choose literature for instruction and children's literature awards. Semester Hours: 3.

LLC 5795 - Current Children's Literature. The focus of this course is on children's literature from the past 10 years, including established and newer authors and illustrators. Various genres will be covered, as participants learn to critique children's literature and how to choose books for instruction. Semester Hours: 3.

LLC 5800 - Sociolinguistics: Language Variation and its 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. Semester Hours: 3.

LLC 5810 - Workshop in Language Acquisition and Development. Provides students with an opportunity to examine current research on language acquisition and development, and to apply their knowledge to the learners in their teaching situation. The course focuses on language development and use in educational settings and addresses learners with English as their first language, second-language learners of English, bi-dialectal speakers and bilingual speakers. Students collect and analyze language samples, evaluate teaching materials and examine teaching techniques in light of the material covered in the course. Semester Hours: 3.

LLC 5820 - Techniques in Teaching English as a Second Language. Develops skills in using a variety of classroom techniques to teach English as a second language. The course is a practical presentation of ESL methods and techniques. Examples of classroom practices are taken from the full educational spectrum, from public schools to pre-university intensive courses on adult education. Semester Hours: 3. Cross-listed with: LLC 4825.

LLC 5821 - English Phonology for TESOL. Provides ESL teachers with a basic understanding of the English sound system and the implications for teaching. Designed for teachers with a limited background in phonetics and phonology. An understanding of some of the basic concepts in linguistics is advantageous, though not required. Students collect speech data from non-native speakers and use their analysis to develop instructional materials and strategies. Semester Hours: 3.

LLC 5822 - Internet for ESL Teachers. Provides teachers with the opportunity to explore Internet resources for instructional use and professional development. While learning how to access, navigate, and write for the Internet, class participants examine and devise instructional uses of the Internet in English language teaching. Issues of equity of access and pedagogical value are discussed. Semester Hours: 3.

LLC 5825 - Methods and Materials of Language Teaching. Provides an in-depth study of curriculum options for learners of English as a second language. Participants examine and apply strategies and materials for developing linguistic and academic capabilities of language learners. Semester Hours: 3.

LLC 5826 - Language Teaching Lab. Provides participants with a classroom-based examination of language teaching based on theoretical tenets of language acquisition and language teaching methods. Students develop lessons around particular language points and work with the professor and peers to implement insights in their classrooms or the classrooms of collaborating language teachers. Language focus varies from phonology, morphology, syntax and discourse features. Semester Hours: 3.

Check for updates at <http://courses.cudenver.edu>.

LLC 5830 - Workshop in Multicultural Education. Provides students with the experiences in multicultural methodology training. How to utilize community members, para-professionals, and peers to facilitate learning in a multicultural environment. Semester Hours: 3.

LLC 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. Semester Hours: 2. Prerequisite: Reading and language arts methods. A minimum of three years primary teaching or reading teaching experience.

LLC 5835 - Special Topics in Literacy and Language. Specific topics vary but will include the exploration of literacy development and instruction in particular populations or with specific focuses. Semester Hours: .5 to 3.

LLC 5840 - Independent Study. Semester Hours: 1 to 4.

LLC 5910 - Foundations of Language, Literacy and Culture.

Designed for veteran and novice teachers to gain an understanding of the broad fields of literacy and language education. Participants examine key educational philosophies based on the writings of important scholars in the field, on topics such as the politics of literacy, the nature of literacy and literacy/cultural identity. The course examines current thought concerning literacy and language learning and teaching from a variety of perspectives and contexts, including classroom, school and community. Semester Hours: 3.

LLC 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. Semester Hours: 3. Prerequisite: LLC 5831.

LLC 5920 - Readings in Multicultural Education. Provides students with an opportunity to examine the current literature as it relates to trends in contemporary issues in the area of multicultural education. Semester Hours: 3.

LLC 5925 - Selected Readings: Advanced Study in Literacy and Language. Semester Hours: 1 to 3. Prerequisite: Written permission of instructor.

LLC 6090 - Research Seminar. An advanced course which focuses on specific issues in language, language acquisition and language teaching. Semester Hours: 3.

LLC 6713 - 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. Semester Hours: 3.

LLC 6840 - Independent Study. Semester Hours: 1 to 4.

LLC 6910 - Seminar and Practicum in Literacy and Language, K-6.

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. Semester Hours: 3.

LLC 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. Semester Hours: 3.

LLC 6912 - Seminar and Practicum in Literacy and Language, ESL and Bilingual Education. 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 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. Semester Hours: 3.

LLC 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. Semester Hours: 4. Prerequisite: LLC 5831 and 5911. Reading and language arts methods. A minimum of three years primary teaching or reading teaching experience.

LLC 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 teaching, participants will deepen their understanding of how to assess and design instruction based on the needs of their students. Second, through structured coaching activities and observation of expert coaches/teachers, participants will improve their skills in the role of Literacy coach, an important aspect of a reading professional's career. This course is standards based using the Reading Teacher, Reading Professional and Literacy Coach standards from the Colorado Department of Education and the International Reading Association. Semester Hours: 3. Prerequisite: LLC 5055, LLC 6910 and LLC 6911.

LLC 6950 - Master's Thesis. Semester Hours: 4.

LLC 7410 - Communication and Control in Systems 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. Semester Hours: 3. Prerequisite: EDLI 7100.

Management: MGMT (Business)

Marketing: MKTG (Business)

Master of Integrated Sciences: MINS (Liberal Arts and Sciences)

Master of Recording Arts: MSRA (Arts & Media)

MATH: Mathematics (Liberal Arts and Sciences)

MATH 1009 - Computer-Based Algebraic Problem Solving. A laboratory-based problem solving course focused on personal computing applications. Topics include general problem solving techniques, deductive reasoning, elementary probability, computer algebraic software, optimization, graphical analysis, systems of equations, spreadsheets, functions, descriptive statistics, linear programming and elementary programming logic. Semester Hours: 3. Prerequisite: Basic high school algebra and some familiarity with Microsoft Windows.

MATH 1010 - Mathematics for the Liberal Arts: MA1. 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. Semester Hours: 3. Prerequisite: Three years of high school mathematics.

MATH 1070 - Algebra for Social Sciences and Business: MA1. Topics in algebra designed for students who intend to take business calculus. Functions, graphs, scatter plots, curve-fitting, solving systems

of equations, polynomial and rational functions, and selected other topics. Semester Hours: 3. Prerequisite: Intermediate algebra and satisfactory score on the placement exam. Note: Graphics calculator required. No co-credit with MATH 1110 or MATH 1130.

MATH 1075 - Linear Programming and Probability. Designed to fulfill College of Business requirements for students who have had college algebra but not MATH 1070. Emphasis is on applications of linear programming and probability. Semester Hours: 1. Prerequisite: MATH 1110. No co-credit with MATH 1070.

MATH 1080 - Polynomial Calculus: MA1. A one-semester course in single-variable calculus. Topics include limits, derivatives, differentiation rules, integration and integration rules. Emphasis is on applications to business and social sciences. Semester Hours: 3. Prerequisite: MATH 1070 or 1110. No co-credit with MATH 1401. Note: No knowledge of trigonometry is required. Those planning to take more than one semester of calculus should take MATH 1401 instead of MATH 1080.

MATH 1110 - College Algebra: MA1. 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 functions, rational functions, and selected other topics. Graphic calculators and/or computer algebra systems are used extensively. Applications are emphasized. Semester Hours: 3. Prerequisite: Intermediate algebra and satisfactory score on the placement exam. Note: No co-credit with either MATH 1070 or 1130.

MATH 1111 - Freshman Seminar. Semester Hours: 1 to 3.

MATH 1120 - College Trigonometry: MA1. 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. Semester Hours: 3. Prerequisite: MATH 1110 and placement test. No joint credit with MATH 1130.

MATH 1130 - Precalculus Mathematics: MA1. Condensed treatment of the topics in MATH 1110 and 1120. Semester Hours: 4. Prerequisite: Satisfactory score on the placement exam. No co-credit with MATH 1070, 1110 or 1120.

MATH 1401 - Calculus I: MA1. 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. Semester Hours: 4. Prerequisite: MATH 1120 or 1130 and satisfactory score on the placement exam. Note: Students cannot receive credit for both MATH 1080 and 1401.

MATH 2411 - Calculus II: MA1. 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. Semester Hours: 4. Prerequisite: MATH 1401.

MATH 2421 - Calculus III: MA1. 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. Semester Hours: 4. Prerequisite: MATH 2411.

MATH 2511 - Discrete Structures. Covers the fundamentals of discrete mathematics, including: logic, sets, functions, growth of functions, algorithms, matrices, mathematical reasoning, proofs, induction, relations, graphs, trees and combinatorics. There is an emphasis on how discrete mathematics applies to computer science in general, and algorithm analysis in particular. Semester Hours: 3. Prerequisite: C SC 2421. Cross-listed with: C SC 2511.

MATH 2810 - Topics. Topics in mathematics with various subtitles reflecting course content. Semester Hours: 1 to 3. Prerequisite: Permission of instructor.

MATH 2830 - Introductory Statistics: MA1. Basic statistical concepts, summarizing data, probability concepts, distributions, confidence intervals, hypothesis testing. Semester Hours: 3. Prerequisite: Intermediate algebra.

MATH 2939 - Internship/Cooperative Education. Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: 15 hours of 2.75 GPA.

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. Semester Hours: 3. Prerequisite: MATH 1401.

MATH 3040 - Mathematics for Elementary Teachers. Topics include intuitive and logical development of geometric ideas relevant to K-6 curriculum; measurement of length, area, volume, mass, angle, temperature, time and the metric system. Further study of the rational number system, probability and statistics, applications and problem solving. Semester Hours: 3. Prerequisite: Three years of high school mathematics. Note: Carries credit only for elementary education majors.

MATH 3140 - Introduction to Modern Algebra. Studies the fundamental algebraic structures used in modern mathematics. Topics include groups, rings, fields and polynomials. Semester Hours: 3. Prerequisite: MATH 3000.

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, eigenvalues and applications. Semester Hours: 3. Prerequisite: MATH 2411.

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. Semester Hours: 4. Prerequisite: MATH 2411.

MATH 3200 - Elementary Differential Equations. First and second order differential equations, Laplace transforms, systems of equations, with an emphasis on modeling and applications. Semester Hours: 3. Prerequisite: MATH 2411; coreq is MATH 3191.

MATH 3210 - Higher Geometry I. Studies the foundations of modern geometry by examining axiomatic systems for various geometries, with an emphasis on non-Euclidean hyperbolic geometry. Semester Hours: 3. Prerequisite: MATH 3000.

MATH 3250 - 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. Semester Hours: 3. When Offered: *Spring*. Prerequisite: MATH 2421. Cross-listed with: MATH 5250. Note: This course will not count toward a graduate degree in applied mathematics.

MATH 3301 - Introduction to Operations Research I - Deterministic Systems. A mathematical approach to decision making based on optimization. Topics include linear programming, network flows and production models. Semester Hours: 3. Prerequisite: MATH 3191 or 3195.

MATH 3302 - Operations Research II. Elementary stochastic processes and standard nondeterministic operations research models: Markov chains, Poisson processes, renewal processes, queuing theory, inventory models, Markov decision processes, simulation. Semester Hours: 3. Prerequisite: MATH 3191 and 3800.

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. Semester Hours: 3. When Offered: *Spring*. Prerequisite: MATH 3000. Cross-listed with: PHIL 3440.

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. Semester Hours: 4. When Offered: *Fall*. Prerequisite: MATH 2411, CHEM 2031, CHEM 2061.

MATH 3800 - Probability and Statistics for Engineers. Basic probability theory, discrete and continuous random variables, point and interval estimation, test of hypotheses, one-way analysis of variance, and simple linear regression. Semester Hours: 3. Prerequisite: MATH 2411; coreq: MATH 2421. Note: No co-credit with MATH 4810.

MATH 3939 - Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: Junior standing and 2.75 GPA.

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. Semester Hours: 3. When Offered: *Spring*. Prerequisite: MATH 1401. Cross-listed with: MATH 5010.

MATH 4027 - Topics in Mathematics. Special topics in mathematics will be covered; consult 'Schedule Planner' for current topics and prerequisites. Semester Hours: 3.

MATH 4101 - Applied Statistics Using SAS and SPSS I. Teaches the practical statistical tools social scientists use to analyze real-world problems. Course split into four modules, each taught by a different instructor. The first module introduces SAS and SPSS; modules 2-4 are problem-based and cover topics such as ANOVA, multivariate regression, and cluster analysis. Semester Hours: 3. Prerequisite: Any statistics course.

MATH 4102 - Applied Statistics Using SAS and SPSS II. (Continuation of MATH 4101.) Students use the skills they learned in the previous semester to analyze a social issue of their choosing and present their findings. In addition to lectures, weekly one-on-one meetings between faculty and student are required. Semester Hours: 3. When Offered: *Spring*. Prerequisite: MATH 4101.

MATH 4110 - Theory of Numbers. Topics include divisibility, prime numbers, congruencies, number theoretic functions, quadratic reciprocity, and special diophantine equations, with applications in engineering. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 3000. Cross-listed with: MATH 5110.

MATH 4201 - Topology. Metric spaces and topological spaces, compactness, separation properties, and connectedness. Semester Hours: 3. When Offered: *Spring*. Prerequisite: MATH 3000.

MATH 4220 - Higher Geometry II. Studies affine and projective geometries. Coordinates are introduced in this framework. Planes and higher dimensional spaces are examined. Semester Hours: 3. Prerequisite: MATH 3191.

MATH 4310 - Introduction to Real Analysis I. Calculus of one variable, the real number system, continuity, differentiation, integration theory, sequence and series. Semester Hours: 4. When Offered: *Fall*. Prerequisite: MATH 2421 and 3000.

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. Semester Hours: 4. When Offered: *Spring*. Prerequisite: MATH 4310.

MATH 4387 - Regression Analysis, Modeling and Time Series. Topics include linear and multiple regression, basic experimental designs, one-way analysis of variance. Emphasis is on practical aspects and applications of linear models to the analysis of data in business engineering, behavioral, biological and physical sciences. Semester Hours: 3. When Offered: *Fall*. Prerequisite: MATH 3191 and 3800/4820. Cross-listed with: MATH 5387.

MATH 4390 - Game Theory. Annual. Begins with an introduction to the mathematical theory of games and the definition of a solution, including extensive and normal forms of representation. The fundamental minimax theorem is presented first as the foundation for two-person matrix games, then extended with fixed point theory to other games. Principles of dominance and solution methods are presented, plus applications to economics, political science, engineering, and other fields. An introduction to n-person game theory is included, with basic terms and concepts. Semester Hours: 3. Prerequisite: MATH 2421, 3191 and 3800/4810. Cross-listed with: MATH 5390.

MATH 4394 - Experimental Designs. Completely randomized block designs factorial and fractional factorial experiments, balanced incomplete block designs, responses surface methods. Semester Hours: 3. When Offered: *Infrequent*. Prerequisite: MATH 4387. Cross-listed with: MATH 5394.

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. Semester Hours: 3. Prerequisite: C SC/MATH 2511 or MATH 3000. Cross-listed with: C SC 4408.

MATH 4409 - 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. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 4408 and 3140.

MATH 4410 - Mathematics of 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 of coding theory, linear, Reed-Muller, Golay, cyclic and BCH codes. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 3191.

MATH 4450 - Complex Variables. Topics include complex algebra, Cauchy-Riemann equations, Laurent expansions, theory of residues, complex integration, and introduction to conformal mapping. Semester Hours: 3. When Offered: *Infrequent*. Prerequisite: MATH 2421 and MATH 3000.

MATH 4576 - Mathematical Foundations of Artificial Intelligence I. 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 search, neural nets, analogical reasoning and learning. Models and paradigms also consider different measures of uncertainty. Semester Hours: 3. When Offered: *Infrequent*. Prerequisite: C SC 2511, MATH 2511/3000 and 3191. Cross-listed with: MATH 5576.

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. Semester Hours: 3. Prerequisite: MATH 2411, 3191 or 3195, and programming experience. Cross-listed with: C SC 4650, 5660, and MATH 5660.

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. Semester Hours: 3. When Offered: *Spring*. Prerequisite: MATH 3195 or both 3191 and 3200; MATH or C SC 4650 or 5660; or programming experience. Cross-listed with: MATH 5661, C SC 4660 and 5661.

MATH 4674 - Parallel Computing and Architectures. 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. Semester Hours: 3. When Offered: *Infrequent*. Prerequisite: MATH 4650. Cross-listed with: MATH 5674.

MATH 4733 - Partial Differential Equations. Initial/Boundary value problems for first-order, wave, heat and Laplace Equations; maximum principles; Fourier Series and applications. Semester Hours: 3. When Offered: *Infrequent*. Prerequisite: MATH 2421 and 3200. Cross-listed with: MATH 5733.

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. Semester Hours: 3. Prerequisite: Consult Schedule Planner or instructor. Cross-listed with: MATH 5779.

MATH 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. Semester Hours: 3. Prerequisite: C SC 1410 and MATH 3191 or 3195. Cross-listed with: C SC 4788, PHYS 4788.

MATH 4791 - Continuous Modeling. 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. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 3191 and 3200. Cross-listed with: MATH 5791.

MATH 4792 - Probabilistic Modeling. 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. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 4810, 5310 and some programming experience. Cross-listed with: MATH 5792.

MATH 4793 - Discrete Math Modeling. 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. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 3191 and 4408. Cross-listed with: MATH 5793.

MATH 4794 - Optimization Modeling. 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. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 2421 and 3191. . Cross-listed with: MATH 5794.

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. Semester Hours: 3. Prerequisite: MATH 2421 and 3191. Cross-listed with: MATH 5310.

MATH 4820 - Statistics. Point and confidence interval estimation, principles of maximum likelihood, sufficiency and completeness, tests of simple and composite hypothesis, linear models and multiple regression, analysis of variance. Semester Hours: 3. When Offered: *Spring*. Prerequisite: MATH 3800. MATH 4810 highly recommended, but not required. Cross-listed with: MATH 5320.

MATH 4830 - Applied Statistics. Review of estimation, confidence intervals and hypothesis testing; ANOVA; categorical data analysis; non-parametric tests; linear and logistic regression. Semester Hours: 3. When Offered: *Spring*. Prerequisite: An introductory course in statistics such as MATH 2830 or permission of instructor. Cross-listed with: MATH 5830.

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. Semester Hours: 1 to 3. 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.

MATH 5000 - RM-MSMSP: 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. Semester Hours: 4. Prerequisite: Permission of project director.

MATH 5002 - RM-MSMSP: 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. Semester Hours: 4. Prerequisite: MATH 5000 or permission of instructor.

MATH 5004 - RM-MSMSP: 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. Semester Hours: 4. Prerequisite: Permission of project director.

MATH 5005 - RM-MSMSP: 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 Arts and Sciences. Semester Hours: 4. Prerequisite: Permission of project director.

MATH 5006 - RM-MSMSP: 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. Semester Hours: 4. Prerequisite: MATH 5000 (or equivalent) or permission of project director.

MATH 5007 - RM-MSMSP: 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. Semester Hours: 4. Prerequisite: MATH 5000 (or equivalent) or permission of project director.

MATH 5008 - RM-MSMSP: 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. This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Semester Hours: 4. Prerequisite: Permission of the project director.

MATH 5009 - RM-MSMSP: 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. Semester Hours: 4. Prerequisite: MATH 5006 (or equivalent) or permission of instructor.

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. Semester Hours: 3. When Offered: *Spring*. Prerequisite: MATH 1401. Not open to students who have had MATH 4010. No credit for applied math graduate students. Cross-listed with: MATH 4010.

MATH 5011 - RM-MSMSP: 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. This course is not applicable toward any degree in the College of Liberal Arts and Sciences. Semester Hours: 4. Prerequisite: MATH 5000, 5002.

MATH 5017 - Topics in Mathematics for Teachers. Topics vary from semester to semester. Designed for professional mathematics teachers. Semester Hours: 1 to 3. Prerequisite: Permission of instructor. Note: This course will not count toward a degree in applied mathematics.

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. Semester Hours: 3. Prerequisite: Permission of instructor.

MATH 5070 - Applied Analysis. Designed to serve as an introduction to real analysis. Topics include: fundamentals of logic and theorem proving, infimum and supremum, real numbers, point-set topology in metric spaces, properties of functions, sequences and series of functions, fixed point theorems, Riemann integral, power series. Semester Hours: 3. When Offered: *Spring*. Prerequisite: MATH 4320.

MATH 5110 - Theory of Numbers. Topics include divisibility, prime numbers, congruences, number theoretic functions, quadratic reciprocity, and special diophantine equations, with applications in engineering. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 3000. Cross-listed with: MATH 4110.

MATH 5135 - Functions of a Complex Variable. The complex plane, infinite series and products, elementary special functions, Cauchy-Riemann equations, conformal mapping, complex integration, Cauchy integral theory, and residue theory. Semester Hours: 3. When Offered: *Infrequent*. Prerequisite: MATH 4320; MATH 5070 recommended.

MATH 5198 - Mathematics for Bioscientists. Develops mathematical reasoning; introduces linear algebra, discrete structures, graph theory, probability, and differential equations, using applications to molecular biology. Semester Hours: 3. When Offered: *Infrequent*. Prerequisite: MATH 2411. Note: No credit for mathematics or engineering students.

MATH 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. Semester Hours: 3. When Offered: *Fall*. Corequisite: MATH 2421. Cross-listed with: MATH 3250. Note: This course will not count toward a graduate degree in applied mathematics.

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. Semester Hours: 3. Prerequisite: MATH 2421 and 3191. Cross-listed with: MATH 4810.

MATH 5320 - Statistics. Point and confidence interval estimation, principles of maximum likelihood, sufficiency and completeness, tests of simple and composite hypothesis, linear models and multiple regression, analysis of variance. Semester Hours: 3. When Offered: *Spring*. Prerequisite: MATH 3800. MATH 4810 highly recommended, but not required. Cross-listed with: MATH 4820.

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. Semester Hours: 3. Prerequisite: MATH 4810/5310.

MATH 5387 - Regression Analysis, Modeling and Time Series. Topics include linear and multiple regression, basic experimental designs, one-way analysis of variance. Emphasis is on practical aspects and applications of linear models to the analysis of data in business engineering and behavioral, biological and physical sciences. Semester Hours: 3. When Offered: *Fall*. Prerequisite: MATH 3191 and 3800/4820. Cross-listed with: MATH 4387.

MATH 5390 - Game Theory. Begins with an introduction to the mathematical theory of games and the definition of a solution, including

extensive and normal forms of representation. The fundamental minimax theorem is presented first, as the foundation for two-person matrix games, then extended with fixed point theory to other games. Principles of dominance and solution methods are presented, plus applications to economics, political science, engineering, and other fields. An introduction to n-person game theory is included, with basic terms and concepts. Semester Hours: 3. When Offered: *Infrequent*. Prerequisite: MATH 2421, 3191 and 3800/4810. Cross-listed with: MATH 4390.

MATH 5394 - Experimental Designs. Completely randomized block designs, factorial and fractional factorial experiments, balanced incomplete block designs, response surface methods. Semester Hours: 3. When Offered: *Infrequent*. Prerequisite: MATH 4387 and 5387. Cross-listed with: MATH 4394.

MATH 5410 - Modern Cryptology. 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. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 3191.

MATH 5432 - Computational Graph Theory. 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. Semester Hours: 3. When Offered: *Infrequent*. Prerequisite: A course in graph theory and some programming experience.

MATH 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. Semester Hours: 3. When Offered: *Infrequent*. Prerequisite: MATH 3000 and 3140. Cross-listed with: C SC 5446.

MATH 5490 - Network Flows. 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. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: Graduate standing in math or computer science.

MATH 5576 - Mathematical Foundations of Artificial Intelligence I. 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. Semester Hours: 3. When Offered: *Infrequent*. Prerequisite: C SC 2511, MATH 2511/3000 and 3191. Cross-listed with: MATH 4576.

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. Semester Hours: 3. When Offered: *Fall*. Prerequisite: MATH 3191.

MATH 5610 - Computational Biology. 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. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: C SC 1410 or equivalent programming experience, and MATH 3191 or 3195.

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. Semester Hours: 3. Prerequisite: MATH 2411, 3191 or 3195, and programming experience. Cross-listed with: C SC 4650, 5660, and MATH 4650.

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. Semester Hours: 3. When Offered: *Spring*. Prerequisite: MATH 3195 or both 3191 and 3200; MATH or C SC 4650 or 5660; or programming experience. Cross-listed with: MATH 4660, C SC 4660 and 5661.

MATH 5674 - Parallel Computing and Architectures. 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. Semester Hours: 3. When Offered: *Infrequent*. Prerequisite: MATH 4650. Cross-listed with: MATH 4674.

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. Semester Hours: 3. When Offered: *Fall*. Prerequisite: MATH 3191.

MATH 5733 - Partial Differential Equations. Initial/Boundary value problems for first-order, wave, heat and Laplace Equations; maximum principles; Fourier Series and applications. Semester Hours: 3. When Offered: *Infrequent*. Prerequisite: MATH 2421 and 3200; graduate standing. Cross-listed with: MATH 4733.

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. Semester Hours: 3. Prerequisite: Consult Schedule Planner or instructor. Cross-listed with: MATH 4779.

MATH 5791 - Continuous Modeling. 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. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 3191 and 3200. Cross-listed with: MATH 4791.

MATH 5792 - Probabilistic Modeling. 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. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 4810 or 5310 and some programming experience. Cross-listed with: MATH 4792.

MATH 5793 - Discrete Math Modeling. 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. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 3191 and 4408. Cross-listed with: MATH 4793.

MATH 5794 - Optimization Modeling. 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. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 2421 and 3191. Cross-listed with: MATH 4794.

MATH 5830 - Applied Statistics. Review of estimation, confidence intervals and hypothesis testing; ANOVA; categorical data analysis; non-parametric tests; linear and logistic regression. Semester Hours: 3. When Offered: *Spring*. Prerequisite: An introductory course in statistics such as MATH 2830 or permission of instructor. Cross-listed with: MATH 4830.

MATH 5840 - Independent Study. Available only with approval of graduate advisor. Subjects arranged. Semester Hours: 1 to 3.

MATH 5939 - Internship/Cooperative Education. Semester Hours: 1 to 6.

MATH 5950 - Master's Thesis. Semester Hours: 1 to 8.

MATH 5960 - Master's Project. Semester Hours: 1 to 8. Note: Credit hours for this course will not count toward a graduate degree in Applied Mathematics.

MATH 6023 - Topics in Discrete Math. Topics may include graph theory, combinatorics, matroid theory, combinatorial matrix theory, finite geometry, design theory, and discrete algorithms. Semester Hours: 3. Prerequisite: Permission of the instructor. Note: Since topic varies by semester, students may register for this course more than once.

MATH 6131 - Real Analysis. Lebesgue measure and integration, general measure and integration theory, Radon-Nikodym Theorem, Fubini Theorem. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 4320 or 5070.

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. Semester Hours: 3. Prerequisite: MATH 5387. Note: Since problems vary each semester, students may register for this course more than once.

MATH 6360 - Exploratory Data Analysis. 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. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: Previous statistics course or permission of instructor.

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. Semester Hours: 3. Prerequisite: MATH 4820/4830 and 4387. Cross-listed with: MATH 7376.

MATH 6380 - Stochastic Processes. Markov processes in discrete and continuous time, renewal theory, martingales, Brownian motion, branching processes, and stationary processes. Applications include queueing theory, performance evaluation of computer and communication systems and finance. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 3191, MATH 3200, and MATH 4810/5310.

MATH 6384 - Analysis of Dependent Data. Statistical methods for the analysis of data with temporal and/or spatial dependence. Longitudinal data, stationary and non-stationary time series models, geostatistical and lattice spatial models, point processes, hierarchical models. Semester Hours: 3. When Offered: *Infrequent*. Prerequisite: MATH 4820 or 4830 and MATH 4387.

MATH 6388 - Advanced Statistical Methods for Research. The second in a two-semester course in applied statistics. Topics include multifactor analysis of variance and covariance, categorical data, general linear models, bootstrapping, and other computationally intensive statistical methods. Semester Hours: 3. When Offered: *Infrequent*. Prerequisite: MATH 5387.

MATH 6393 - Introduction to Bayesian Statistics. Prior and posterior distributions, conjugate models, single and multiparameter models, hierarchical models, mixture models, numerical methods for evaluating posteriors, Monte Carlo methods, and Markov chain Monte Carlo. Semester Hours: 3. Prerequisite: MATH 3800 or both MATH 4810 and MATH 4820 (or equivalent). Some computer programming experience.

MATH 6395 - Multivariate Methods. Multivariate distributions, hypothesis testing and estimation. Multivariate analysis of variance, discriminant analysis, multidimensional scaling, factor analysis, principal components. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 5387.

MATH 6398 - Calculus of Variations and Optimal Control. 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. Semester Hours: 3. When Offered: *Infrequent*. Prerequisite: MATH 4320.

MATH 6404 - Applied Graph Theory. Emphasis on graph theory. Topics will include trees, diagrams and networks, intersection graphs, coloring, clique coverings, distance, paths and cycles. Topics are motivated by applications. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: Graduate standing.

MATH 6595 - Computational Methods in Nonlinear Programming. Introduces fundamental algorithms and theory for nonlinear optimization problems. Topics include Newton, quasi-Newton and conjugate direction methods; linesearch and trust-region methods; active set, penalty and barrier methods for constrained optimization; convergence analysis and duality theory. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 4320 and MATH 5718.

MATH 6653 - Introduction to Finite Element Methods. 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. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 5660.

MATH 6735 - Continuum Mechanics. 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. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 3191 and 3200 or graduate standing.

MATH 6840 - Independent Study. Semester Hours: 1 to 3.

MATH 7101 - Topology. Topological spaces, compactness, separation properties and connectedness. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 4320.

MATH 7132 - Functional Analysis. Linear metric and topological spaces, duality, weak topology, spaces of functions, linear operators, compact operators, elements of spectral theory, and operator calculus. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 6131.

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. Semester Hours: 3. Prerequisite: MATH 4820/4830 and 4387. Cross-listed with: MATH 6376.

MATH 7381 - Mathematical Statistics I. Mathematical theory of statistics. Parametric inference: discrete and continuous distributions, methods of parameter estimation, confidence intervals. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 3191 and 4820/5320.

MATH 7382 - Mathematical Statistics II. (Continuation of MATH 7381.) Hypothesis testing, robust estimation, tolerance intervals, nonparametric inference, sequential methods. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 7381.

MATH 7384 - Mathematical Probability. 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). Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 4810/5310 and MATH 5070 or MATH 6131.

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. Semester Hours: 3. Prerequisite: MATH 7384.

MATH 7397 - Nonparametric Statistics. Statistical inference without strong model assumptions. Hypothesis testing and estimation using permutations and ranks, analysis of variance, and nonparametric model fitting. Semester Hours: 3. When Offered: *Every three years*. Prerequisite: Applied mathematics - statistics (PhD.).

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. Semester Hours: 3. Prerequisite: MATH 6404 or permission of instructor.

MATH 7409 - Applied Combinatorics. Emphasis is on enumerative combinatorics. Topics include multinomial coefficients, generating functions, SDRs, Pólya's enumeration theory, pigeon-hole principle, inclusion/exclusion and Möbius inversion of finite posets. Topics may also include introduction to designs and finite geometry. Semester Hours: 3. When Offered: *Every other year*

MATH 7410 - Combinatorial Structures. Finite combinatorial structures; existence, construction and applications. Topics include Latin squares, Hadamard matrices, block designs, finite geometries and extremal and non-constructive combinatorics. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 5718 and MATH 7409 or permission of instructor.

MATH 7413 - Modern Algebra I. Groups, rings and ideals, integral domains. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 3140. Corequisite: MATH 5718.

MATH 7414 - Modern Algebra II. Field theory, Galois theory, Modules over rings, especially over integral domains. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 5718 and MATH 7413.

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. Semester Hours: 3. Prerequisite: MATH 5718.

MATH 7421 - Projective Geometry. Synthetic and algebraic development of projective spaces. Collineation groups, representation theorems, quadratic sets and applications. Emphasis is on finite projective spaces. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 5718 and MATH 7409.

MATH 7593 - Advanced Linear Programming. A PhD 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. Semester Hours: 3. When Offered: *Every three years*. Prerequisite: MATH 5593.

MATH 7594 - Integer Programming. A PhD 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 Chvátal'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. Semester Hours: 3. When Offered: *Every three years*. Prerequisite: MATH 5593.

MATH 7595 - Advanced Nonlinear Programming. 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. Semester Hours: 3. When Offered: *Every three years*. Prerequisite: MATH 6595.

MATH 7663 - Finite Difference Methods for Partial Differential Equations. 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. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 5070 and MATH 5733.

MATH 7665 - Numerical Linear Algebra. Solution of linear equations, eigenvector and eigenvalue calculation, matrix error analysis, orthogonal transformation, iterative methods. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 5660 and MATH 5718.

MATH 7667 - Introduction to Approximation Theory. 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. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 5070 and MATH 5718.

MATH 7821 - Topics in Projective Geometry. Advanced topics in projective geometry. Topics may include finite projective planes, free projective planes, derivation, collineation groups, higher dimensional projective spaces, ovals and ovoids. Semester Hours: 3. When Offered: *Infrequent*. Prerequisite: MATH 7421.

MATH 7822 - Topics in Linear Algebra. Topics may include canonical forms, bilinear and quadratic forms, and combinatorial matrix theory. Semester Hours: 3. When Offered: *Infrequent*. Prerequisite: MATH 5718.

MATH 7823 - Topics in Discrete Math. Advanced topics in discrete mathematics; will change from semester to semester. Semester Hours: 3. When Offered: *Infrequent*. Prerequisite: MATH 7413, 6404 and 7409 or permission of instructor.

MATH 7824 - Topics in Computational Mathematics. Topics include methods for differential equations, numerical optimization, approximation theory, inverse problems, and Fourier analysis. Semester Hours: 3. When Offered: *Infrequent*. Prerequisite: Permission of instructor.

MATH 7825 - Topics in Optimization. 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. Semester Hours: 3. When Offered: *Infrequent*. Prerequisite: Preqreq: Permission of instructor.

MATH 7826 - Topics in Probability and Statistics. Topics may include generalized linear models, information theory, robust methods, spatial statistics, sequential analysis, Monte Carlo methods, queuing theory. Semester Hours: 3. When Offered: *Infrequent*. Prerequisite: Permission of instructor. Note: Since topics vary each semester, students may register for this course more than once.

MATH 7827 - Topics in Applied Mathematics. Topics include problems in differential equations, optimization, mathematical modeling, Fourier analysis and approximation theory. Semester Hours: 3. When Offered: *Infrequent*. Note: Since topics vary each semester, students may register for this course more than once.

MATH 7840 - Independent Study. Available only to PhD students. Semester Hours: 1 to 3.

MATH 7921 to 7927 - Readings in Mathematics. Annual. Seven readings courses are offered regularly primarily for PhD students at the research level in the designated fields. The seminar format requires significant student participation. Semester Hours: 1. Prerequisite: Permission of instructor.

MATH 8660 - Mathematical Foundations of Finite Element Methods. 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. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 6653 (or equivalent programming experience), and MATH 6131/7132.

MATH 8664 - Iterative Methods in Numerical Linear Algebra.

Preconditioned iterative methods for linear systems and eigen problems, conjugate gradients, multigrid and domain decomposition. Semester Hours: 3. When Offered: *Every other year*. Prerequisite: MATH 5660 and MATH 7665.

MATH 8990 - Doctoral Dissertation. Only for students working on their PhD research. Semester Hours: 1 to 10.

ME: Mechanical Engineering (Engineering)

ME 1208-12X8 - Special Topics. Subject matter to be selected from topics of current technological interest. Credit to be arranged. Semester Hours: 1 to 3. Prerequisite: Permission of instructor.

ME 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. Semester Hours: 3. Prerequisite: PHYS 2311. Cross-listed with: CE 2121.

ME 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. Semester Hours: 3. Prerequisite: MATH 1401 and ENGR 1025.

ME 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. Semester Hours: 3. Prerequisite: ME 2023 or CE 2121. Cross-listed with: CE 3111.

ME 2208-22X8 - Special Topics. Subject matter to be selected from topics of current technological interest. Credit to be arranged. Semester Hours: 1 to 3. Prerequisite: Permission of instructor.

ME 3010 - Elementary Numerical Methods and Programming. A development of basic numerical methods used to solve engineering problems. Introduction to MATLAB to implement numerical simulations. Semester Hours: 3. Corequisite: MATH 3195 or (MATH 3191 and MATH 3200).

ME 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. Semester Hours: 3. Prerequisite: ME 2033 or CE 3111 and MATH 2421.

ME 3022 - Thermodynamics II. Generalized thermodynamic cycles; general thermodynamic cycle considerations, compressor, expander, heat exchanger processes, refrigeration cycles, mixtures and combustion. Semester Hours: 3. Prerequisite: ENGR 3012 and MATH 2421.

ME 3023 - System Dynamics I: Vibrations. Modeling of dynamical systems. Analysis of single and multiple degree of freedom systems. Introduction to continuous systems. Semester Hours: 3. Prerequisite: CE 3111 or ME 2033, MATH 3195 or MATH 3191 and MATH 3200? and ME 3010. Corequisite: CE 3121 or ME 3043.

ME 3024 - Introduction to Materials Science. The development of the physical principles relating the structural features of materials to their observed properties. Semester Hours: 3. Prerequisite: PHYS 2311.

ME 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. Semester Hours: 3. Prerequisite: MATH 3195 or (MATH 3191 and MATH 3200).

ME 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. Semester Hours: 1. Corequisite: ME 3027.

ME 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). Semester Hours: 3. Prerequisite: MATH 2421 and PHYS 2331. Cross-listed with: EE 3030.

ME 3031 - Fluids/Thermal Laboratory. Laboratory exercise in compressible and incompressible fluid flow; steady state and transient heat transfer. Semester Hours: 1. Prerequisite: ENGR 3012. Corequisite: ME 3021.

ME 3032 - Electric Circuits and Systems Lab. Basic electrical engineering lab for ME majors. Semester Hours: 1 Corequisite: ME 3030 or EE 3030.

ME 3034 - 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. Semester Hours: 1 Corequisite: ME 3024 or (ME 3043 or CE 3121).

ME 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. Semester Hours: 3. Prerequisite: ME 3043, CE 3121. Coreq: ME 3024.

ME 3042 - Heat Transfer. Basic laws of heat transfer by conduction, convection, and radiation with engineering design applications. Includes design project. Semester Hours: 3. Prerequisite: ENGR 3012 and MATH 2421.

ME 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. Semester Hours: 3. Prerequisite: ME 2023, CE 2121. Cross-listed with: CE 3121.

ME 3065 - Intermediate Dynamics. An in-depth study of Newtonian dynamics with constraints. Mechanism synthesis using graphical and analytic techniques. Semester Hours: 3. Prerequisite: ME 2033/CE 3111 and ME 3010.

ME 3145 - 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. Semester Hours: 3. Prerequisite: ME 3042 and ME 4035.

ME 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. Semester Hours: 3. Prerequisite: Junior standing in engineering.

ME 3208-32X8 - Special Topics. Subject matter to be selected from topics of current technological interest. Credit to be arranged. Semester Hours: 1 to 3.

ME 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. Semester Hours: 1 to 3.

ME 4023 - System Dynamics II: Controls. Introduces the Laplace Transformation. Control system analysis using root locus and frequency response methods. Basic compensation techniques are covered. Semester Hours: 3. Prerequisite: ME 3023.

ME 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. Semester Hours: 3. Prerequisite: ME 3024.

ME 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. ME 4035 and ME 4045 form a one year sequence and must be taken consecutively. Semester Hours: 3. Prerequisite: ME 3035.

ME 4045 - Senior Design II. Student teams manufacture and construct and/or redesign mechanical parts or assemblies that they designed in previous course (ME 4035). A proposal, oral progress reports, and a final written report and demonstration are required. ME 4035 and ME 4045 form a one year sequence and must be taken consecutively. Semester Hours: 3. Prerequisite: ME 4035.

ME 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. Semester Hours: 3. Prerequisite: MATH 3195 or (3191 and 3200) and some programming experience. Cross-listed with: ME 4110.

ME 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. Semester Hours: 3. Prerequisite: ENGR 3012.

ME 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. Semester Hours: 3. Prerequisite: ME 3043/C E 3121. Cross-listed with: ME 5114.

ME 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 non linear viscoelastic creep with applications to plates and shells. Semester Hours: 3. Prerequisite: ME 3043. Cross-listed with: ME 5115.

ME 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. Semester Hours: 3. Prerequisite: ME 3065.

ME 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. Semester Hours: 3. Prerequisite: MATH 3195 or (MATH 3191 and MATH 3200). Cross-listed with: ME 5120.

ME 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. Semester Hours: 3. Prerequisite: ME 3022.

ME 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. Semester Hours: 3. Prerequisite: ME 3035.

ME 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. Semester Hours: 3. Prerequisite: ME 4023.

ME 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. Semester Hours: 3. Prerequisite: ME 3021. Cross-listed with: ME 5141.

ME 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. Semester Hours: 3. Prerequisite: ENGR 3012 and ME 3021.

ME 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. Semester Hours: 3. Prerequisite: Junior standing in engineering. Cross-listed with: C E 4077.

ME 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. Semester Hours: 3. Prerequisite: ME 3022 and 3042.

ME 4160 - Introduction to Operations Research. Introduces operations research, including mathematical programming models, models for decision alternatives, for procurement and inventory, and for queuing operations. Semester Hours: 3. Prerequisite: MATH 3195 or (3191 and 3200).

ME 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. Semester Hours: 3. Prerequisite: ME 2033 or C E 3111, MATH 3195 or (MATH 3191 and MATH 3200). Cross-listed with: ME 5163.

ME 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. Semester Hours: 3. Prerequisite: Junior standing in engineering. Cross-listed with: ME 5166.

ME 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. Semester Hours: 3. Prerequisite: ME 3035. Cross-listed with: ME 5175.

ME 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. Semester Hours: 3. Prerequisite: Junior standing in engineering.

ME 4208-42X8 - Special Topics. Subject matter to be selected from topics of current technological interest. Credit to be arranged. Semester Hours: 1 to 3. Prerequisite: Senior standing and permission of instructor.

ME 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. Semester Hours: 1 to 3.

ME 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: ME 4110.

ME 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: ME 4114.

ME 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 non linear viscoelastic

creep with applications to plates and shells. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: M E 4115.

M E 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: M E 4120.

M E 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor.

M E 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor.

M E 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor.

M E 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. Semester Hours: 3. Prerequisite: M E 5143.

M E 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. Semester Hours: 3. Prerequisite: M E 5143 or permission of instructor.

M E 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: M E 4141.

M E 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor.

M E 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor.

M E 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. Semester Hours: 3. Prerequisite: M E 5143.

M E 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. Semester Hours: 3. Prerequisite: M E 5141 or permission of instructor.

M E 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor.

M E 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: M E 4163.

M E 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: M E 4166.

M E 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. Semester Hours: 3. Prerequisite: M E 5141 or permission of instructor.

M E 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. Semester Hours: 3. Prerequisite: M E 5143 or permission of instructor. Cross-listed with: M E 4175.

M E 5208-52X8 - Special Topics. Subject matter to be selected from topics of current technological interest. Credit to be arranged. Semester Hours: 1 to 3. Prerequisite: Graduate standing or permission of instructor.

M E 5238 - Special Topics. Semester Hours: 1 to 3.

M E 5840 - Independent Study. Available only through approval of the graduate advisor. Subjects arranged to fit needs of the particular student. Semester Hours: 1 to 3. Prerequisite: Graduate standing.

M E 5950 - Master's Thesis. Semester Hours: 1 to 8.

M E 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. Semester Hours: 3. Prerequisite: Completion of 21 hours toward the M. S. degree.

M E 5970 - Graduate Problem Course. The graduate problem course is for the solution of specific problems in M E specialty areas. Each student is assigned a set of problems of some difficulty requiring the use of the literature of the various areas covered. Semester Hours: 3. Prerequisite: 15 hours of graduate level courses in M E.

MGMT: Management (Business)

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. Semester Hours: 3. When Offered: *Fall, Spring, Summer*. Prerequisite: Open to freshman and sophomores, non-degree students and music majors at all levels.

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. Semester Hours: 3. When Offered: *Fall, Spring*. Prerequisite: Open only to new Freshman. Note: Credit will not be given for both MGMT 1111 and MGMT 1000.

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. Semester Hours: 3. Prerequisite: Junior standing.

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. Semester Hours: 3.

MGMT 3939 - Internship/Cooperative Education. Supervised experiences involving the application of concepts and skills in an employment situation. Semester Hours: 1 to 3. Prerequisite: Senior standing and 3.5 GPA.

MGMT 4100 - Managing Cultural Diversity. 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. Semester Hours: 3. When Offered: *Fall, Spring*. Prerequisite: MGMT 3000.

MGMT 4330 - Mastering Management. Designed to give students hands on practice developing critical management skills, such as communication, conflict handling, negotiation, giving feedback, public speaking, meeting management and self management. Semester Hours: 3. Prerequisite: MGMT 3000 with a grade of 'C' or better.

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. Semester Hours: 3. Prerequisite: MGMT 3000 with a grade of 'C' or better and MGMT 4370.

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. Semester Hours: 3. Prerequisite: MGMT 3000.

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. Semester Hours: 3. Prerequisite: MGMT 3000 and junior standing. Cross-listed with: INTB 4400.

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. Semester Hours: 3. Prerequisite: INTB 4400 or MGMT 4400. Cross-listed with: INTB 4410.

MGMT 4420 - Human Resources Management: Staffing. Methods, theories, research findings, and issues in staffing. Topics include

performance-based framework for selecting employees, establishing performance expectations, planning the recruitment process and finding valid and useful tools to select the best candidate. Semester Hours: 3. Prerequisite: MGMT 3010 (may be taken concurrently).

MGMT 4430 - Human Resources Management: Training. Methods, theories, research findings, and issues in training. Topics include how to design, deliver, and evaluate training programs. Semester Hours: 3. Prerequisite: MGMT 3010 (may be taken concurrently). Cross-listed with: MGMT 6720.

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. Semester Hours: 3. Prerequisite: MGMT 3010 (may be taken concurrently).

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. Semester Hours: 3. Prerequisite: MGMT 3010 (may be taken concurrently). Cross-listed with: MGMT 6740.

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. Semester Hours: 3. When Offered: *Fall, Spring, Summer*. Prerequisite: Graduation term, senior standing and completion of all business core courses with a grade of a 'C' or better.

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. Semester Hours: 3. Prerequisite: MGMT 3000.

MGMT 4780 - Managing Entrepreneurial Ventures. Teaches future new and small business owners the practical aspects of managing their entrepreneurial venture, to develop a comprehensive business plan and to develop the skills necessary to improve the odds of success. The course will consider strategies to leverage limited resources for maximum effect. Also covers small organization and group behavior, performance, leadership and motivation in small business settings and focuses on the owner/manager as the principle success factor in the context of a small organization. Semester Hours: 3. Prerequisite: MGMT 3000, MKTG 3000, and BLAW 3000 strongly recommended. Note: For business majors only. Can be applied to management emphasis and to Entrepreneurship Certificate.

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. Semester Hours: 3. Prerequisite: MKTG 3000. Cross-listed with: MGMT 3830, BUSN 6830.

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. Semester Hours: 3. Prerequisite: MGMT 3000. Cross-listed with: MGMT 6834.

MGMT 4840 - Independent Study. 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. Semester Hours: 3. Prerequisite: ISMG 3000. Cross-listed with: ISMG 4900. Note: Successful completion of this course meets the educational requirements to sit for both the PMP and CAPM exams.

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. Semester Hours: 3. Prerequisite: Prerequisites vary depending on the topic and instructor requirements. Cross-listed with: MGMT 5800.

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. Semester Hours: 3. Prerequisite: Prerequisites vary depending on the topic and instructor requirements. Cross-listed with: MGMT 4950.

MGMT 5939 - Internship or Cooperative Education. Supervised experiences involving the application of concepts and skills in an employment situation. Semester Hours: 1 to 3. Prerequisite: 21 semester hours and 3.5 GPA.

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. Semester Hours: 3.

MGMT 6040 - International Human Resources Management. 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). Semester Hours: 3. Prerequisite: MGMT 6380 or BUSN 6520 (or equivalent). Cross-listed with: INTB 6040.

MGMT 6320 - Organizational Development. 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. Semester Hours: 3. Prerequisite: BUSN 6520, may be taken concurrently.

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. Semester Hours: 3. Prerequisite: BUSN 6520, may be taken concurrently.

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. Semester Hours: 3. Prerequisite: BUSN 6520, may be taken concurrently.

MGMT 6710 - Human Resources Management: Staffing. Focuses on the design and implementation of human resources management systems to recruit and select employees. Areas of study include planning, job analysis, external and internal recruitment and selection, and decision making. Semester Hours: 3. Prerequisite: MGMT 6380 and BUSN 6530.

MGMT 6720 - Human Resources Management: Training. Methods, theories, research findings, and issues in training. Topics include how to design, deliver, and evaluate training programs. Semester Hours: 3. Prerequisite: MGMT 6380. Cross-listed with: MGMT 4430.

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. Semester Hours: 3. Prerequisite: MGMT 6380.

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. Semester Hours: 3. Prerequisite: MGMT 6380 and BUSN 6530. Cross-listed with: MGMT 4450.

MGMT 6780 - Small Business Management. The primary objective of this course is to teach future small business owners the practical aspects of small business management and to develop the skills necessary to improve the odds of success. The course will consider strategies to leverage limited resources for maximum effect in managing the small business enterprise. Also, this course covers small organization and group behavior, performance, leadership and motivation in small business settings and focuses on the owner/manager as the principal success factor in the context of a small organization. Semester Hours: 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. Semester Hours: 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. Semester Hours: 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. Semester Hours: 3. Prerequisite: BUSN 6520, may be taken concurrently.

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 conflict resolution. Semester Hours: 3. Prerequisite: BUSN 6520, may be taken concurrently.

MGMT 6805 - Entrepreneurship and Venture Capital. Combines analytical tools for evaluating and organizing new business ventures with detailed information for preparing business plans, structuring the business, and raising capital for new ventures. The course includes analysis of current start-up companies, and class presentations by managers of start-up and venture capital firms. Semester Hours: 3. Prerequisite: BUSN 6520 or equivalent.

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. Semester Hours: 3.

MGMT 6820 - Management Field Studies. The objective of this course is to provide an opportunity for the in-depth examination of a 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. Semester Hours: 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 stakeholders (employees, customers, communities, society-at-large) to develop and promote mutually beneficial products and solutions to key social needs and concerns. Semester Hours: 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. Semester Hours: 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. Semester Hours: 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. Semester Hours: 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. Semester Hours: 3.

MGMT 6840 - Independent Study. Instructor approval required. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Semester Hours: 1 to 8.

MGMT 6950 - Master's Thesis. Semester Hours: 1 to 8.

MILR: Military Science (Army ROTC)

MILR 1011 - Adventures in Leadership. Introduces fundamentals of leadership and the U.S. Army. Examines Army organization, customs and history as well as its current relevance and purpose. Students also investigate basic leadership and management skills necessary to be successful in both military and civilian settings. Includes fundamentals of Army leadership doctrine, team-building concepts, cartography, marksmanship and basic military tactics. Semester Hours: 2. Note: Lab fee, 3 hour lecture, 2 hour lab, 3 hours of PT per week and 80 hours of field training.

MILR 1021 - Adventures in Leadership II. Covers selected leadership topics in small military organizations such as troop leading procedures, military first aid and casualty evacuation concepts, ethical work climates, Army organizations and installations, and basic military tactics. Introduces students to effective military writing styles. Semester Hours: 2. Prerequisite: MILR 1011. Note: Lab fee, 2 hour lecture, 2 hours lab, and 3 hours PT per week. 80 hours field training.

MILR 2031 - Leadership and Management I. Comprehensively reviews advanced leadership and management concepts including motivation, attitudes, communication skills, problem solving, human needs and behavior and leadership self development. Students continue to refine effective written and oral communication skills and to explore topics such as unit light infantry tactics and are prepared to perform as midlevel leaders in the cadet organization. Semester Hours: 3. Note: Lab fee, 3 hour lecture, 2 hour lab, 3 hours of PT per week and 80 hours of field training.

MILR 2041 - Leadership and Management II. Focuses on leadership and management functions in military and corporate environments.

Covers various components of Army leadership, risk management and planning theory, and leadership evaluation. Continues to refine written and oral communication skills. Semester Hours: 3. Prerequisite: MILR 2031. Note: Lab fee, 3 hour lecture, 2 hours lab, and 3 hours PT per week. 80 hours field training.

MILR 3062 - Leadership and Development II. Focuses on managing personnel and resources, military decision making, operations order, and oral communication. Exposes students to tactical unit leadership in preparation for the summer advance camp experience. Semester Hours: 3. Prerequisite: Consent of the Professor of Military Science, MILR 3052. Note: Lab fee, 3 hour lecture, 2 hours lab, and 3 hours PT per week. 80 hours field training.

MINS: Master of Integrated Sciences (Liberal Arts and 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. Semester Hours: 3 to 4. Prerequisite: MIS candidate with 12 hours of upper division work completed.

MINS 5840 - Independent Study. Semester Hours: 1 to 3.

MINS 5939 - Internship/Cooperative Education. Semester Hours: 1 to 3.

MINS 5950 - Master's Thesis. Semester Hours: 1 to 4. Prerequisite: Advisor approval.

MINS 5960 - Master's Project. Semester Hours: 1 to 4. Prerequisite: Advisor approval.

MKTG: Marketing (Business)

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. Semester Hours: 3.

MKTG 2939 - Internship/Cooperative Education. Introductory supervised experiences involving the applications, concepts and skills in an employment situation. Semester Hours: 1. Prerequisite: Sophomore standing.

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. Semester Hours: 3. When Offered: *Fall, Spring, Summer*. Prerequisite: Junior standing. Note: Offered fall, spring and summer.

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. Semester Hours: 3. Prerequisite: MKTG 3000 and DSCI 2010.

MKTG 3200 - Buyer 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. Semester Hours: 3. Prerequisite: MKTG 3000.

MKTG 3939 - Internship/Cooperative Education. Supervised experiences involving the application of concepts and skills in an employment situation. Semester Hours: 1 to 3. Prerequisite: Senior standing and 3.5 GPA.

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. Semester Hours: 3. Prerequisite: MKTG 3000.

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. Semester Hours: 3. Prerequisite: MKTG 3000 and DSCI 2010.

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. Semester Hours: 3. Prerequisite: MKTG 3000, cumulative GPA of 3.2 or higher. 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.

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. Semester Hours: 3. When Offered: *Fall, Spring*. Prerequisite: MKTG 3000.

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. Semester Hours: 3. Prerequisite: MKTG 3000.

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. Semester Hours: 3. When Offered: *Fall, Spring*. Prerequisite: MKTG 3000.

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. Semester Hours: 3. Prerequisite: MKTG 3000.

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. Semester Hours: 3. Prerequisite: MKTG 3000.

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. Semester Hours: 3. Prerequisite: MKTG 3000. Cross-listed with: ISMG 4760.

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. Semester Hours: 3. Prerequisite: MKTG 3000.

MKTG 4840 - Independent Study. 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. Semester Hours: 3. Prerequisite: Prerequisites vary depending upon the particular topic and instructor requirements.

MKTG 5939 - Internship/Cooperative Education. Supervised experiences involving the applications of concepts and skills in an employment situation. Semester Hours: 1 to 3. Prerequisite: 21 semester hours and 3.5 GPA.

MKTG 6010 - Marketing Strategy, Evaluation and Development. 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. Semester Hours: 3. When Offered: *Fall, Spring*. Prerequisite: BUSN 6560. Note: This course is intended to be taken near the end of your program.

MKTG 6020 - International Marketing. 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. Semester Hours: 3. Prerequisite: BUSN 6560. Cross-listed with: INTB 6026. Note: Students cannot receive credit for both MKTG 6020 and INTB 6026.

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. Semester Hours: 3. When Offered: *Spring*. Prerequisite: BUSN 6560.

MKTG 6040 - Services Marketing. 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. Manufacturing firms are increasing look to value-added services to improve their bottom lines. Yet customer satisfaction with services has been consistently lower than with goods. This course teaches students how to design and deliver high quality services, improve customer satisfaction, and thereby increase revenues and profitability. It also addresses how small, medium, and large firms can develop marketing plans and strategies in the new service environment. A variety of teaching methods may be used to demonstrate these concepts, such as cases, projects, field experiences, and/or guest speakers. Semester Hours: 3. When Offered: *Fall, Spring*

MKTG 6050 - Marketing Research. The objectives relate to effective marketing information management. Objectives 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) gaining experience in making recommendations and decisions based on relevant and timely information. Computer analysis and projects are employed. Semester Hours: 3. When Offered: *Fall, Spring*. Prerequisite: Prereq/coreq: BUSN 6530. Strictly enforced.

MKTG 6060 - Buyer Behavior. Why do consumers buy? How can marketing activities influence buyer behavior? Answers to these questions are key to marketing success and business fortune. In this course, we explore how to understand the heart and soul of consumers and examine the strategic implications of consumer psychology. Course participants conduct a market segmentation project that identifies and dissects various buyer groups within a chosen market. Semester Hours: 3.

MKTG 6070 - Integrated Marketing Communications and Brand Identity. 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. Semester Hours: 3. Prerequisite: BUSN 6560.

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. Semester Hours: 3. Prerequisite: BUSN 6560. Cross-listed with: INTB 6082. Note: Students cannot receive credit for both MKTG 6080 and INTB 6082.

MKTG 6090 - 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. Semester Hours: 3. Prerequisite: BUSN 6560.

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. Semester Hours: 3.

MKTG 6092 - Internet Marketing. 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. Semester Hours: 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. Semester Hours: 3. Cross-listed with: INTB 6094. Note: It is recommended for students to take BUSN 6560 or INTB 6000 prior to this course.

MKTG 6120 - Non-Profit and Social Marketing. In this course, students will examine the role and application of marketing processes in non-profit organizations, such as those addressing social issues and causes. Using case studies and projects, students will consider the non-profit sector's multiple marketing objectives, which include aiming to change behavior, developing donor relationships, and creating partnerships with for-profit organizations. Students will consider these perspectives while applying marketing concepts such as segmentation, positioning, branding, and the marketing mix. Semester Hours: 3. Prerequisite: BUSN 6560.

MKTG 6200 - Marketing Dashboards & Scorecards. Performance measurement systems help companies monitor their progress and stay on track toward their stated goals and objectives. Some performance measures, such as financial or operations data, can be readily provided by internal information systems. In contrast, marketing performance measures depend upon the activities of skilled marketing researchers to gather external market-based information about the market, customers, and competitors. This hands-on course provides students with a tool-kit for gathering market performance metrics for companies of all sizes, for profit and not-for-profit, manufacturers or service providers. The course also teaches students how to use tools such as dashboards and scorecards to apply market-performance measures to the firm's strategies and objectives. Semester Hours: 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. 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 non-profit organization. Semester Hours: 3. When Offered: *Usually offered every other year*. Prerequisite: BUSN 6560.

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. Semester Hours: 3. Prerequisite: BUSN 6560.

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. Semester Hours: 3.

MKTG 6840 - Independent Study. Allowed only under special and unusual circumstances. Regularly scheduled courses cannot be taken as independent study. Semester Hours: 1 to 8. Prerequisite: Permission of instructor.

MLNG: Modern Languages (Liberal Arts and Sciences)

MLNG 1111 - Freshman Seminar. Semester Hours: 1 to 3.

MLNG 2939 - Cooperative Education. Semester Hours: 1 to 3.

MLNG 4690 - Methods of Teaching Modern Languages. Methodology of teaching foreign language in an urban setting. Semester Hours: 3. Cross-listed with: MLNG 5690. Note: Requirement for language majors in the teacher certification program, School of Education, UC Denver.

MLNG 4691 - 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. Semester Hours: 3. Prerequisite: MLNG 4690. Cross-listed with: MLNG 5691.

MLNG 5690 - Methods of Teaching Modern Languages. Methodology of teaching foreign language in an urban setting. Requirement for language majors in the teacher certification program, School of Education, UC Denver. Semester Hours: 3. Cross-listed with: MLNG 4690.

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. Semester Hours: 3. Prerequisite: MLNG 5690. Cross-listed with: MLNG 4691.

MSRA: Master of Recording Arts (Arts & Media)

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. Semester Hours: 3. Prerequisite: Admission to the MSRA degree program.

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. Semester Hours: 1 to 4. Cross-listed with: MUS 4500.

MSRA 5505 - Graduate Audio Sweetening. 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. Semester Hours: 4 Cross-listed with: MUS 4505.

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. Semester Hours: 4. Prerequisite: MUS 2650 or permission of instructor. Cross-listed with: MUS 4550.

MSRA 5575 - Graduate 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. Semester Hours: 4. Prerequisite: MSRA 5550. Cross-listed with: MUS 4575.

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. Semester Hours: 4. Prerequisite: MSRA 5550, 5575 and 5505, or permission of instructor. Cross-listed with: MUS 4576.

MSRA 5580 - Graduate Audio 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. Semester Hours: 3. Prerequisite: MUS 2560 or permission of instructor. Cross-listed with: MUS 4580.

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. Semester Hours: 4. Prerequisite: Acceptance into MSRA Degree Program.

MSRA 5600 - Topics in Music. Various topics relating to the study of music performance, music technology and music business. Semester Hours: 1 to 3. Cross-listed with: MUS 4600.

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. Semester Hours: 1 to 3. Prerequisite: Permission of instructor and per stipulations of college IS policies.

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.) Semester Hours: 4. Prerequisite: MUS 5000.

MSRA 6530 - Graduate Audio Forensics. Deals with audio for the legal profession. Topics covered include tape authentication, audio enhancement, voice prints and analysis, consultation and expert witness testimony. The labs work with practice and real-life situations and prepare students for further research in this area. Semester Hours: 4. Prerequisite: MSRA graduate students only or permission of instructor.

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.) Semester Hours: 4. Prerequisite: MUS 5000 and 5590 or permission of instructor.

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. Semester Hours: 4. Prerequisite: MUS 5000, MUS 5590, MUS 6510, MUS 6580 and MUS 6530.

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. Semester Hours: 4. Prerequisite: MUS 5000, MUS 5590, MUS 6510 and MUS 6530.

MUS: Music (Arts & Media)

MUS 1550 - Introduction to Guitar Effects and Electronic Theory. Introduction to guitar effects, electronic theory and construction of electronic signal processing for electric and electronic musical instruments. Semester Hours: 3.

MUS 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. Semester Hours: 3. Prerequisite: PMUS 1200, PMUS 1210 and MUS 2300.

MUS 2300 - 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. Semester Hours: 3.

MUS 2450 - Introduction to Performing Arts and Events Management. Introduces stage management of events in the performing arts. Development of leadership and organizational skills as well as a general understanding of the profession. Semester Hours: 3. Cross-listed with: THTR 2450.

MUS 2470 - Music Applications on the Computer. Introduces the use of computers in the music industry. Topics include basic computer operation, computer hardware, desktop publishing for music business,

music notation, MIDI sequencing and digital audio. Students individually create several computer lab projects. Semester Hours: 3.

MUS 2500 - 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. Semester Hours: 3.

MUS 2540 - 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. Semester Hours: 3.

MUS 2560 - Audio Production II. Studies aesthetics and technology of electronic music, voltage controlled and MIDI sound synthesis, and multi-track analog recording and signal processing. Team lab recording projects. Semester Hours: 4. Prerequisite: MUS 2540 or permission of instructor.

MUS 2700 - Introduction to Music Business. Introduces music as a business and a product, emphasizing music publishing, recording, broadcasting, marketing, licensing and legal aspects. Semester Hours: 3.

MUS 3120 - Music in Film: Altered Reality. This course examines films that make use of altered space and time, analyzing the scores for compositional techniques and discussing the effectiveness of these techniques in these films and others of the same type. Semester Hours: 3.

MUS 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. Semester Hours: 1.

Prerequisite: MUS 2540 and MUS 2470 or permission of instructor.

MUS 3310 - Songwriting II. Presents concepts of songwriting that build upon those presented in MUS 2300. Students are expected to understand and discuss musical concepts and lyric structure and use these concepts in the creation of original songs. Semester Hours: 3. Prerequisite: MUS 2300, PMUS 1200, PMUS 1210 and PMUS 1023.

MUS 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. Semester Hours: 4. Prerequisite: Admittance to Recording Arts/Tech focus.

MUS 3540 - Recording Studio Maintenance and Calibration.

A basic course in calibration, alignment, and minor repair necessary for functional operation of the recording studio. Semester Hours: 3. Prerequisite: Admittance to Recording Arts/Tech focus.

MUS 3550 - 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. Semester Hours: 3. Prerequisite: Admittance to Recording Arts/Tech focus.

MUS 3710 - Music and the Media. One-week modules consisting of various music business topics. Semester Hours: 1. When Offered: *Summer*.

MUS 3715 - Concert Venue Management. Study of the Concert Promotion Business and Venue Management with an emphasis on the marketing techniques of the industry. Course provides an understanding of the scope and direction of the concert industry and venue management in the ever-changing business environment. Semester Hours: 1.

MUS 3720 - Law and the Music Industry. An overview of the body of law which governs the music industry. Emphasis on industry contractual issues. Semester Hours: 3. Prerequisite: MUS 2710, MUS 4720 and MUS 4770.

MUS 3745 - CAM Records Label Operations. Provides students with the opportunity to participate in the administrative and business practices of operating a record label. Semester Hours: 3. Prerequisite: 3000 level: MUS 4750 or MUS 4770 and a 2.75 GPA; 4000 level: MUS 3745 (CAM Records Label Operations), 2.75 GPA. Cross-listed with: MUS 4745.

MUS 3755 - Music Publishing. An in-depth look at the function and responsibilities of music publishers and the operation of music publishing companies. Key issues related to music publishing activities are studied and analyzed. Semester Hours: 3. Prerequisite: MUS 2700 and MUS 4750 or MUS 4770.

MUS 3760 - Music Intermediaries: Agents, Managers, Producers and Others. Describes the professionals who guide a musician's career and who work with the artist. The roles of agents, managers, producers, attorneys, merchandisers, and distributors are discussed from the perspectives of both the artist and intermediary. The course is designed to assist the individual who wants to work as an intermediary in the music business and to assist artists in working with those professionals. Semester Hours: 3. Prerequisite: MUS 2700 and MUS 4750 or MUS 4770.

MUS 3770 - Recording Studio Management. Study of the management and operations of a commercial recording studio; spanning home-based businesses or project studios as well as larger commercial facilities. Semester Hours: 1.

MUS 3780 - Current Issues in 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. Semester Hours: 3. Prerequisite: MUS 2700, MUS 2710 and senior standing.

MUS 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. Semester Hours: 4.

MUS 3820 - 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. Semester Hours: 3. Prerequisite: Admittance to Recording Arts/Tech focus.

MUS 3939 - Internship/Cooperative Education. Semester Hours: 1 to 3.

MUS 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. Semester Hours: 1 to 4. Prerequisite: Admittance to Recording Arts/Tech focus. Cross-listed with: MSRA 5500.

MUS 4501 - Music Business Senior Seminar. Faculty and majors of the Music Business program meet to discuss senior capstone projects. Semester Hours: 3. Prerequisite: MUS 4750 or MUS 4770 and Music Business students with senior standing.

MUS 4505 - Audio Sweetening. 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. Semester Hours: 4. Prerequisite: Admittance to Recording Arts/Tech focus. Cross-listed with: MSRA 5505.

MUS 4550 - 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. Semester Hours: 4. Prerequisite: Admittance to Recording Arts/Tech focus. Cross-listed with: MSRA 5550.

MUS 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. Semester Hours: 4. Prerequisite: MUS 4550 and admittance to Recording Arts/Tech focus. Cross-listed with: MSRA 5575.

MUS 4576 - 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. Semester Hours: 4. Prerequisite: MUS 4550, 4575, 4505 or permission of instructor. Cross-listed with: MSRA 5576.

MUS 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). Semester Hours: 3. Prerequisite: Admittance to Recording Arts/Tech focus. Cross-listed with: MSRA 5580.

MUS 4600 - Topics in Music. Various topics relating to the study of music performance, music technology and music business. Semester Hours: 1 to 3. Cross-listed with: MSRA 5600.

MUS 4720 - Music Management. The theory and practice of contemporary business management as it relates to music marketing and artist management in the recording, broadcasting, and telecommunications industries. Semester Hours: 3. Prerequisite: MUS 4750 or MUS 4770.

MUS 4740 - Music Business Analysis. An analysis of specific managerial situations unique to the music and entertainment industries. Aspects of finance, marketing, taxation, and management science are explored. Semester Hours: 3. Prerequisite: MUS 2700 and MUS 4750 or MUS 4770.

MUS 4745 - CAM Records Label Operations. Provides students with the opportunity to participate in the administrative and business practices of operating a record label. Semester Hours: 3. Prerequisite: 3000 level: MUS 4750 or MUS 4770 and a 2.75 GPA; 4000 level: MUS 3745 (CAM Records Label Operations), 2.75 GPA. Cross-listed with: MUS 3745.

MUS 4750 - 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. Semester Hours: 3. Prerequisite: MUS 2700.

MUS 4760 - Music Journalism. This course examines music journalism in historic and contemporary contexts. Students are evaluated largely on the quality of this course's several written assignments. Semester Hours: 3. Prerequisite: MUS 2560, MUS 4750 or MUS 4770, and PMUS 1100.

MUS 4770 - Concert Promotion, Tour 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. Semester Hours: 3. Prerequisite: MUS 2700 and 2710.

MUS 4775 - 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. Semester Hours: 3. Prerequisite: MUS 2700.

MUS 4780 - Current Issues in 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. Semester Hours: 3. Prerequisite: MUS 2700, MUS 2710 and senior standing.

MUS 4840 - Independent Study. Semester Hours: 1 to 3.

MUS 5840 - Independent Study. Semester Hours: 1 to 3.

MUS 5939 - Cooperative Education. Semester Hours: 1 to 6.

Performance Music: PMUS (Arts & Media)

Philosophy: PHIL (Liberal Arts and Sciences)

Physics: PHYS (Liberal Arts and Sciences)

Political Science: P SC (Liberal Arts and Sciences)

Check for updates at <http://courses.cudenver.edu>.

Psychology: PSY (Liberal Arts & Sciences)

P AD: Public Administration (Public Affairs)

P AD 5001 - Introduction to Public Administration and Public Service. Examines the fundamental theories, structures, and processes of governance in the United States. Explores the constitutional foundations and functions of legislative, administrative, and legal institutions. Covers topics such as federalism, public-private relations, and comparative public administration. Semester Hours: 3.

P AD 5002 - Organizational Management and Change. This course provides coverage of those elements which, when combined, create a resilient learning organization. Topics include, but are not limited to, organization theory and design, managing human capital, group development and performance, inter- and intra-group communication, information management, and ethical decision making. These topics are presented within the framework of how to organize people to enhance the delivery of public services. Semester Hours: 3.

P AD 5003 - Research and Analytic Methods. Examines quantitative and qualitative research methods used to answer questions and test hypotheses in public and non-profit settings. Methods covered include identifying and reviewing scholarly literature; formulating research questions; selecting appropriate design, data collection and sampling strategies; and analyzing data. Topics include casual and descriptive designs, interview and survey methods, and descriptive and inferential statistics such as chi square and regression. Semester Hours: 3. Prerequisite: P AD 5000-1B and 5000-1F or the equivalent.

P AD 5004 - Economics and Public Finance. Uses economics to explore public and private sector roles, and the allocation of resources in the public sector. Introduces the concepts of public goods, market failure and externalities. The effects of taxation and subsidies on consumer and firm behavior are analyzed. Also covers cost benefit analysis and national, state, and local budgeting methods. Semester Hours: 3.

P AD 5005 - The Policy Process and Democracy. Provides an introduction to theoretical and applied studies of the policy process. The policy process includes the manner in which (i) issues are conceptualized and brought to the government as problems needing action; (ii) policies are designed and selected; and (iii) the enacted policies are implemented, monitored, evaluated, and revised. The policy process also includes the study of politics, especially how government and non-government actors interact and exercise power in allocating societal benefits and burdens. Semester Hours: 3.

P AD 5006 - Leadership and Professional Ethics. Examines theories of leadership applied to the public and non-profit sectors and the skills and processes employed by effective leaders. The course also considers ethical theories as applied to problems in the public and non-profit sectors; emphasizes critical thinking to address value conflicts, notably in the context of a pluralistic society; and teaches moral reasoning as a practical professional skill. Semester Hours: 3.

P AD 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. Semester Hours: 3. Cross-listed with: P AD 7110.

P AD 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). Semester Hours: 3. Cross-listed with: P AD 7115.

P AD 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. Semester Hours: 3. Cross-listed with: P AD 7120.

P AD 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. Semester Hours: 3. Cross-listed with: P AD 7125.

P AD 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 and 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. Semester Hours: 3. Cross-listed with: P AD 7130.

P AD 5140 - Nonprofit Financial Management. Financial management is one of the core competencies of effective nonprofit managers. Every nonprofit organization needs money to sustain or advance its mission. This course 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. Semester Hours: 3. Cross-listed with: P AD 7140.

P AD 5150 - Understanding and Achieving Funding Diversity.

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. Semester Hours: 3. Cross-listed with: P AD 7150.

P AD 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. Semester Hours: 3. Cross-listed with: P AD 7160.

P AD 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. Semester Hours: 3. Cross-listed with: P AD 7170.

P AD 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. Semester Hours: 3. Cross-listed with: P AD 7180.

P AD 5220 - Managing People in Public and Nonprofit Organizations.

The study and practice of human resource management to build effective organizations. This course reviews the process of staffing an organization, motivating and managing employees from the initial steps of describing a position and determining compensation to recruiting qualified and diverse applicants, screening and selecting good employees, hiring, training, motivating, developing and providing feedback to employees; and layoffs and promotions. Contemporary issues concerning managerial flexibility and merit pay will be reviewed. Semester Hours: 3. Prerequisite: P AD 5002 or P AD 7002. Cross-listed with: P AD 7220.

P AD 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. Semester Hours: 3. Cross-listed with: P AD 7250.

P AD 5260 - Managing in a Multicultural Society. 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. Semester Hours: 3. Cross-listed with: P AD 7260.

P AD 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. Semester Hours: 3. Cross-listed with: P AD 7271.

P AD 5280 - American Public Service Environment. Designed for SPA international students, especially those in their first or second semester, students will compare US culture and its public and nonprofit organizations (NGOs) with those in their home countries. Class sessions include: site visits; guest speakers from public and non-profit organizations; case studies, with an emphasis on applying theory to current issues in public policy and management. Semester Hours: 3.

P AD 5310 - Policy Formulation & Implementation. Building on P AD 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. Semester Hours: 3. Prerequisite: P AD 5005 or 7005. Cross-listed with: P AD 7310.

P AD 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. Semester Hours: 3. Prerequisite: P AD 5003/7003, 5004/7004 and 5005/7005. Cross-listed with: P AD 7320.

P AD 5330 - Intermediate Statistical Analysis. Follows P AD 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. Semester Hours: 3. Prerequisite: P AD 5003 or 7003. Cross-listed with: P AD 7330.

P AD 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. Semester Hours: 3. Prerequisite: P AD 5003 or P AD 7003 and P AD 5005 or P AD 7005. Cross-listed with: P AD 7350.

P AD 5361 - Advanced Seminar in Public Policy and Management. In this seminar, students demonstrate their mastery of the knowledge and skills acquired in core courses, through the conduct of a client-based project. Students in a concentration must undertake a project related to that concentration. Students also make a juried oral presentation of the professional paper which reports project findings. This is the cumulative opportunity for students to apply concepts, theories, and research skills gained in the program to professional practice. (Successful completion of this course is an M.P.A. degree program requirement) Semester Hours: 3. Cross-listed with: P AD 7361.

P AD 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. Semester Hours: 3. Cross-listed with: P AD 7370.

P AD 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. Semester Hours: 3. Cross-listed with: P AD 7380.

P AD 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. Semester Hours: 3. Cross-listed with: P AD 7410.

P AD 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. Semester Hours: 3. Cross-listed with: P AD 7420.

P AD 5430 - Seminar in Legal Research Methods and Public Law Scholarship. Provides law library-based training in locating and analyzing primary and secondary sources of law. Individualized guidance in understanding and using the content of legal materials in the conduct of public law scholarship and law-based writing. Satisfies the PhD qualitative research methods requirement. Semester Hours: 3. Cross-listed with: P AD 7430.

P AD 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. Semester Hours: 3. Cross-listed with: P AD 7440.

P AD 5450 - Law of All-Hazards Management. This course conveys knowledge of the statutes, regulations and court decisions governing the management of hazards by governmental agencies. It covers local, state

and federal agencies as they mitigate, prepare for, respond to and recover from naturally, accidentally and intentionally caused disasters. Semester Hours: 3. Cross-listed with: P AD 7450.

P AD 5460 - Political Advocacy. Designed to address advocacy and lobbying issues for graduate students, in the general area of public policy issues and government problems. Special attention is given to how the advocacy process works in the public sector and policymaking bodies and how lobbying techniques and processes can be understood. The general focus of the class is on practical applications at all levels of government with primary attention to state and local government. It is anticipated that guest speakers are invited to attend some of the classes. The guest speaker will have the opportunity to utilize their own academic and professional background, and experiences. Semester Hours: 3. Cross-listed with: P AD 7460.

P AD 5502 - Public Financial Management and Policy. Includes topics on investment and spending policy, public borrowing and advancing credit to the public sector; specialties of budgeting and anticipated revenues and costs, accounting for the receipt and disbursement of funds once the budget is enacted, and purchased goods and services; investing idle funds; issuing short-term and long-term debt. Semester Hours: 3. Prerequisite: P AD 5501 or 7501. Cross-listed with: P AD 7502.

P AD 5503 - Governmental Budgeting. Focuses on theory and practices of government budgeting, including cycles, formats, political considerations, costing and analytical tasks. Covers both operating and capital budgeting, plus fiscal management issues Semester Hours: 3. Cross-listed with: P AD 7503.

P AD 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. Semester Hours: 3. Prerequisite: P AD 5210 or 7210. Cross-listed with: P AD 7540.

P AD 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. Semester Hours: 3. Cross-listed with: P AD 7615.

P AD 5617 - Health Economics. Extends students' understanding of basic economic principles to consumer, physician, insurer, and health provider behavior. Current policy topics are analyzed from an economic perspective using published research. Students are required to write a research paper focused on analyzing a health care topic with the application of economic concepts. Semester Hours: 3. Prerequisite: P AD 5004/7004 or equivalent economic course. Cross-listed with: P AD 7617.

P AD 5618 - Cost-Benefit Analysis. An intermediate-level course on the theory, methods, and application of economic evaluation in the health context. 'Economic evaluation' includes cost analysis, cost-benefit analysis (CBA), cost-effectiveness analysis (CEA), and cost-utility analysis. Students are required to conduct an economic evaluation by collecting data and information related to a health area of interest. Semester Hours: 3. Prerequisite: P AD 5003/7003, 5330/7330, and 5617/7617. Cross-listed with: P AD 7618.

P AD 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. Semester Hours: 3. Cross-listed with: P AD 7625.

P AD 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. Semester Hours: 3. Cross-listed with: P AD 7626.

P AD 5628 - 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. Semester Hours: 3. Cross-listed with: P AD 7628.

P AD 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. Semester Hours: 3. Cross-listed with: P AD 7631.

P AD 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. Semester Hours: 3. Cross-listed with: P AD 7632.

P AD 5633 - Seminar in Natural Resource and Environmental Health Law. Administrative law aspects of environmental policy implementation and enforcement, the role of courts in both stimulating and limiting statutory reform, and regulatory innovation. Focus on the legal aspects of both natural resource allocation and management, and environmental protection. Alternatives to traditional processes for environmental dispute resolution. Semester Hours: 3. Cross-listed with: P AD 7633.

P AD 5650 - Disaster and Emergency Management Policies.

Examines policies for the management of hazards, emergencies and disasters. Focuses on a series of case studies concerning major disasters and on management principles drawn from those cases. Examines the role of institutional processes, government organizations and nongovernmental organizations in emergency management. Semester Hours: 3. Cross-listed with: P AD 7650.

P AD 5710 - Public Sector Technology. Technology is an integral piece of public administration today. Taking a historical/topical approach, this course examines the relationship between technology and culture; technology's role in economic growth; how technologically-driven prosperity impacts the balance between governments and markets; and the impact of information technologies on e-Government and e-Democracy. Semester Hours: 3. Cross-listed with: P AD 7710.

P AD 5910 - Women and Violence: A Sociological Perspective. This course is a sociological, feminist analysis of violence against women and girls that addresses the intersection of sexism and other forms of oppression such as racism, classism and heterosexism within historical, cultural, social and institutional contexts. Topics covered focus on overt and covert forms of sexual coercion, harassment and assault, battering and stalking. Semester Hours: 3. Cross-listed with: P AD 7910, C J 5910 and 7910.

P AD 5920 - Psychology of Violence Against Women. This class addresses the contributions and the limitations of current empirical and clinical psychological literatures about domestic violence. Topics covered include: distinguishing among mental health professionals regarding work with DV clients; the psychological impacts of domestic violence; services useful for responding to the needs of women and children; and an introduction to the psychology and treatment of batterers. Semester Hours: 3. Cross-listed with: P AD 7920, C J 5920 and 7920.

P AD 5930 - Battered Women and the Legal System. This course provides a practical understanding of how the following relate to battered women and their children: (a) major developments in federal, state, tribal, administrative, statutory and case law; (b) the role and responses of law enforcement, judges, attorneys, victim assistance providers and other legal system agents; and (c) the role and process of victim advocacy. Semester Hours: 3. Cross-listed with: P AD 5930, C J 5930 and 7930.

P AD 5940 - Domestic Violence Social Change and Advocacy. This course provides students information on the theories and strategies

behind contemporary social change movements and the skills necessary to organize and implement actions to influence public awareness and policy. The values of American society are complex and require advocates/activists to develop a heightened sense of self, community and an ethical framework while confronting sexism, racism and other forms of oppression. Semester Hours: 3. Cross-listed with: P AD 7940, C J 5940 and 7940.

P AD 5950 - Interpersonal Violence and Health. Interpersonal violence is a major health issue. Approximately 20% of emergency room visits by women are attributable to interpersonal violence. This course will provide students with the foundational knowledge and skills necessary for responding to the health care needs of patients experiencing interpersonal violence. Semester Hours: 3.

P AD 5960 - Interpersonal Violence and Health **Interpersonal violence is a major health issue.** Approximately 20% of emergency room visits by women are attributable to interpersonal violence. This course will provide students with the foundational knowledge and skills necessary for responding to the health care needs of patients experiencing interpersonal violence. Semester Hours: 3.

P AD 5961 - Interpersonal Violence, Health Advocacy and Systems Change. This course will explore how healthcare professionals can develop successful public and institutional discourses that transform healthcare policies and systems to address the health needs of patients experiencing interpersonal violence. Students will learn methods of advocacy, activism and organizational change that produce positive results including effective education techniques. Semester Hours: 3.

P AD 6600 - Special Topics in Public Administration. Studies special topics relevant to public administration, such as public/private sector partnerships, community participation, conflict management, regionalism, managing economic options for Colorado, and nonprofit management and marketing. Each semester various topics are studied. Semester Hours: 1 to 4. Cross-listed with: P AD 7600.

P AD 6840 - Independent Study. Affords students the opportunity to do independent, creative work. Semester Hours: 1 to 6. Prerequisite: Permission of instructor.

P AD 6910 - Field Study in Public Administration. 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. Semester Hours: 3. Prerequisite: Completion of the common core courses. It is recommended that at least three of the track courses also be completed.

P AD 6950 - Master's Thesis. Semester Hours: 3 to 6

P AD 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 research project. Semester Hours: 3. Cross-listed with: P AD 5007.

P AD 7110 - 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. Semester Hours: 3. Cross-listed with: P AD 5110.

P AD 7115 - 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). Semester Hours: 3. Cross-listed with: P AD 5115.

P AD 7120 - 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 sector. The course also 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 of nonprofits in social movements such as Civil Rights and the environment. Semester Hours: 3. Cross-listed with: P AD 5120.

P AD 7125 - 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. Semester Hours: 3. Cross-listed with: 5125.

P AD 7130 - 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 and 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. Semester Hours: 3. Cross-listed with: P AD 5130.

P AD 7140 - Nonprofit Financial Management. Financial management is one of the core competencies of effective nonprofit managers. Every nonprofit organization needs money to sustain or advance its mission. This course 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. Semester Hours: 3. Cross-listed with: P AD 5140.

P AD 7150 - Understanding and Achieving Funding Diversity.

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. Semester Hours: 3. Cross-listed with: P AD 5150.

P AD 7160 - 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 advisory boards, achieving effective board meetings, the realm of liability, using committees, and the board's role in fundraising, among other special subject matter. Semester Hours: 3. Cross-listed with: P AD 5160.

P AD 7170 - 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. Semester Hours: 3. Cross-listed with: P AD 5170.

P AD 7180 - 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. Semester Hours: 3. Cross-listed with: P AD 5180.

P AD 7220 - Managing People in Public and Nonprofit Organizations.

The study and practice of human resource management to build effective organizations. This course reviews the process of staffing an organization, motivating and managing employees from the initial steps of describing a position and determining compensation to recruiting qualified and diverse applicants, screening and selecting good employees, hiring, training, motivating, developing and providing feedback to employees; and layoffs and promotions. Contemporary issues concerning managerial flexibility and merit pay will be reviewed. Semester Hours: 3. Prerequisite: P AD 7002 or P AD 5002. Cross-listed with: P AD 5220.

P AD 7250 - Intergovernmental Management. Surveys the basic literature of intergovernmental management and examines the interactive role of managers at federal, state, regional, and local levels of government. Emphasis is placed on current intergovernmental issues. Semester Hours: 3. Cross-listed with: P AD 5250.

P AD 7260 - Managing in a Multicultural Society. 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. Semester Hours: 3. Cross-listed with: P AD 5260.

P AD 7271 - Managing Conflict and Change. Explores the process of change in organizations, communities, and 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. Semester Hours: 3. Cross-listed with: P AD 5271.

P AD 7310 - Policy Formulation & Implementation. Building on P AD 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. Semester Hours: 3. Prerequisite: P AD 5005 or 7005. Cross-listed with: P AD 5310.

P AD 7320 - 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. Semester Hours: 3. Prerequisite: P AD 7003/5003, 7004/5004 and 7005/5005. Cross-listed with: P AD 5320.

P AD 7330 - Intermediate Statistics. Follows P AD 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. Semester Hours: 3. Prerequisite: P AD 7003 or 5003. Cross-listed with: P AD 5330.

P AD 7350 - 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. Semester Hours: 3. Prerequisite: P AD 7003 or P AD 5003 and P AD 7005 or P AD 5005. Cross-listed with: P AD 5350.

P AD 7361 - Advanced Seminar in Public Policy and Management. In this seminar, students demonstrate their mastery of the knowledge and skills acquired in core courses, through the conduct of a client-based project. Students in a concentration must undertake a project related to that concentration. Students also make a juried oral presentation of the professional paper which reports project findings. This is the cumulative opportunity for students to apply concepts, theories, and research skills gained in the program to professional practice. (Successful completion of this course is an M.P.A. degree program requirement) Semester Hours: 3. Cross-listed with: P AD 5361.

P AD 7370 - 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. Semester Hours: 3. Cross-listed with: P AD 5370.

P AD 7380 - 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. Semester Hours: 3. Cross-listed with: P AD 5380.

P AD 7410 - 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. Semester Hours: 3. Cross-listed with: P AD 5410.

P AD 7420 - 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. Semester Hours: 3. Cross-listed with: P AD 5420.

P AD 7430 - Seminar in Legal Research Methods and Public Law Scholarship. Provides law library-based training in locating and analyzing primary and secondary sources of law. Individualized guidance in understanding and using the content of legal materials in the conduct of public law scholarship and law-based writing. Satisfies the PhD qualitative research methods requirement. Semester Hours: 3. Cross-listed with: P AD 5430.

P AD 7440 - 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. Semester Hours: 3. Cross-listed with: P AD 5440.

P AD 7450 - Law of All-Hazards Management. This course conveys knowledge of the statutes, regulations and court decisions governing the management of hazards by governmental agencies. It covers local, state and federal agencies as they mitigate, prepare for, respond to and recover from naturally, accidentally and intentionally caused disasters. Semester Hours: 3. Cross-listed with: P AD 5450.

P AD 7460 - Political Advocacy. Designed to address advocacy and lobbying issues for graduate students, in the general area of public policy issues and government problems. Special attention is given to how the

advocacy process works in the public sector and policymaking bodies and how lobbying techniques and processes can be understood. The general focus of the class is on practical applications at all levels of government with primary attention to state and local government. It is anticipated that guest speakers are invited to attend some of the classes. The guest speaker will have the opportunity to utilize their own academic and professional backgrounds, and experiences. Semester Hours: 3. Cross-listed with: P AD 5460.

P AD 7502 - Public Financial Management and Policy. Includes topics on investment and spending policy, public borrowing and advancing credit to the public sector; specialties of budgeting and anticipated revenues and costs, accounting for the receipt and disbursement of funds once the budget is enacted, and purchased goods and services; investing idle funds; issuing short-term and long-term debt. Semester Hours: 3. Prerequisite: P AD 5501 or 7501. Cross-listed with: P AD 7502.

P AD 7503 - Governmental Budgeting. Focuses on theory and practices of government budgeting, including cycles, formats, political considerations, costing and analytical tasks. Covers both operating and capital budgeting, plus fiscal management issues Semester Hours: 3. Cross-listed with: P AD 5503.

P AD 7540 - 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. Semester Hours: 3. Prerequisite: P AD 7210 or 5210. Cross-listed with: P AD 5540.

P AD 7600 - Special Topics in Public Administration. Studies special topics relevant to public administration, such as public/private sector partnerships, community participation, conflict management, regionalism, managing economic options for Colorado, and nonprofit management and marketing. (Each semester various topics are studied.) Semester Hours: 1 to 4. Cross-listed with: P AD 6600.

P AD 7615 - 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, and the non-profit and for-profit role in health. Semester Hours: 3. Cross-listed with: P AD 5615.

P AD 7617 - Health Economics. Extend students' understanding of basic economic principles to consumer, physician, insurer, and health provider behavior. Current policy topics are analyzed from an economic perspective using published research. Students are required to write a research paper focused on analyzing a health care topic with the application of economic concepts. Semester Hours: 3. Prerequisite: P AD 7004/5004 or equivalent economics course. Cross-listed with: P AD 5617.

P AD 7618 - Cost-Benefit Analysis. An intermediate-level course on the theory, methods, and application of economic evaluation in the health context. 'Economic evaluation' includes cost analysis, cost-benefit analysis (CBA), cost-effectiveness analysis (CEA), and cost-utility analysis. Students are required to conduct an economic evaluation by collecting data and information related to a health area of interest. Semester Hours: 3. Prerequisite: P AD 7003/5003, 7330/5330 and 7617/5617. Cross-listed with: P AD 5618.

P AD 7625 - 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. Semester Hours: 3. Cross-listed with: P AD 5625.

P AD 7626 - 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. Semester Hours: 3. Cross-listed with: P AD 5626.

P AD 7628 - 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. Semester Hours: 3. Cross-listed with: P AD 5628.

P AD 7631 - 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. Semester Hours: 3. Cross-listed with: P AD 5631.

P AD 7632 - 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. Semester Hours: 3. Cross-listed with: P AD 5632.

P AD 7633 - Seminar in Natural Resource and Environmental Health Law. Administrative law aspects of environmental policy implementation and enforcement, and the role of courts in both stimulating and limiting statutory reform and regulatory innovation. Focus on the legal aspects of both natural resource allocation and management, and environmental protection. Alternatives to traditional processes for environmental dispute resolution. Semester Hours: 3. Cross-listed with: P AD 5633.

P AD 7650 - Disaster and Emergency Management Policies.

Examines policies for the management of hazards, emergencies and disasters. Focuses on a series of case studies concerning major disasters and on management principles drawn from those cases. Examines the role of institutional processes, government organizations and nongovernmental organizations in emergency management. Semester Hours: 3. Cross-listed with: P AD 5650.

P AD 7710 - Public Sector Technology. Technology is an integral piece of public administration today. Taking a historical/topical approach, this course examines the relationship between technology and culture; technology's role in economic growth; how technologically-driven prosperity impacts the balance between governments and markets; and the impact of information technologies on e-Government and e-Democracy. Semester Hours: 3. Cross-listed with: P AD 5710.

P AD 7910 - Women and Violence: A Sociological Perspective.

This course is a sociological, feminist analysis of violence against women and girls that addresses the intersection of sexism and other forms of oppression such as racism, classism and heterosexism, within historical, cultural, social and institutional contexts. Topics covered focus on overt and covert forms of sexual coercion, harassment and assault, battering and stalking. Semester Hours: 3. Cross-listed with: P AD 5910, C J 5910 and 7910.

P AD 7920 - Psychology of Violence Against Women. This class addresses the contributions and the limitations of current empirical and clinical psychological literatures about domestic violence. Topics covered include: distinguishing among mental health professionals regarding work with DV clients; the psychological impacts of domestic violence; services useful for responding to the needs of women and children; and an introduction to the psychology and treatment of batterers. Semester Hours: 3. Cross-listed with: P AD 5920, C J 5920 and 7920.

P AD 7930 - Battered Women and the Legal System. This course provides a practical understanding of how the following relate to battered women and their children: (a) major developments in federal, state, tribal, administrative, statutory and case law; (b) the role and responses of law enforcement, judges, attorneys, victim assistance providers and other legal system agents; and (c) the role and process of victim advocacy. Semester Hours: 3. Cross-listed with: P AD 5930, C J 5930 and 7930.

P AD 7940 - Domestic Violence Social Change and Advocacy.

This course provides students information on the theories and strategies behind contemporary social change movements and the skills necessary to organize and implement actions to influence public awareness and policy. The values of American society are complex and require advocates/activists to develop a heightened sense of self, community and an ethical framework while confronting sexism, racism and other forms of oppression. Semester Hours: 3. Cross-listed with: P AD 5940, C J 5940 and 7940.

P AD 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 public administration and bureaucracy has evolved and is defined, practiced, studied and taught. It must normally be taken during the first full semester of the doctoral program. Semester Hours: 3. Prerequisite: P AD 7001 or P AD 5001 (or equivalent).

P AD 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. Semester Hours: 3. Prerequisite: P AD 7003/5003, 7004/5004 or equivalent.

P AD 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. Semester Hours: 3. Prerequisite: P AD 7004/5004, 7005/5005 or equivalent.

P AD 8040 - Critical Issues in Public Affairs. Identifies and examines emerging topics of public administration, policy, and management in which additional research and theory are required with a focus on economic and related approaches. The intent is to help students identify advanced conceptual and methodological issues for dissertation research. Semester Hours: 3. Prerequisite: P AD 8010, 8020, 8030 and 8060.

P AD 8060 - Seminar on Conduct of Empirical Inquiry. Examines a range of empirical approaches used in the study of public policy and management. Introduces some of the major concepts and problems of scientific inquiry; explores relevant aspects of the philosophy of science; and further develops skills in the design, conduct, and use of research. Semester Hours: 3. Prerequisite: P AD 5003 or P AD 7003.

P AD 8070 - Advanced Seminar in Research Methods. Provides in-depth knowledge about designing and conducting dissertation research. The course follows a basic sequence of problem definition, theoretical and propositional formulation, sample selection, data collection and observational methods, data analysis and presentation, and writing skills. This course represents the final class in the PhD sequence of seminars. Semester Hours: 3.

P AD 8840 - Independent Study. (Doctoral level) Affords students the opportunity to do independent, creative work. Semester Hours: 1 to 6. Prerequisite: Permission of advisor.

P AD 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 PhD director to register for fewer semester credit hours. Students must be registered for dissertation credit during the semester they have a colloquium or defense. Semester Hours: 1 to 10.

Performance Music: PMUS (Arts & Media)

PHIL: Philosophy (Liberal Arts and Sciences)

PHIL 1012 - Introduction to Philosophy: Relationship of the Individual to the World: AH3. 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 of is essential to the student for informed participation in the resolution of contemporary problems in today's society. Semester Hours: 3.

PHIL 1020 - Introduction to Ethics and Society: The Person and the Community: AH3. Studies some of the traditional problems in ethics that tend to be focused on individual morality within the larger context of social and political philosophy. Some specific contemporary moral and social problems may be addressed, such as AIDS, abortion, famine, and individual rights versus the collective rights of society. Semester Hours: 3.

PHIL 1111 - Freshman Seminar. 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. Semester Hours: 3.

PHIL 2441 - Logic and Language: AH3. Introductory course that considers the significance of logical form and language use in argumentation and persuasion. Topics covered include definition, types of discourse, informal fallacies, traditional syllogisms, rules of logical inference, and problem solving similar to that found on the L.S.A.T. Semester Hours: 3.

PHIL 2939 - Internship/Cooperative Education. Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: 15 hours of 2.75 GPA.

PHIL 3000 - Ethics in Community Affairs. Includes an overview of ethical concepts and approaches, together with consideration of applications to contemporary cases taken from current events in for-profit, non-profit, and governmental arenas. Semester Hours: 1.

PHIL 3002 - Ancient Greek Philosophy. History of ancient Greek thought, including traditional myth, pre-Socratic fragments, Plato's dialogues, and Aristotle's systematic philosophy. Semester Hours: 3.

PHIL 3005 - Roman and Early Medieval Philosophy. Surveys philosophy in the Roman era, focusing on the Hellenistic schools (Epicureanism, Stoicism and Skepticism), Neoplatonic thought, the advent of Christianity, and the earliest Christian philosophers. Semester Hours: 3.

PHIL 3010 - Medieval Philosophy. History of philosophy from Augustine through Scotus and Ockham, the 5th through the 14th centuries. Semester Hours: 3.

PHIL 3022 - Modern Philosophy. History of philosophy from Descartes through Kant. Semester Hours: 3.

PHIL 3032 - Twentieth Century Analytic Philosophy. Surveys representative philosophers, methods, and problems in the 20th century analytic tradition. Semester Hours: 3.

PHIL 3100 - Current Perspectives on the Evolution of Consciousness and Culture. Studies of evolution traditionally regard morphology (anatomy)/behavior and mind/consciousness as separate fields that belong either in biology/paleontology or in psychology/philosophy. The 'middle ground' behavior, anthropology, social systems, is also treated separately in most cases. Recent approaches tend toward a more holistic view using unifying principles and 'laws of nature' that show similar processes (dissipative effects, information theory, development theory) operating across all fields. Examines the relationships and common threads between the physical anatomical evolution of organisms and their behavior perception and consciousness. Semester Hours: 3. Prerequisite: Introductory course in evolution (biology/paleontology), psychology, philosophy, anthropology or permission of instructor. Cross-listed with: GEOL 3100 and RLST 4280.

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.). Semester Hours: 3.

PHIL 3200 - Social and Political Philosophy. Examines basic issues in social and political philosophy, including justice, freedom, individuality, power and community. Semester Hours: 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. Semester Hours: 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?. Semester Hours: 3.

PHIL 3300 - Special Topics in Philosophy. Semester Hours: 1 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. Semester Hours: 3.

PHIL 3360 - Epistemology. Study of major theories of knowledge, including such problems as perception and the distinction between belief and knowledge. Semester Hours: 3.

PHIL 3420 - Kosmos: Theories of the Universe. A course in philosophical cosmology using material from the sciences, history and philosophy. The goal is to illuminate our present theories concerning the nature of the universe and the place of life within it. Semester Hours: 3. Cross-listed with: RLST 4260.

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. Semester Hours: 3. Cross-listed with: MATH 3440.

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. Semester Hours: 3. Cross-listed with: WGST 3500.

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. Semester Hours: 3. Prerequisite: Three hours of philosophy; preferably PHIL 1012.

PHIL 3656 - Contemporary Religious Ethics: Jewish and Christian Traditions. Historical and thematic introduction to ethics in Judaism, Roman Catholicism and Protestantism. A study of selected ethical issues: bio-medical, social justice, sexuality, economic justice, business and personal ethics. Semester Hours: 3. Prerequisite: English composition; intro to philosophy; world religions; world history; junior status.

PHIL 3666 - 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. Semester Hours: 3. Cross-listed with: RLST 3400.

PHIL 3840 - Independent Study. Semester Hours: 1 to 3.

PHIL 3939 - Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: Junior standing and 2.75 GPA.

PHIL 3981 - 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 schools of Neo-Confucianism, Neo-Taoism and Chinese Buddhism. Semester Hours: 3. Cross-listed with: RLST 3660.

PHIL 4000 - 19th Century Philosophy. Covers the systematic work of such German idealists as Hegel, Fichte, and Schelling, as well as responses to those systems by such authors as Marx, Kierkegaard, and Nietzsche. Semester Hours: 3. Prerequisite: PHIL 3002 or 3022. Cross-listed with: PHIL 5000, HUM 5000 and S SC 5000.

PHIL 4040 - Skeptic and Believer. 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. Semester Hours: 3. Prerequisite: PHIL 3002 or 3022, a minimum grade of 'C' in each previous philosophy course, or permission of instructor. Cross-listed with: PHIL 5040.

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. Semester Hours: 3. Prerequisite: PHIL 3002 or 3022, a minimum grade of 'C' in each previous philosophy course, or permission of instructor. Cross-listed with: PHIL 5101, HUM 5101, S SC 5101.

PHIL 4150 - Twentieth Century Ethics. Surveys representative philosophers, methods, and/or problems in 20th century ethics. Semester Hours: 3. Prerequisite: PHIL 3002 or 3022, a minimum grade of 'C' in each previous philosophy course, or permission of instructor.

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. Semester Hours: 3. Prerequisite: PHIL 3002 or 3022, a minimum grade of 'C' in each previous philosophy course, or permission of instructor.

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. Semester Hours: 3. Cross-listed with: PHIL 5220 and HUM 5220.

PHIL 4230 - Postmodernism and the Social Sciences. 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. Semester Hours: 3. Prerequisite: Upper division standing; PHIL 3002 or 3022, minimum grade of 'C' in each previous philosophy course, or permission of instructor.

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 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. Semester Hours: 3. Prerequisite: PHIL 3002 or 3022, a minimum grade of 'C' in each previous philosophy course, or permission of instructor. Cross-listed with: PHIL 5242, S SC 5242, HUM 5242.

PHIL 4250 - 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. Semester Hours: 3. Cross-listed with: PHIL 5250, HUM 5250 and S SC 5250.

PHIL 4260 - Philosophy of Law. Surveys theoretical positions on the nature of law, with particular emphasis on American law. Semester Hours: 3. Prerequisite: PHIL 3002 or 3022, a minimum grade of 'C' in each previous philosophy course, or permission of instructor. Cross-listed with: PHIL 5260.

PHIL 4270 - Philosophy of History. Examines critical and speculative theories of history, including the problems of methodology, explanation, values, and the relationship between history and social philosophy. Semester Hours: 3. Prerequisite: PHIL 3002 or 3022, a minimum grade of 'C' in each previous philosophy course, or permission of instructor.

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. Semester Hours: 3. Prerequisite: PHIL 3002 or 3022, a minimum grade of 'C' in each previous philosophy course, or permission of instructor. Cross-listed with: PHIL 5300.

PHIL 4360 - 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. Semester Hours: 3. Cross-listed with: PHIL 5360.

PHIL 4460 - Theories of Human Nature. Consideration of such problems as the changeability and definability of human nature, and the possibility of a science of human nature. Semester Hours: 3. Prerequisite: PHIL 3002 or 3022, a minimum grade of 'C' in each previous philosophy course, or permission of instructor.

PHIL 4470 - 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. Semester Hours: 3. Cross-listed with: PHIL 5470 and RLST 4440, 5440.

PHIL 4480 - Perspectives on Good and Evil. Examines the 'problem of evil.' As formulated in the philosophical tradition: if the deity is understood as perfect, then why is there evil? How can a perfect entity create imperfection? Why would an absolutely benevolent God cause or allow the innocent to suffer? Presents the classical formulation of the problem, the traditional solutions offered, and the classical critiques of each answer. Considers the perspectives of the various religious orientations, each of which deals differently with the question of suffering. Semester Hours: 3. Cross-listed with: RLST 4480.

PHIL 4510 - Philosophy of Nature. Critical comparison of different views of nature presupposed in science, environmental policy, art and religion. Concepts of 'natural' are examined in relation to such issues as animal rights, wilderness preservation, synthetic landscape, technology, pollution and population control. Semester Hours: 3. Prerequisite: PHIL 3002 or 3022, a minimum grade of 'C' in each previous philosophy course, or permission of instructor.

PHIL 4600 - Philosophy of Religion. Nature of religion and methods of studying it. Semester Hours: 3. Cross-listed with: HUM 5600, PHIL 5600, RLST 4060, 5060, and S SC 5600.

PHIL 4650 - 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. Semester Hours: 3. Cross-listed with: PHIL 5655, RLST 4400 and 5400.

PHIL 4700 - Seminar in a Major Philosopher (topics). The major philosophical texts of one philosopher is studied in this course. Philosophers to be studied are major figures in the history of philosophy such as Plato, Aristotle, Kant and Hume. Semester Hours: 3. Prerequisite: PHIL 3002 or 3022, a minimum grade of 'C' in each previous philosophy course, or permission of instructor. Note: May be taken for credit more than once.

PHIL 4710 - Western Religious Thought. Focuses on philosophers and theologians who have contributed to the evolution of the three great religious traditions of the West: Judaism, Christianity and Islam. Targets thinkers from three periods: the ancient or formative era, the medieval era, and the contemporary era. Semester Hours: 3. Cross-listed with: RLST 4070. Note: Specific philosophers chosen may vary in different semesters.

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. Semester Hours: 3. Cross-listed with: RLST 4080.

PHIL 4730 - Philosophy and Literature. Considers the philosophical dimensions of literature. Semester Hours: 3. Prerequisite: PHIL 3002 or 3022, a minimum grade of 'C' in each previous philosophy course, or permission of instructor. Cross-listed with: PHIL 5730, ENGL 4735 and 5735.

PHIL 4735 - 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. Semester Hours: 3. Prerequisite: PHIL 3002 or 3022, a minimum grade of 'C' in each previous philosophy course, or permission of instructor. Cross-listed with: PHIL 5735.

PHIL 4740 - 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. Semester Hours: 3. Prerequisite: PHIL 3002 or 3022, a minimum grade of 'C' in each previous philosophy course, or permission of instructor. Cross-listed with: PHIL 5740.

PHIL 4750 - 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. Semester Hours: 3. Prerequisite: PHIL 3002 or 3022, a minimum grade of 'C' in each previous philosophy course, or permission of instructor. Cross-listed with: PHIL 5750.

PHIL 4760 - 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*. Semester Hours: 3. Prerequisite: PHIL 3002 or 3022, a minimum grade of 'C' in each previous philosophy course, or permission of instructor. Cross-listed with: PHIL 5830.

PHIL 4770 - 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. Semester Hours: 3. Prerequisite: PHIL 3002 or 3022, a minimum grade of 'C' in each previous philosophy course, or permission of instructor. Cross-listed with: PHIL 5770.

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. Semester Hours: 3. Prerequisite: PHIL 3002 or 3022, a minimum grade of 'C' in each previous philosophy course, or permission of instructor. Cross-listed with: PHIL 5780.

PHIL 4790 - Nietzsche. A close study of Nietzsche's philosophical writings, with attention to his significance for philosophy in the 20th century and beyond. Semester Hours: 3. Cross-listed with: PHIL 5790.

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. Semester Hours: 3. Prerequisite: PHIL 3002 or 3022, a minimum grade of 'C' in each previous philosophy course, or permission of instructor. Cross-listed with: PHIL 5800.

PHIL 4810 - Aristotle. Examines Aristotle's systematic philosophy and discusses its contributions to logic, epistemology, physics, psychology, metaphysics, ethics and political theory. Semester Hours: 3. Prerequisite: PHIL 3002 or 3022, a minimum grade of 'C' in each previous philosophy course, or permission of instructor. Cross-listed with: PHIL 5810.

PHIL 4812 - Special Topics in Philosophy. Semester Hours: 3. Prerequisite: PHIL 3002 or 3022, a minimum grade of 'C' in each previous philosophy course, or permission of instructor.

PHIL 4820 - Hume. Considers the work of eighteenth century philosopher David Hume. Emphasis on unity of Hume's thought. Semester Hours: 3. Prerequisite: PHIL 3002 or 3022, a minimum grade of 'C' in each previous philosophy course, or permission of instructor. Cross-listed with: PHIL 5820.

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. Semester Hours: 3. Prerequisite: PHIL 3000 or 3022, a minimum grade of 'C' in each previous philosophy course or permission of instructor. Cross-listed with: PHIL 5833, HUM 5833 and S SC 5833.

PHIL 4840 - Independent Study. Semester Hours: 1 to 3.

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. Semester Hours: 3. Cross-listed with: PHIL 5900.

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. Semester Hours: 3. Cross-listed with: PHIL 5920, HUM 5920, S SC 5920.

PHIL 4933 - Philosophy of Eros. Why is philosophy an erotic activity, and what are the implications of this insight? We will explore these issues, first, by reading Plato's erotic dialogues: *Lysis*, *Symposium* and *Phaedrus*. Then we will focus on Freud's influential (and controversial) appropriation of Plato's thought in the writings that span his career, from *The Interpretation of Dreams* (1900) to *Civilization and its Discontents* (1930) and beyond. Finally, we will survey post-Freudian theories of eros, such as Michel Foucault's *History of Sexuality*, as well as the more recent contributions of thinkers such as Jonathan Lear, Thomas Nagel, Martha Nussbaum and Slavoj Žižek. Semester Hours: 3. Cross-listed with: HUM 5933, PHIL 5933, S SC 5933, and WGST 4933.

PHIL 4950 - Honors Thesis. Semester Hours: 3 to 6.

PHIL 4980 - Special Topics in Philosophy. Semester Hours: 1 to 3.

PHIL 5000 - 19th Century Philosophy. Covers the systematic work of such German idealists as Hegel, Fichte, and Schelling, as well as responses to those systems by such authors as Marx, Kierkegaard, and Nietzsche. Semester Hours: 3. Prerequisite: PHIL 3002 or 3022. Cross-listed with: PHIL 4000, HUM 5000 and S SC 5000.

PHIL 5013 - Philosophical Problems in the Social Sciences and the Humanities. Presents an overview of key theoretical issues currently emerging across academic disciplines. Examines questions about reality, knowledge, and ethics that affect social research and writing in the humanities. Readings explore how contemporary philosophical and cultural discourses have altered theory and method. Assignments include influential theoretical pieces by key historical and contemporary thinkers, examples of application in social research, and interpretations of thought and affect in cultural contexts. Semester Hours: 3. Cross-listed with: HUM/S SC 5013.

PHIL 5020 - Elements of Social Thought. Introduces students to the disciplines that comprise the social sciences (classical anthropology, sociology, sociology of religion, philosophy of history, political theory, classical psychology, etc.). Provides necessary tools for interdisciplinary

students to understand the social infrastructure of contemporary society. Semester Hours: 3. Cross-listed with: S SC 5020 and HUM 5020.

PHIL 5040 - Skeptic and Believer. 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. Semester Hours: 3. Cross-listed with: PHIL 4040.

PHIL 5100 - Topics in the History of Philosophy. Semester Hours: 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. Semester Hours: 3. Prerequisite: An introductory course in philosophy. Cross-listed with: PHIL 4101, S SC 5101, HUM 5101.

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. Semester Hours: 3. Cross-listed with: PHIL 4220 and HUM 5220.

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 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. Semester Hours: 3. Cross-listed with: PHIL 4242, HUM 5242, S SC 5242.

PHIL 5250 - 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. Semester Hours: 3. Cross-listed with: PHIL 4250, HUM 5250 and S SC 5250.

PHIL 5260 - Philosophy of Law. Surveys theoretical positions on the nature of law, with particular emphasis on American law. Semester Hours: 3. Cross-listed with: PHIL 4260.

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. Semester Hours: 3. Cross-listed with: PHIL 4300.

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. Semester Hours: 3. Cross-listed with: PHIL 4360.

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. Semester Hours: 3. Cross-listed with: PHIL 4470 and RLST 4440, 5440.

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. Semester Hours: 3. Cross-listed with: HUM 5550 and S SC 5550.

PHIL 5600 - Philosophy of Religion. Nature of religion and methods of studying it. Semester Hours: 3. Cross-listed with: HUM 5600, PHIL 4600, RLST 4060, 5060, and S SC 5600.

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. Semester Hours: 3. Cross-listed with: HUM 5650 and S SC 5650.

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. Semester Hours: 3. Cross-listed with: PHIL 4650, RLST 4400 and 5400.

PHIL 5720 - Topics in Recent Philosophy. Semester Hours: 3.

PHIL 5730 - Philosophy and Literature. Considers the philosophical dimensions of literature. Semester Hours: 3. Cross-listed with: PHIL 4730, ENGL 4735 and 5735.

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. Semester Hours: 3. Prerequisite: Six hours in Western philosophy. Cross-listed with: PHIL 4735.

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. Semester Hours: 3. Prerequisite: Six credit hours in Western philosophy. Cross-listed with: PHIL 4740.

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. Semester Hours: 3. Cross-listed with: PHIL 4750.

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. Semester Hours: 3. Cross-listed with: HUM 5750, S SC 5750.

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. Semester Hours: 3. Cross-listed with: PHIL 4770.

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. Semester Hours: 3. Prerequisite: Six credit hours in Western philosophy. Cross-listed with: PHIL 4780.

PHIL 5790 - Nietzsche. A close study of Nietzsche's philosophical writings, with attention to his significance for philosophy in the 20th century and beyond. Semester Hours: 3. Cross-listed with: PHIL 4790.

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. Semester Hours: 3. Cross-listed with: PHIL 4800.

PHIL 5810 - Aristotle. Examines Aristotle's systematic philosophy and discusses its contributions to logic, epistemology, physics, psychology, metaphysics, ethics and political theory. Semester Hours: 3. Cross-listed with: PHIL 4810.

PHIL 5812 - Special Topics in Philosophy. Semester Hours: 3.

PHIL 5820 - Hume. Considers the work of eighteenth century philosopher David Hume. Emphasis on unity of Hume's thought. Semester Hours: 3. Cross-listed with: PHIL 4820.

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. Semester Hours: 3. Cross-listed with: PHIL 4760.

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. Semester Hours: 3. Cross-listed with: PHIL 4833, HUM 5833 and S SC 5833.

PHIL 5840 - Independent Study. Semester Hours: 1 to 3.

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. Semester Hours: 3. Cross-listed with: PHIL 4900.

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. Semester Hours: 3. Cross-listed with: PHIL 4920, HUM 5920, S SC 5920.

PHIL 5933 - Philosophy of Eros. Why is philosophy an erotic activity, and what are the implications of this insight? We will explore these issues, first, by reading Plato's erotic dialogues: *Lysis*, *Symposium* and *Phaedrus*. Then we will focus on Freud's influential (and controversial) appropriation of Plato's thought in the writings that span his career, from *The Interpretation of Dreams* (1900) to *Civilization and its Discontents* (1930) and beyond. Finally, we will survey post-Freudian theories of eros, such as Michel Foucault's *History of Sexuality*, as well as the more recent contributions of thinkers such as Jonathan Lear, Thomas Nagel, Martha Nussbaum and Slavoj Žižek. Semester Hours: 3. Cross-listed with: HUM 5933, PHIL 4933, S SC 5933, and WGST 4933.

PHYS: Physics (Liberal Arts and Sciences)

PHYS 1000 - Introduction to Physics. Introductory survey course for nonscientists that emphasizes the main concepts of physics. Although this course is mainly descriptive, some high school algebra will be used. The accompanying lab work is designed to illustrate the material discussed in the lectures. Semester Hours: 4.

PHYS 1052 - General Astronomy I: SC1. 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. Semester Hours: 4. Prerequisite: High school algebra or equivalent. 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.

PHYS 1100 - Foundations of Physics: SC2. 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. Semester Hours: 4. Prerequisite: A good working knowledge of elementary algebra.

PHYS 1111 - Freshman Seminar. Semester Hours: 1 to 3.

PHYS 1115 - Physics Content. Covers content areas of undergraduate physics. Topics include matter and energy; heat and thermodynamics; atomic and nuclear structure; mechanics; electricity and magnetism; and wave characteristics. Semester Hours: 1 to 3.

PHYS 1332 - Explorations in Physics. Applications of physics are explored in depth for students considering physics as a major or minor. Topics vary each semester, providing conceptual and mathematical insights and hands-on activities on how physics is used in the real world or at research frontiers. Semester Hours: 3. Prerequisite: Algebra and Trigonometry.

PHYS 1840 - Independent Study. Students must check with a faculty member before taking this course. Semester Hours: 1 to 3.

PHYS 2010 - College Physics I. (This course is an approved Colorado Statewide Guaranteed Transfer Course). Mechanics, heat and sound. Semester Hours: 4. Prerequisite: College algebra and trigonometry.

PHYS 2020 - College Physics II: SC1. Electricity, magnetism, light and modern physics. Semester Hours: 4. Prerequisite: PHYS 2010.

PHYS 2030 - College Physics Lab I: SC1. Semester Hours: 1.

PHYS 2040 - College Physics Lab II: SC1. Semester Hours: 1. Prerequisite: PHYS 2030.

PHYS 2311 - General Physics I: Calculus-Based. Covers vector displacement, uniform and accelerated motion, force, momentum, energy, rotating systems, oscillations, and an introduction to thermodynamics. Emphasis is on basic principles. Semester Hours: 4 Corequisite: MATH 1401.

PHYS 2321 - General Physics Lab I. Semester Hours: 1.

PHYS 2331 - General Physics II: Calculus-Based. Covers electrostatics, magnetic fields, electromagnetic waves (including light), and optics. Semester Hours: 4. Prerequisite: PHYS 2311; coreq: MATH 2411.

PHYS 2341 - General Physics Lab II. Semester Hours: 1. Prerequisite: PHYS 2321.

PHYS 2371 - Topic-Driven Physics Lab. A focused topic is used to show how many fundamental ideas in physics provide the basis for current applications and research. A laboratory component further illustrates the ideas and develops essential skills in physics experimentation. Semester Hours: 3. Corequisite: PHYS 2331.

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. Semester Hours: 3. Prerequisite: PHYS 2331 and MATH 2411.

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. Semester Hours: 4. Prerequisite: PHYS 2331 and MATH 2411.

PHYS 2821 - 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. Semester Hours: 3. Prerequisite: PHYS 2811.

PHYS 2840 - Independent Study. Students must check with a faculty member before taking this course. Semester Hours: 1 to 3.

PHYS 2939 - Internship/Cooperative Education. Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: 15 hours of 2.75 GPA.

PHYS 3040 - Modern Cosmology. Designed for non-majors, covering the large-scale structure of the universe. Topics covered are gravitational concepts, neutron stars, pulsars, black holes, big bang universe and cosmological tests. Semester Hours: 3. Prerequisite: PHYS 2010 or equivalent.

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. Semester Hours: 3. Prerequisite: PHYS 1052, 2010 or 2311.

PHYS 3060 - Astronomical Image Processing Lab. Techniques in digital image processing. Emphasis on data reduction of astronomical images, processed and reduced on the department's own computer and software platform. Exercise and project oriented. Semester Hours: 3. Prerequisite: MATH 2411 or PHYS 2811 or 1052 and PHYS 2020.

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. Semester Hours: 3. Prerequisite: One college-level science course and MATH 1110 or equivalent. Cross-listed with: ENVS 3082.

PHYS 3120 - Methods of Mathematical Physics. Typically covers calculus of variations, special functions, partial differential equations, integral transforms, linear vector spaces, and tensor analysis. Semester Hours: 3. Prerequisite: MATH 2421 and 3195 (or equivalent) or permission of instructor.

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. Semester Hours: 1. Prerequisite: PHYS 2311 and PHYS 2331.

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 and ecological systems. Semester Hours: 1. Prerequisite: PHYS 2311 and PHYS 2331.

PHYS 3211 - Analytical Mechanics. Topics include the Lagrange and Hamiltonian formulations, the two-body problem, rigid body motion, and small oscillations. Semester Hours: 4. Prerequisite: PHYS 2711, MATH 2421 and 3195 or equivalent; Coreq: PHYS 3120.

PHYS 3251 - Biophysics of the Body. Fundamental ideas of mechanics are used to model the form and function of the human body, including statistics, locomotion, energy, and fluid flow. Topics from analytical mechanics are included to ensure student knowledge of Lagrangian and Hamiltonian formalisms. Semester Hours: 4.

PHYS 3411 - Thermal Physics. Covers the basic concepts of the three related disciplines of thermodynamics, statistical mechanics, and kinetic theory. Semester Hours: 3. Prerequisite: PHYS 2331, 2811 and MATH 2421; coreq: MATH 3195 or equivalent.

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. Semester Hours: 3. Prerequisite: MATH 1070 or equivalent.

PHYS 3711 - Junior Laboratory I. Advanced laboratory in classical and modern physics. Semester Hours: 2. Prerequisite: PHYS 2811.

PHYS 3721 - Junior Laboratory II. Advanced laboratory in classical and modern physics. Semester Hours: 2. Prerequisite: PHYS 3711.

PHYS 3811 - Quantum Mechanics. A course in which both wave and matrix mechanics are developed and applied to selected problems in atomic physics. Semester Hours: 3. Prerequisite: PHYS 2811 and 3211.

PHYS 3820 - Subatomic Physics. Introductory treatment of the various concepts and models used to describe nuclear and high energy particle phenomena. Semester Hours: 3. Prerequisite: PHYS 2811.

PHYS 3840 - Independent Study. Semester Hours: 1 to 3. Note: Students must check with a faculty member before taking this course.

PHYS 3939 - Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: Junior standing and 2.75 GPA.

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. Semester Hours: 4. Prerequisite: PHYS 2331 and 3120.

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. Semester Hours: 4. Prerequisite: PHYS 2331 and 3120.

PHYS 4400-4499 - Topics in Scientific Instrumentation and Laboratory Methods. Short courses on practical knowledge needed to design scientific instruments, develop technical products, and use special laboratory procedures to research. Topics include materials, mechanisms, electronics, and optics. Specific topic information is available through the physics department web site. Semester Hours: 1. Prerequisite: Two semesters of 2000-level introductory physics or instructor's permission. Cross-listed with: PHYS 5400-5499.

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. Semester Hours: 3. Prerequisite: PHYS 2331, 2811 and 3120.

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. Semester Hours: 3. Prerequisite: MATH 3195; PHYS 2821 and 3050 recommended.

PHYS 4610 - 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. Semester Hours: 2. Prerequisite: PHYS 3120.

PHYS 4620 - Computational Physics II. Assigns the student to an individual, advanced-level project modeling a physical phenomenon on the computer. Semester Hours: 2. Prerequisite: PHYS 4610.

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. Semester Hours: 3. Prerequisite: PHYS 3411 and 3811.

PHYS 4711 - Senior Laboratory I. Individual project laboratory with emphasis on modern methods of physical experimentation. Semester Hours: 2. Prerequisite: PHYS 3721.

PHYS 4721 - Senior Laboratory II. Individual project laboratory with emphasis on modern methods of physical experimentation. Semester Hours: 2. Prerequisite: PHYS 4711.

PHYS 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 predictions and microarray analysis. Semester Hours: 3. Prerequisite: C SC 1410, MATH 3191 or 3195. Cross-listed with: C SC 4788, MATH 4788.

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. Semester Hours: 3. Prerequisite: PHYS 3811.

PHYS 4840 - Independent Study. Semester Hours: 1 to 3. Note: Students must check with a faculty member before taking this course.

PHYS 4850 - 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. Semester Hours: 3. Cross-listed with: PHYS 5850.

PHYS 4852 - 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. Semester Hours: 3. Prerequisite: PHYS 4850. Cross-listed with: PHYS 5852.

PHYS 4920 - Advanced Undergraduate Seminar. Studies a focused topic such as: size and age of the universe, critical phenomena, non-linear optics, energy, fiber-optic communications, among others. Students research these topics and give a seminar outlining their findings. Semester Hours: 1. Prerequisite: PHYS 2811 or permission of instructor.

PHYS 4931 - Internship in Applied Physics. Lab experience at major federal and industrial laboratories; an alternative means by which senior physics students complete their senior lab requirement. Semester Hours: 2 to 4. Prerequisite: PHYS 3721. Note: To be taken in lieu of PHYS 4711 and/or 4721.

PHYS 4980 - Advanced Physics Topics. Covers a particular topic, as announced in the 'Schedule Planner'. Semester Hours: 1 to 3. Prerequisite: PHYS 2811. Note: May be taken more than once for credit in different topics.

PHYS 5101 - RM-MSMSP: Forces and Motion. Systematic study of the concepts of motion and the forces that cause motion to change, using daily hands-on activities that include identifying patterns by collecting, graphing or analyzing data and applying concepts to everyday phenomena. 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. Semester Hours: 4. Prerequisite: Permission of project director.

PHYS 5102 - RM-MSMSP: Light, Color, and Geometrical Optics. Systematic study of numerous phenomena in light and geometrical optics including: illumination, shadows, and pinholes; reflection and image formation with lenses; color. 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. Semester Hours: 3. Prerequisite: Permission of project director.

PHYS 5103 - Forms and Transfer of Energy. Presents approaches to teaching basic concepts of energy with an emphasis on electricity and magnetism. Addresses the Colorado Department of Education's Grade 8 science assessment framework, specifically 2.8, 2.9 and 4.2. Course is not applicable toward any degree in physics. Semester Hours: 4. Prerequisite: Permission of project director.

PHYS 5400-5499 - Topics in Scientific Instrumentation and Laboratory Methods. Short courses on practical knowledge needed to design scientific instruments, develop technical products, and use special laboratory procedures in research. Topics include materials, mechanisms, electronics, and optics. Specific topic information is available through the physics department web site. Semester Hours: 1 Cross-listed with: PHYS 4400-4499.

PHYS 5840 - Independent Study. Semester Hours: 1 to 3. Note: Students must check with a faculty member before taking this course.

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. Semester Hours: 3. Cross-listed with: PHYS 4850.

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. Semester Hours: 3. Prerequisite: PHYS 4850 or 5850. Cross-listed with: PHYS 5852.

PHYS 5939 - Internship/Cooperative Education. Semester Hours: 1 to 6. Note: Students must check with a faculty member before taking this course.

PHYS 5950 - Master's Thesis. Semester Hours: 1 to 8. Note: Students must check with a faculty member before taking this course.

PHYS 5960 - Master's Project. Semester Hours: 1 to 8. Note: Students must check with a faculty member before taking this course.

PHYS 5980 - Advanced Physics Topics. Covers a particular topic as announced in the 'Schedule Planner'. Semester Hours: 3. Prerequisite: PHYS 2811 or permission of instructor. Note: May be taken more than once for credit in different topics.

PHYS 6840 - Independent Study. Semester Hours: 1 to 3. Note: Students must check with a faculty member before taking this course.

PMUS: Performance Music (Arts & Media)

PMUS 1001 - Music Appreciation: AH1. 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. Semester Hours: 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. Semester Hours: 3.

PMUS 1023 - Piano Class. Course content includes functional piano skills of sight-reading, transposition, improvisation, playing by ear, and performing in various styles. Class meets in the Kurzweil mini synthesizer keyboard lab. Semester Hours: 1. Note: Offered from beginning through intermediate levels.

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. Semester Hours: 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. Semester Hours: 1. Prerequisite: PMUS 1040.

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. Semester Hours: 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. Semester Hours: 1. Prerequisite: PMUS 1050.

PMUS 1093 - 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. Semester Hours: 2.

PMUS 1094 - 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. Semester Hours: 2.

PMUS 1100 - Music Theory I. Study of harmonic procedures as derived from the common practice period, and their relationship to contemporary concepts. Semester Hours: 3. Corequisite: PMUS 1110 and PMUS 1023.

PMUS 1110 - Ear Training and Sight Singing I. Laboratory course designed to help students listen to music analytically and to apply the harmonic principles learned in PMUS 1100 to the performance of music. Semester Hours: 1 Corequisite: PMUS 1100 and PMUS 1023.

PMUS 1111 - Freshman Seminar. Freshman seminar courses are academic courses for entering freshmen taught under a controlled enrollment environment to promote student-faculty interaction and critical thinking skills. An ancillary function is to provide students with academic proficiencies necessary for success in a liberal arts baccalaureate program. Semester Hours: 3.

PMUS 1200 - Music Theory II. Continuation of PMUS 1100. Semester Hours: 3. Prerequisite: PMUS 1110 and PMUS 1100. Corequisite: PMUS 1210 and PMUS 1023.

PMUS 1210 - Ear Training and Sight Singing II. Laboratory course designed to help students listen to music analytically and to apply the harmonic principles learned in PMUS 1200 to the performance of music. Semester Hours: 1. Prerequisite: PMUS 1100 and PMUS 1110. Corequisite: PMUS 1200 and PMUS 1023.

PMUS 1310 - Beginning 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. Semester Hours: 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. Semester Hours: 2 Corequisite: PMUS 1500 and at least 7 non-applied lesson credits. Note: PMUS 1400 is only available to majors in the Music Industry Studies degree program.

PMUS 1500 - General Recital. May be taken on a pass/fail basis only. Co-requisite for all applied music courses for music majors and minors. Attendance at musical performances is required. Semester Hours: 0.

PMUS 1501-1743 - Applied Music Instruction. Private instruction in electric and acoustic bass, banjo, bassoon, clarinet, bass clarinet, flute, French horn, guitar, oboe, percussion, piano, jazz piano, saxophone, synthesizer, trombone, trumpet, tuba, violin, viola, cello and voice. Open only to accepted music majors enrolled for a minimum of 7 semester credit hours of non-applied courses. Semester Hours: 1. Prerequisite: Students must be accepted as an audition-based music major. Instructor permission. Corequisite: PMUS 1500, 2000/4000 and at least 7 non-applied lesson credits.

PMUS 1600 - Topics in Performance Music. Various topics related to music performance. Semester Hours: 1 to 3.

PMUS 1700 - Applied Music Instruction. Private, one-on-one instrumental or vocal lessons. Half-an-hour per week for duration of semester. Semester Hours: 2. Prerequisite: Instructor permission. Note: Open to all students, but intended for non-Music majors. Music majors may not use PMUS 1700 to satisfy Applied Music requirement. Instructor permission required. PMUS 1700 tuition rates differ from all other MEIS classes. Contact the College of Arts & Media Advising Office for additional information on tuition, registration, etc. PMUS 1700 is a Continuing and Professional Education course.

PMUS 1752 - Applied Music Instruction: Euphonium. Private instruction in euphonium. Open only to accepted music majors enrolled for a minimum of 7 semester hours of non-applied courses. Semester Hours: 2. Prerequisite: Students must be accepted as an audition-based music major. Corequisite: PMUS 1500, PMUS 2000, PMUS 4000 and at least 7 non-applied lesson credits. Cross-listed with: PMUS 3753.

PMUS 1800 - Applied Music: Music Industry Studies. 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. Semester Hours: 2 Corequisite: PMUS 1500 and at least 7 non-applied lesson credits. Note: PMUS 1800 is only available to majors in the Music Industry Studies degree program.

PMUS 2000 - Music Ensembles. Coaching and performance opportunities for vocal and instrumental groups within a wide range of stylistic offerings. Consult schedule for current ensembles, audition, instructor and registration information. Semester Hours: 1. Prerequisite: Audition or meeting with ensemble faculty. Cross-listed with: PMUS 4000.

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. Semester Hours: 3. Prerequisite: PMUS 1200 and PMUS 1210. Corequisite: PMUS 2110 and PMUS 1023.

PMUS 2110 - Ear Training and Sight Singing III. A laboratory course designed to help students listen to music analytically and to apply the harmonic principles learned in PMUS 2100 to the performance of music. Semester Hours: 1. When Offered: *Fall*. Prerequisite: PMUS 1200 and PMUS 1210. Corequisite: PMUS 2100 and PMUS 1023.

PMUS 2120 - Introduction to Arranging and Orchestration.

This course will focus on techniques, technologies and strategies for contemporary arranging and orchestration in a number of diverse musical settings. Score reading, transposition, ranges, orchestration and composition will be covered. Using notational software, students will create original arrangements for ensembles varying in instrumentation and genre. Semester Hours: 3. Prerequisite: PMUS 1100 and 1200.

PMUS 2200 - Contemporary Styles. Surveys classical, jazz, and popular styles of the 20th century. Semester Hours: 3. When Offered: *Spring*. Prerequisite: PMUS 2100.

PMUS 2750 - Functional Guitar Skills: Acoustic Guitar Styles. This course will consist of diverse semester modules addressing specific styles and applications. Each module will include a time-line study relating the guitar to important musical and historical events and include analysis, performance and teaching of essential twentieth century guitar literature. Semester Hours: 2. Prerequisite: PMUS 1093, 1094 or permission of instructor.

PMUS 2751 - Functional Guitar Skills: Essential Studio Guitarist. This course will consist of diverse semester modules addressing specific styles and applications. Each module will include a time-line study relating the guitar to important musical and historical events and include analysis, performance and teaching of essential twentieth century guitar literature. Semester Hours: 2. Prerequisite: PMUS 1093, 1094 or permission of instructor.

PMUS 2752 - Functional Guitar Skills: World Guitar Styles. This course will consist of diverse semester modules addressing specific styles and applications. Each module will include a time-line study relating the guitar to important musical and historical events and include analysis, performance and teaching of essential twentieth century guitar literature. Semester Hours: 2. Prerequisite: PMUS 1093, PMUS 1094 or permission of instructor.

PMUS 2753 - Functional Guitar Skills: American Guitar Styles. This course will consist of diverse semester modules addressing specific styles and applications. Each module will include a time-line study relating the guitar to important musical and historical events and include analysis, performance and teaching of essential twentieth century guitar literature. Semester Hours: 2. Prerequisite: PMUS 1093, 1094 or permission of instructor.

PMUS 3010 - 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. Semester Hours: 1.

PMUS 3020 - 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. Semester Hours: 1. Prerequisite: PMUS 3010.

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. Semester Hours: 3.

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. Semester Hours: 3.

PMUS 3300 - Advanced Sight Reading and 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. Semester Hours: 2. Prerequisite: PMUS 1310 or permission of the instructor.

PMUS 3502-3743 - Applied Music Instruction. Private instruction in electric and acoustic bass, banjo, bassoon, clarinet, bass clarinet, flute, French horn, guitar, oboe, percussion, piano, jazz piano, saxophone, synthesizer, trombone, trumpet, tuba, violin, viola, cello and voice. Open only to accepted music majors enrolled for a minimum of 7 semester credit hours of non-applied courses. Semester Hours: 1. Prerequisite: Students must be accepted as an audition-based music major. Instructor permission. Corequisite: PMUS 1500, 2000/4000 and at least 7 non-applied lesson credits.

PMUS 3753 - Applied Music Instruction: Euphonium. Private instruction in euphonium. Open only to accepted music majors enrolled for a minimum of 7 semester hours of non-applied courses. Semester Hours: 3. Prerequisite: Students must be accepted as an audition-based music major. Corequisite: PMUS 1500, PMUS 2000, PMUS 4000 and at least 7 non-applied lesson credits. Cross-listed with: PMUS 1752.

PMUS 3810 - Music of the Popular Culture. Surveys folk music, world music, pop and jazz. Focuses on musical style with considerable attention to the relationship between music and society. Semester Hours: 3.

PMUS 3820 - Music History Modules. A set of three different five-week music style surveys. These surveys introduce concert, popular, and ethnic idioms sequentially, so the student may choose to enroll in one to three sections. Semester Hours: 1.

PMUS 3825 - History of Rock 'n' Roll: 1950's to 1970's. Examines how the styles of rock 'n' roll developed from the 1950's into the 1970's, as well as lasting impact today. Includes blues, R&B, teen idols, soul, British Invasion, folk-rock, psychedelic music and singer-songwriters. Extensive class listening and video viewing. Semester Hours: 3.

PMUS 3826 - History of Rock 'N' Roll: 1970's to Present. Examines how styles of rock developed from the 1970s to the present, introducing methods of musical analysis. Includes genres from the 1970s (including Funk, Progressive Rock, British Metal), 80s (including American Metal, New Wave), 90s (including Grunge, Hip Hop, Techno), and 00s (including Media Pop, Electronica). Class listening, video viewing and research presentations. Semester Hours: 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. Semester Hours: 3. Prerequisite: Any semester of music theory.

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. Semester Hours: 3. Prerequisite: Any semester of music theory.

PMUS 4000 - Music Ensembles. Coaching and performance opportunities for vocal and instrumental groups within a wide range of stylistic offerings. Consult schedule for current ensembles, audition, instructor and registration information. Semester Hours: 1. Prerequisite: Audition or meeting with ensemble faculty. Cross-listed with: PMUS 2000.

PMUS 4060 - Analysis. The study of music of the Classical and Romantic periods through analysis. Semester Hours: 3. Prerequisite: PMUS 2100.

PMUS 4200 - Senior Recital. This course is for music performance students to prepare for their capstone senior recital and to prepare materials for their required portfolio. Semester Hours: 2. Prerequisite: Permission of instructor.

PMUS 4600 - Topics in Music. Semester Hours: 1 to 3. Cross-listed with: PMUS 5600.

PMUS 5600 - Topics in Music. Semester Hours: 1 to 3. Cross-listed with: PMUS 4600.

P SC: Political Science (Liberal Arts and Sciences)

P SC 1001 - Introduction to Political Science: The Quest for Freedom and Justice: SS1. 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. Semester Hours: 3. Note: Required of all P SC majors.

P SC 1101 - American Political System: SS1. General introduction to the American political system with emphasis upon citizen involvement, the relationships among the various levels and branches of government, formal and informal institutions, processes, and behavior. Semester Hours: 3. Note: Required of all P SC majors.

P SC 1111 - Freshman Seminar. Semester Hours: 1 to 3.

P SC 2001 - Topics in Political Science. Covers different areas of politics. Semester Hours: 3. Note: May be taken more than once for credit when topics vary.

P SC 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. Semester Hours: 3.

P SC 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. Semester Hours: 1 to 3. Prerequisite: One semester of course work at Downtown Denver Campus.

P SC 2939 - Internship/Cooperative Education. Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: 15 hours of 2.75 GPA.

P SC 3000 - Topics: Conference Participation. Semester Hours: 1.

P SC 3002 - Topics in Political Science. Covers different areas of politics. Semester Hours: 1 to 3. Note: May be taken more than once for credit when topics vary.

P SC 3011 - Research Methods. Design of political/social research, both qualitative and quantitative. Applications of statistical techniques and procedures to social and political phenomena. Use of computer and the Internet. Semester Hours: 3.

P SC 3022 - Introduction to Comparative Politics. Comparison of the basic political features of selected countries with focus on political behavior, institutions and political cultures. Themes examined include development, democratization, social movements, political instability and globalization. Semester Hours: 3.

P SC 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. Semester Hours: 3. Cross-listed with: WGST 3034.

P SC 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. Semester Hours: 3. Cross-listed with: WGST 3035.

P SC 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. Semester Hours: 3.

P SC 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. Semester Hours: 3.

P SC 3125 - Introduction to Latin American Society. Explores the central characteristics of political-economic systems and cultures of Latin America. Prepares students to follow developments in the region with greater understanding and to pursue advanced study. Semester Hours: 3.

P SC 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. Semester Hours: 3. Cross-listed with: ETST 3216.

P SC 3333 - Utopian Transformations. Explores cutting-edge theory and practice in social change that transcends traditional left-right divisions and merely incremental reform. Utopian and transformative experiments studied include communes, worker cooperatives, neighborhood organizing, and green parties. Semester Hours: 3. Note: Service-learning option can fulfill major requirement.

P SC 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. Semester Hours: 3.

P SC 3840 - Independent Study. Semester Hours: 1 to 3.

P SC 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. Semester Hours: 3. Prerequisite: A willingness to spend a semester working and studying together as a team in both the classroom and the community.

P SC 3939 - Internship/Cooperative Education. Designed experiences involving application of political concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: Junior or senior standing and 3.0 GPA.

P SC 4002 - Topics in Political Science. Specialized areas of politics. Semester Hours: 3. Note: May be taken more than once for credit when topics vary.

P SC 4009 - Politics of the Budgetary Process. Develops each student's understanding of 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. Semester Hours: 3.

P SC 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. Semester Hours: 3. Cross-listed with: P SC 5011.

P SC 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. Semester Hours: 3. Prerequisite: P SC 1001 and 1101 or permission of instructor.

P SC 4024 - Legislatures and Legislation. Structure and organization of legislatures, informal influences, and the process of statute law making. Semester Hours: 3.

P SC 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: P SC 5025.

P SC 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. Semester Hours: 3.

P SC 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. Semester Hours: 3. Prerequisite: P SC 1101. Cross-listed with: P SC 5044.

P SC 4057 - 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. Semester Hours: 3. Cross-listed with: P SC 5057 and RLST 4500, 5500.

P SC 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. Semester Hours: 3.

P SC 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. Semester Hours: 3. Cross-listed with: P SC 5084.

P SC 4085 - Comparative Public Policy. Comparison of public policy making in such areas as health care, environment, family assistance, and employment in the United States and at least two other countries. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: P SC 5085.

P SC 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 Semester Hours: 3. Cross-listed with: P SC 5014.

P SC 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. Semester Hours: 3. Cross-listed with: P SC 5105.

P SC 4115 - Third World Politics. Examines the factors challenging political stability in low income nations and the prospects for democracy and economic development. Semester Hours: 3.

P SC 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. Semester Hours: 3.

P SC 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. Semester Hours: 3.

P SC 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. Semester Hours: 3. Cross-listed with: ETST 4144.

P SC 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. Semester Hours: 3. Prerequisite: P SC 1001. Cross-listed with: P SC 5145 and ETST 4146.

P SC 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. Semester Hours: 3.

P SC 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. Semester Hours: 3. Prerequisite: Upper division standing. Cross-listed with: ETST 4156.

P SC 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. Semester Hours: 3. Cross-listed with: RLST 3100.

P SC 4175 - Politics and Governments of the Pacific Rim. Examines the domestic governments and political economies of selected Pacific Rim countries—especially Japan, Korea, Taiwan, China, Singapore, and Malaysia—and of these countries involvement in the international political economy and U.S. foreign policy. Semester Hours: 3.

P SC 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. Semester Hours: 3. Prerequisite: P SC 1001 or 3022.

P SC 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. Semester Hours: 3.

P SC 4195 - Political Systems of Sub-Saharan Africa. Analysis of major types of political systems in sub-Saharan Africa and intensive case studies of selected countries exemplifying each type. Semester Hours: 3.

P SC 4206 - Social Movements, NGOs and Global Politics. Examines global social movements and NGOs as new political actors within world politics; how international relations' theoretical perspectives have addressed these actors; and the forms of interaction between these actors and institutions of global governance. Semester Hours: 3. Cross-listed with: P SC 5206.

P SC 4207 - Theories of Social and Political Change. Conservative, radical, and incremental approaches to change. Role of psychological and sociological factors in political change. Comparative perspectives on change. Self-perpetuation processes of power systems and their vulnerabilities. Requisites of system maintenance and system change. Selected case studies. Semester Hours: 3.

P SC 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. Semester Hours: 3. Prerequisite: Six hours of political science or instructor permission. Cross-listed with: WGST 4215.

P SC 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. Semester Hours: 3.

P SC 4217 - 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. Semester Hours: 3. Cross-listed with: P SC 5217.

P SC 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.

Semester Hours: 3. Cross-listed with: P SC 5225.

P SC 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. Semester Hours: 3.

P SC 4235 - Politics and Markets in Latin America. Explores political economic development in Latin America within the context of the world system. Includes the study of colonization, land tenure, foreign investment, authoritarianism, militarism, social and revolutionary movements, human rights and democratization. Semester Hours: 3.

P SC 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. Semester Hours: 3.

P SC 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. Semester Hours: 3.

P SC 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. Semester Hours: 3. Cross-listed with: P SC 5245 and WGST 4248.

P SC 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. Semester Hours: 3. Prerequisite: Upper division political science major. Cross-listed with: P SC 5266.

P SC 4274 - 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. Semester Hours: 3. Cross-listed with: P SC 5274.

P SC 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. Semester Hours: 3. Cross-listed with: P SC 5276.

P SC 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. Semester Hours: 3. Prerequisite: P SC 1001. Cross-listed with: P SC 5286.

P SC 4324 - Politics, Public Policy and Leadership. Role of politics in public and nonprofit sectors. Theories of administration and policy-making, emphasizing the role of leadership in public outcomes. Hands-on approach to case studies and use of students' policy experiences in practical application of theories. Semester Hours: 3. Cross-listed with: P SC 5324.

P SC 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. Semester Hours: 3. Prerequisite: P SC 4126. Cross-listed with: P SC 5326.

P SC 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). Semester Hours: 3.

P SC 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. Semester Hours: 3.

P SC 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. Semester Hours: 3.

P SC 4374 - Public Priorities for the 21st Century. Identification of and planning for social, political, and economic trends in American society likely to transform governmental, nonprofit, and private entities. Rigorous examination of and debate on competing priorities such as liberty, security, welfare, equality, diversity, growth and ecology. Semester Hours: 3. Cross-listed with: P SC 5374.

P SC 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. Semester Hours: 3.

P SC 4414 - Organizational Change Agents. Explores strategies for changing public and nonprofit organizations and of ways leadership abilities can be used for this purpose. Analysis of obstacles to organizational change and of methods for overcoming them. Principles of change applied to real-life contexts. Semester Hours: 3. Cross-listed with: P SC 5514.

P SC 4417 - Modern Political Thought. Main currents of political thought in their historical setting from the 17th century to the present. Development of the student's own political theory. P SC 4407 is not a prerequisite for P SC 4417. Semester Hours: 3.

P SC 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. Semester Hours: 3.

P SC 4437 - Coercion and the State. An analysis of: (1) the historical emergence of the modern state; (2) the theoretical justifications for the concentration of political power and the activist state; (3) the internationalization of the European state system; and (4) anarchist and Fourth World challenges. Semester Hours: 3.

P SC 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. Semester Hours: 3.

P SC 4446 - Advanced Indigenous Peoples' Politics. Builds upon the theoretical and applied foundations of P SC 4146. Intensive study of international legal and political developments are examined, particularly in the United Nations and the Organization of American States systems. Semester Hours: 3. Prerequisite: P SC 4144 or 4146 or permission of instructor. Cross-listed with: P SC 5446.

P SC 4457 - American Political Thought. American law, politics, and conflict. History and development of American political theories and ideas from Native American roots through the colonial period to the present. Political theory and practice in the U.S. today. Semester Hours: 3.

P SC 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. Semester Hours: 3.

P SC 4487 - Constitutional Law II. Continuation of P SC 4477, with emphasis on the war powers of the president, citizenship, the Bill of Rights, and the Civil War amendments. (Case method). Semester Hours: 3. Note: P SC 4477 is not a prerequisite for P SC 4487.

P SC 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. Semester Hours: 3.

P SC 4505 - The Post-Soviet World: Origins and Present Condition. Central and East Europe, Russia, and Central Asia, from earliest times

to the present. Equal emphasis on economics, culture and politics. Particular attention to recent developments in the former Soviet Union. Semester Hours: 3.

P SC 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. Semester Hours: 3. Cross-listed with: P SC 5545.

P SC 4554 - Chicano and Latino Politics. Analysis of the social, cultural, and economic factors that affect political behavior of Latinos. Special attention is paid to the Mexican American cultural heritage and to relations between Mexican Americans and Anglo Americans. Semester Hours: 3. Cross-listed with: ETST 4558.

P SC 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. Semester Hours: 3. Cross-listed with: P SC 5555, ETST 4555 and WGST 4555.

P SC 4564 - Gender and Politics. Analysis of the political experience of women and of strategies for change. Emphasis on the U.S. Semester Hours: 3. Cross-listed with: WGST 4564.

P SC 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. Semester Hours: 3.

P SC 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. Semester Hours: 3.

P SC 4644 - Ethical Responsibilities of Leaders. Explores concepts of ethical decision making within the context of public leadership in both the public and non-profit sectors. Universal and individual ethical standards are examined. Semester Hours: 3. Cross-listed with: P SC 5644.

P SC 4645 - Comparative Political Leadership. Comparative study of historical, socio-cultural, and psychological bases of political leadership. Leadership types in peasant societies, empires, and revolutionary movements. Dilemmas of democratic versus authoritarian leadership in modernizing and industrial states. Semester Hours: 3.

P SC 4726 - Russian and Chinese Foreign Policy. Foreign policies of Russia and China; relations with Western powers and the Third World; interaction of domestic developments and foreign policy; role of national interest, ideology, and elite personalities. Semester Hours: 3.

P SC 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. Semester Hours: 3.

P SC 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. Semester Hours: 3. Prerequisite: ENGL 1020, 2030, and any one 3000-level English/writing course or CMMU 3120. Cross-listed with: P SC 5747, CMMU 4750, 5750.

P SC 4807 - Revolution and Political Violence. Study, discussion, and evaluation of alternative frameworks for the analysis of revolution and political violence. The theoretical material is firmly couched in case situations such as Western, class, colonial, urban, international, historical, racial, religious, and intergenerational violence. The class develops its own theoretical model(s). Semester Hours: 3.

P SC 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 participa-

tion of women. Semester Hours: 3. Cross-listed with: ETST 4827 and WGST 4827.

P SC 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. Semester Hours: 3. Cross-listed with: P SC 5837.

P SC 4840 - Independent Study. 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. Semester Hours: 1 to 3. Prerequisite: 15 semester hours in political science and permission of instructor. Note: Primarily for seniors.

P SC 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. Semester Hours: 3.

P SC 4995 - Travel Study Topics. Students study various topics at an off-campus location, either a foreign country or another city or region in the United States, led by a Downtown Denver Campus instructor. Semester Hours: 1 to 3. Prerequisite: P SC 1001 or 3022 or permission of instructor. Cross-listed with: P SC 5995.

P SC 4996 - The Middle East at Hand. Designed to provide students with an in-depth examination of the contemporary Palestinian, Jordanian, and Israeli societies and thus allow students to enhance understanding of the connection between geographical and topographical features of the region and the politics of conflict and cooperation. Semester Hours: 3. Prerequisite: Good standing at the junior level or above and having had 3-6 hours in a CLAS major. Cross-listed with: P SC 5996.

P SC 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor.

P SC 5005 - Political Theory After 9/11. The events of 9/11 brought into sharp focus dilemmas in international politics, including the responses to American hegemony, return of religion, nature of 'terrorism' and implications for democracy. This course explores diverse interpretations of these challenges offered by major political theorists. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor.

P SC 5007 - Beyond Political Correctness. Explores and critiques 'political correctness' defined as 'ideological narrowing, intolerance and silencing of dissent.' Analysis of origins, dynamics and consequences of PC with emphasis on its advantages and disadvantages for practitioners. Foundational works, illustrative cases and contemporary voices. Semester Hours: 3.

P SC 5008 - Graduate Topics in Political Science. Semester Hours: 1 to 3.

P SC 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. Semester Hours: 3. Note: Offered as a special topics course in an intensive three-weekend format, which is reflected in the syllabus.

P SC 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. Semester Hours: 3. Cross-listed with: P SC 4011.

P SC 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. Semester Hours: 3. Cross-listed with: S SC 5013.

P SC 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 Semester Hours: 3. Cross-listed with: P SC 4094.

P SC 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. Semester Hours: 3.

P SC 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. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: P SC 4025.

P SC 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. Semester Hours: 3. Prerequisite: Graduate status or permission of instructor. Cross-listed with: P SC 4044.

P SC 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. Semester Hours: 3.

P SC 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. Semester Hours: 3. Cross-listed with: P SC 4057, and RLST 4500, 5500.

P SC 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. Semester Hours: 3. Cross-listed with: P SC 4084.

P SC 5085 - Comparative Public Policy. Comparison of public policy making in such areas as health care, environment, family assistance, and employment in the United States and at least two other countries. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor. Cross-listed with: P SC 4085.

P SC 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. Semester Hours: 3.

P SC 5105 - Comparative Politics: Europe. Examination and writing of research papers on selected topics of industrial democracies, especially those of Europe. Semester Hours: 3. Cross-listed with: P SC 4105.

P SC 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. Semester Hours: 3.

P SC 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. Semester Hours: 3. Prerequisite: Graduate status or permission of instructor. Cross-listed with: P SC 4146 and ETST 4146.

P SC 5206 - Social Movements, NGOs and Global Politics. Examines global social movements and NGOs as new political actors

within world politics; how international relations' theoretical perspectives have addressed these actors; and the forms of interaction between these actors and institutions of global governance. Semester Hours: 3. Cross-listed with: P SC 4206.

P SC 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. Semester Hours: 3.

P SC 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. Semester Hours: 3. Cross-listed with: P SC 4217.

P SC 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. Semester Hours: 3. Cross-listed with: P SC 4225.

P SC 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. Semester Hours: 3.

P SC 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. Semester Hours: 3. Cross-listed with: P SC 4248 and WGST 4248.

P SC 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. Semester Hours: 3.

P SC 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. Semester Hours: 3. Prerequisite: Upper division political science major. Cross-listed with: P SC 4266.

P SC 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. Semester Hours: 3. Cross-listed with: P SC 4274.

P SC 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. Semester Hours: 3. Cross-listed with: P SC 4276.

P SC 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 Semester Hours: 3. Prerequisite: Graduate status or permission of instructor. Cross-listed with: P SC 4286.

P SC 5324 - Politics, Public Policy and Leadership. Role of politics in public and nonprofit sectors. Theories of administration and policy-making, emphasizing the role of leadership in public outcomes. Hands-on approach to case studies and use of students' policy experiences in practical application of theories. Semester Hours: 3. Cross-listed with: P SC 4324.

P SC 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. Semester Hours: 3. Cross-listed with: P SC 4326.

P SC 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. Semester Hours: 3.

P SC 5374 - Public Priorities for the 21st Century. Identification of and planning for social, political, and economic trends in American society likely to transform governmental, nonprofit and private entities. Rigorous examination of and debate on competing priorities such as liberty, security, welfare, equality, diversity, growth and ecology. Semester Hours: 3. Cross-listed with: P SC 4374.

P SC 5414 - Organizational Change Agents. Explores of strategies for changing public and nonprofit organizations and of ways leadership abilities can be used for this purpose. Analysis of obstacles to organizational change and of methods for overcoming them. Principles of change applied to real-life contexts. Semester Hours: 3. Cross-listed with: P SC 4414.

P SC 5417 - Seminar: Practical Utopias. Explores of utopian theories applied in real-world experiments and political movements, including communes, worker cooperatives, neighborhood organizing and Green parties. One or more field trips and a final retreat during which the class will develop its own practical-utopian model(s). Semester Hours: 3.

P SC 5446 - Advanced Indigenous Peoples' Politics. Builds upon the theoretical and applied foundations of P SC 4146. Intensive study of international legal and political developments are examined, particularly in the United Nations and the Organization of American States systems. Semester Hours: 3. Prerequisite: P SC 4144 or 4146 or permission of instructor. Cross-listed with: P SC 4446.

P SC 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. Semester Hours: 3.

P SC 5468 - Research Methods in Political Science. Analysis and evaluation of research methods, techniques, and empirical materials in political science application to Internet research. Semester Hours: 3.

P SC 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. Semester Hours: 3. Prerequisite: P SC 4477 or 4487 or permission of instructor.

P SC 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. Semester Hours: 3. Cross-listed with: P SC 4545.

P SC 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. Semester Hours: 3. Prerequisite: Graduate status or permission of instructor. Cross-listed with: P SC 4555, WGST 4555 and ETST 4555.

P SC 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. Semester Hours: 3.

P SC 5644 - Ethical Responsibilities of Leaders. Explores concepts of ethical decision making within the context of public leadership in both the public and non-profit sectors. Universal and individual ethical standards are examined. Semester Hours: 3. Cross-listed with: P SC 4644.

P SC 5726 - Seminar on U.S. and China Relations. Detailed examination of historical context and current issues in U.S./China relations. Emphasis on post-1949 period, with particular attention to post-1978 relations and issues. Semester Hours: 3. Prerequisite: Graduate status or permission of instructor.

P SC 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. Semester Hours: 3. Cross-listed with: P SC 4757, CMMU 4750, 5750.

P SC 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. Semester Hours: 3.

P SC 5827 - Seminar: Political Psychology. Role of personality variables in political attitudes, behavior, and system maintenance and change; human nature as a parameter; political relevance of psychoanalytic, behaviorist, humanistic and social psychology; alienation, ethnocentrism, dogmatism, and aggression as political variables. Semester Hours: 3. Prerequisite: Political science or psychology background.

P SC 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. Semester Hours: 3. Cross-listed with: S SC 5830.

P SC 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. Semester Hours: 3. Cross-listed with: P SC 4837.

P SC 5840 - Independent Study. Semester Hours: 1 to 3.

P SC 5914 - Community Development. The theory and practice of community-sensitive development. Global forces challenge communities, alternatively, with floods and droughts of international capital. By collaborating with a non-profit community-based organization, this class examines how communities develop progressive methods of engaging global forces. Semester Hours: 3. Prerequisite: Graduate standing or permission of instructor.

P SC 5939 - Cooperative Education. Semester Hours: 1 to 6.

P SC 5950 - Master's Thesis. Semester Hours: 1 to 6.

P SC 5960 - Master's Project. Semester Hours: 1 to 3.

P SC 5995 - Travel Study Topics. Students study various topics at an off-campus location, either a foreign country or another city or region in the United States, led by a Downtown Denver Campus instructor. Semester Hours: 1 to 3. Prerequisite: P SC 1001 or 3022 or permission of instructor. Cross-listed with: P SC 4995.

P SC 5996 - The Middle East at Hand. Designed to provide students with an in-depth examination of the contemporary Palestinian, Jordanian, and Israeli societies and thus allow students to enhance understanding of the connection between geographical and topographical features of the region and the politics of conflict and cooperation. Semester Hours: 3. Prerequisite: Good standing at the junior level or above and having had 3-6 hours in a CLAS major. Cross-listed with: P SC 4996.

P SC 6840 - Independent Study. Semester Hours: 1 to 3.

PSY: Psychology (Liberal Arts & Sciences)

PSY 1000 - Introduction to Psychology I: SS3. 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. Semester Hours: 3.

PSY 1005 - Introduction to Psychology II: SS3. Introduces the scientific study of behavior, including an overview of the history of psychology, development, personality, psychological disorders, therapy, health psychology and social behavior. PSY 1000 is not a prerequisite for this course. Semester Hours: 3.

PSY 1111 - Freshman Seminar. Semester Hours: 1 to 3.

PSY 2050 - Improving Memory. Applies psychological principles of memory function and process to everyday settings and experiences. Covers topics such as how memory works, principles of memory improvement, and strategies for effective learning. Semester Hours: 2.

PSY 2060 - Psychology Applied to Everyday Life. A primer in psychological principles applied to everyday situations. Covers topics such as learning, stress and health, attraction and love, and personality. Semester Hours: 3.

PSY 2090 - Statistics and Research Methods. Introduces statistics and research methods in the field of psychology. Semester Hours: 4. Prerequisite: PSY 1000. Note: Intended for those who plan to major in psychology. Completion of college algebra or equivalent is recommended.

PSY 2220 - Biological Basis of Behavior: SC2. 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. Semester Hours: 3. Prerequisite: PSY 1000 or BIOL 2051.

PSY 2939 - Internship/Cooperative Education. Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: 15 hours of 2.75 GPA.

PSY 2990 - Topics in Psychology. Studies special topics to be selected by the instructor. Semester Hours: 1 to 3. Note: May be repeated for credit.

PSY 3090 - Research Methods in Experimental Psychology. Lecture and associated laboratory exercises that consider principles of experimental methodology, data collection and interpretation, presentation of results, evaluation of scientific literature, scientific writing, and advanced statistical concepts. Semester Hours: 4. Prerequisite: PSY 1000, 1005 and 2090. Note: Strongly recommended for students who wish to pursue a career in research or professional psychology.

PSY 3104 - Behavioral Genetics. Interdisciplinary course on relationships between behavior and heredity, with emphasis on human behavioral genetics. Semester Hours: 3. Prerequisite: General biology or general psychology. Cross-listed with: BIOL 3104.

PSY 3135 - Organizational Psychology. Surveys the behavior of individuals in organizations. Topics include leadership and motivation theories; group dynamics; measuring, understanding, and explaining job attitudes; analyzing and designing jobs; training and organizational development. Semester Hours: 3. Prerequisite: PSY 1000, 1005 and 2090 or permission of instructor.

PSY 3205 - Human Development I: Child Psychology. Studies human development covering birth, infancy, toddler, preschool and school-aged child. Covers biological, cognitive and social processes. Semester Hours: 3. Prerequisite: PSY 1000 or 1005.

PSY 3215 - Human Development II: Adolescence and Adulthood. Study of human development from adolescence through adulthood and aging. Covers biological, cognitive, and social processes. Semester Hours: 3. Prerequisite: PSY 1000 or 1005.

PSY 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. Semester Hours: 3. Prerequisite: PSY 1000.

PSY 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. Semester Hours: 3. Prerequisite: PSY 1000, 1005 and 2090, or permission of instructor.

PSY 3254 - Introduction to Animal Behavior. Surveys the behavior of nonhuman animals, emphasizing the evolution through natural selection. Semester Hours: 3. Prerequisite: One semester of general biology, biological anthropology, or other course emphasizing evolutionary perspective.

PSY 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. Semester Hours: 3. Prerequisite: PSY 1000, 2090 and 2220 or permission of instructor.

PSY 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. Semester Hours: 3. Prerequisite: PSY 1000, 2090 and 2220 or permission of instructor.

PSY 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. Semester Hours: 3. Prerequisite: PSY 1000, 2090 and 2220 or permission of instructor.

PSY 3305 - Abnormal Psychology. Borderline disorders as extreme variations of the normal personality. Major functional and organic disorders. Theories of mental disorders and methods of psychotherapy. Semester Hours: 3. Prerequisite: PSY 1000.

PSY 3405 - Family Psychology. Overview of theory and research pertaining to marital and family structure, functioning and dynamics. Semester Hours: 3. Prerequisite: PSY 1005.

PSY 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. Semester Hours: 3. Prerequisite: PSY 1000, 1005, and 2090 or permission of instructor.

PSY 3600 - Topics in Psychology. Studies special topics to be selected by the instructor. Semester Hours: 1 to 3. Note: May be repeated for credit.

PSY 3610 - Psychological Trauma. Overview of psychological trauma, including: history, theoretical application, trauma models, diagnosis and treatment implications. Topics include family violence, child abuse, sexual abuse, and the trauma of war. Semester Hours: 3. Prerequisite: PSY 1000, 1005 and 2090 or permission of instructor.

PSY 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. Semester Hours: 3. Prerequisite: PSY 1000, 1005 and 2090 or permission of instructor.

PSY 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. Semester Hours: 3. Prerequisite: PSY 1000, 1005 and 2090 or permission of instructor.

PSY 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. Semester Hours: 3. Prerequisite: PSY 1000/1005 or BIOL 2051/2061.

PSY 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. Semester Hours: 3. Prerequisite: PSY 1000 and 2220 or permission of instructor.

PSY 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. Semester Hours: 3. Prerequisite: PSY 1000, 2090 and 2220 or permission of instructor.

PSY 3939 - Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: Junior standing, completion of minimum of 12 hours in psychology with minimum grade of 'C'.

PSY 4054 - Behavioral Neuroscience. The morphological, neurochemical and physiological bases of behavior. Emphasis is on structure and function of the brain. Semester Hours: 3. Prerequisite: PSY 1000, 2090 and 2220 or permission of instructor.

PSY 4101 - Applied Statistics Using SAS and SPSS I. Teaches the practical statistical tools social scientists use to analyze real-world problems. It is split into four modules, each taught by a different instructor. The first module introduces SAS and SPSS; modules 2-4 are problem-based and cover topics such as ANOVA, multivariate regression, and cluster analysis. Semester Hours: 3. Prerequisite: Any statistics course.

PSY 4102 - Applied Statistics Using SAS and SPSS II. Students use the skills they learned in the previous semester to analyze a social issue of their choosing and present their findings. Semester Hours: 3. Prerequisite: PSY 4101. Note: A continuation of PSY 4101. In addition to lectures, weekly one-on-one meetings between faculty and students are required.

PSY 4144 - Human Cognition. Studies information processing in humans, with emphasis on memory, thinking and language. Semester Hours: 3. Prerequisite: PSY 1000.

PSY 4164 - Psychology of Perception. Studies sensory processes and perceptual variables. Covers processes related to vision, audition, gustation and olfaction. Semester Hours: 3. Prerequisite: PSY 1000, 2090 and 2220 or permission of instructor.

PSY 4415 - Experimental Social Psychology. Readings and lectures focused on the formulation of researchable problems in social psychology. Semester Hours: 3. Prerequisite: PSY 1000 and 1005.

PSY 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. Semester Hours: 3. Prerequisite: PSY 1000, 1005 and 2090 or permission of instructor.

PSY 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. Semester Hours: 3. Prerequisite: Six semester hours of psychology, sociology, and/or anthropology in any combination.

PSY 4500 - Psychotherapy. Overview of the major systems of psychotherapy, including psychoanalysis, person-centered therapy, family therapy, cognitive or behavioral approaches, and relationships among the various approaches. Semester Hours: 3. Prerequisite: 12 hours in psychology, including PSY 1005 and 2090.

PSY 4511 - History of Psychology. Development of psychological theories since 500 B.C. Schools of psychology and their adherents. Readings of primary and secondary sources. Semester Hours: 3. Prerequisite: PSY 1000 and 1005 plus 6 additional credit hours in psychology (12 hours total).

PSY 4645 - Industrial Psychology. Surveys the field of industrial psychology. Organizational structure, communication networks, personnel selection, training, stress, and human relations are examined. Semester Hours: 3. Prerequisite: PSY 1000, 1005 and 2090 or permission of instructor.

PSY 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. Semester Hours: 3. Prerequisite: 12 hours in psychology, including PSY 1005 and 2090.

PSY 4803 - 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. Semester Hours: 3. Prerequisite: A prior course in statistics. Cross-listed with: PSY 5803.

PSY 4840 - Independent Study. Semester Hours: 1 to 3. Prerequisite: Permission of instructor.

PSY 4990 - Topics in Psychology. Advanced study of special topics to be selected by the instructor. May be repeated for credit. Semester Hours: 1 to 3. Prerequisite: Permission of instructor. Cross-listed with: PSY 5990.

PSY 5360 - 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. Semester Hours: 3. Prerequisite: Admission to the Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director.

PSY 5700 - 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. Semester Hours: 3. Prerequisite: Admission to the Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director.

PSY 5713 - 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. Semester Hours: 3. Prerequisite: Admission to the Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director.

PSY 5730 - Clinical Psychology: Ethics and Issues. 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. Semester Hours: 3. Prerequisite: Admission to the Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director.

PSY 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. Semester Hours: 3. Prerequisite: Admission to psychology graduate program. Cross-listed with: PSY 4803.

PSY 5840 - Independent Study. Semester Hours: 1 to 3.

PSY 5939 - Internship/Cooperative Education. Semester Hours: 1 to 6.

PSY 5990 - Topics in Psychology. Advanced study of special topics to be selected by the instructor. Semester Hours: 1 to 3. Prerequisite: Permission of instructor. Cross-listed with: PSY 4990. Note: May be repeated for credit.

PSY 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. Semester Hours: 3. Prerequisite: Admission to the Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director.

PSY 6410 - Theories of Assessment. Presents issues in psychological assessment, including validity, reliability, clinical judgment, ethics, cultural diversity and specific assessment methods. Particular focus on psychological assessment in a medical setting. Semester Hours: 3. Prerequisite: Admission to the Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director.

PSY 6420 - Applied Assessment. Administering, interpreting and writing reports for diverse assessment tools in the context of health psychology assessment. Semester Hours: 3. Prerequisite: Admission to the Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and program director.

PSY 6500 - Adult 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. Semester Hours: 3. Prerequisite: Admission to Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director.

PSY 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. Semester Hours: 1 to 3. Prerequisite: Admission to the graduate program in psychology.

PSY 6910 - Research Practicum. Semester Hours: 3.

PSY 6930 - Clinical Internship. Clinical experience in a setting which provides supervision by qualified professionals. Students participate in assessment, intervention, and/or evaluation and research. Semester Hours: 1 to 6. Prerequisite: Completion of 24 hours of course work in the UCD Psychology MA, Clinical program.

PSY 6950 - Master's Thesis. Semester Hours: 1 to 6.

PSY 7144 - Learning, Memory and Cognition. Overview of contemporary psychological theories and research in human learning, memory and cognition. Semester Hours: 3. Prerequisite: Admission to the Clinical Health Psychology Ph.D. Program or with permission of instructor and graduate program director.

PSY 7205 - Advanced Developmental Psychology. A survey of neurobiological, cognitive, social and cultural processes in human development from conception through adulthood. Semester Hours: 3. Prerequisite: Admission to the Clinical Health Psychology Ph.D. Program or with permission of instructor and graduate program director.

PSY 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. Semester Hours: 3. Prerequisite: Admission to the Clinical Health Psychology Ph.D. Program or with permission of instructor and graduate program director.

PSY 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. Semester Hours: 3. Prerequisite: Admission to the Clinical Health Psychology Ph.D. Program or with permission of instructor and graduate program director.

PSY 7400 - Child Assessment. Psychometric theory and practice in assessment of children with focus on the diagnostics, the WISC-III, and personality assessment. Semester Hours: 3. Prerequisite: Admission to the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director.

PSY 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. Semester Hours: 3. Prerequisite: Admission to the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director.

PSY 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. Semester Hours: 1. Prerequisite: Admission to the Clinical Health Psychology Ph.D. Program. Note: This course is required for first, second and third-year graduate students.

PSY 7511 - Historical and Philosophical Foundations of Psychology. Philosophical and historical antecedents to contemporary psychology, with particular emphasis on clinical psychology. Semester Hours: 3. Prerequisite: Admission to the Clinical Health Psychology Ph.D. Program or with permission of instructor and graduate program director.

PSY 7520 - Experimental Psychopathology. Theories of etiology of major psychopathologies, including: personality disorders, anxiety

disorders, affective disorders, substance use disorders and schizophrenia and other psychoses. Semester Hours: 3. Prerequisite: Admission to the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director.

PSY 7710 - Multivariate Statistics. Topics include canonical analysis, discriminate function analysis, and multiple regression. Semester Hours: 3. Prerequisite: Admission to the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director.

PSY 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. Semester Hours: 1 to 3. Prerequisite: Admission to the Psychology MA, Clinical program or the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director.

PSY 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. Semester Hours: 1 to 6. Prerequisite: Completion of 24 hours of course work in the UCD Clinical Health Psychology PhD program. Note: All field placements must be approved by the Director of Clinical Training (DCT) in advance of registration.

PSY 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. Semester Hours: 3. Prerequisite: Admission to the Clinical Health Psychology Ph.D. Program or with permission of instructor and graduate program director.

PSY 8200 - Teaching Skills Seminar. Basic principles and strategies of good teaching. Explores research and theory for teaching at the college level. Semester Hours: 2. Prerequisite: Admission to the Clinical Health Psychology Ph.D. program or with permission of instructor and graduate program director.

PSY 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. Semester Hours: 3. Prerequisite: Admission to the Clinical Health Psychology Ph.D. Program or with permission of instructor and graduate program director.

PSY 8910 - Clinical Health 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. Semester Hours: 1 to 6. Prerequisite: PSY 7930. Note: All field placements must be approved by the Director of Clinical Training (DCT) in advance of registration.

PSY 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. Semester Hours: 1 to 3. Prerequisite: Successful defense of the dissertation proposal in Clinical Health Psychology. Note: All field placements must be approved by the Director of Clinical Training (DCT) in advance of registration.

PSY 8990 - Doctoral Dissertation. Independent research on the doctoral dissertation in Clinical Health Psychology. Semester Hours: 1 to 10. Prerequisite: Admission to the Clinical Health Psychology PhD Program.

Public Administration: P AD (Public Affairs)

Religious Studies: RLST (Liberal Arts and Sciences)

REM: Research and Evaluation Methodology (Education)

REM 5000 - Orientation to Research and Measurement in Education.

Provides an overview of the research process, various types of research, and major concepts and techniques in educational measurement. The emphasis is on: (1) critiquing educational research studies; and (2) critiquing tests and other measures used in educational research as well as for other assessment purposes. A limited coverage of statistics and evaluation is included. Semester Hours: 3.

REM 5050 - Assessment for Teachers. Provides teachers with a conceptual framework for developing new assessments of student learning and attitudes, and for evaluating and selecting assessment instruments developed by others. Techniques of performance assessment and the use of portfolios in assessment are emphasized. A variety of assessment purposes—and their particular uses in placement, grading, instructional planning, and accountability—considered. Students design and administer portfolios and performance assessments; in addition, they read articles from leaders in the field. Semester Hours: 3.

REM 5080 - Research for Teachers. 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. Semester Hours: 3.

REM 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; t-tests and analysis of variance. Semester Hours: 3.

REM 5200 - Introduction to Research Methods. Examines the purposes of research, the methods and designs of quantitative and qualitative research, and the processes involved in research studies. The methods of research examined include experimental designs, quasi-experimental designs, descriptive surveys, case studies, ethnographies and correlational designs. Designing a research study is a part of the course activities. Semester Hours: 3.

REM 5300 - 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. Semester Hours: 3.

REM 5350 - Workshop in Instrument Development. Provides an opportunity to learn the art and technology of developing different measures in education. Students develop an instrument of their own design. Topics vary. Semester Hours: 3.

REM 5400 - Introduction to Evaluation of Programs and Persons. Models and methods of evaluating programs and persons in education and related fields, such as business and nursing, are examined. Emphasis is given to the topics of formative and summative evaluation, frameworks for program evaluation, teacher evaluation, merit pay, and the measurement and design problems associated with each topic. Semester Hours: 3.

REM 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. Semester Hours: 1 to 4.

REM 5840 - Independent Study. Semester Hours: 1 to 4.

REM 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). Semester Hours: 1 to 4.

REM 5920 - Readings in Educational Statistics. Semester Hours: 1 to 3.
REM 5921 - Readings in Educational Research. Semester Hours: 1 to 3.
REM 5923 - Readings in Educational Measurement. Semester Hours: 1 to 3.

REM 5924 - Readings in Program Evaluation. Semester Hours: 1 to 3.
REM 6050 - Seminar in Assessment Policy Issues. Three public policy issues involving educational assessment are analyzed. The policy issues selected vary to reflect current policy debates. Sample issues are school accountability, grading and report cards, performance-based graduation standards, classification of students as having special needs, merit pay for teachers, and retaining students in grade. Each analysis examines (a) policy history; (b) value assumptions and constituency interests; (c) validity of assessment procedures; and (d) consequences of policy alternatives. Semester Hours: 3. Prerequisite: REM 5050 or REM 5300 (or another introductory course in educational measurement or assessment).

REM 6100 - 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. Semester Hours: 3. Prerequisite: REM 5080 or REM 5200 or EDLI 7000 (or their equivalents as determined by the course instructor).

REM 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. Semester Hours: 3. Prerequisite: REM 5100, 5200 or EDLI 7000 (or their equivalents, as determined by the course instructor).

REM 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. Semester Hours: 3. Prerequisite: REM 6100 or equivalent.

REM 7110 - Intermediate Statistics. Continuation of REM 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). Semester Hours: 3. Prerequisite: REM 5100 or equivalent.

REM 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. Semester Hours: 3. Prerequisite: REM 5080 or REM 5200 and REM 7110 or permission of instructor.

REM 7150 - Mixed Methods Research. This is a doctoral seminar 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. Semester Hours: 3. Prerequisite: EDLI 7000, REM 7110 and 6100 or equivalents or permission of instructor.

REM 7240 - Patterned Inquiry for Educational Administrators. This seminar provides students with a conceptual and practical basis for conducting and evaluating educational research. Its focus is on the

application of research to problems of administrative practice. The seminar is also intended to prepare students for dissertation research. Semester Hours: 1 to 6. Prerequisite: REM 7110.

REM 7500 - Special Topics in Research and Evaluation Methods. Specific topics vary from semester to semester. Semester Hours: 1 to 6.

RLST: Religious Studies (Liberal Arts and Sciences)

RLST 1610 - Introduction to Religious Studies: AH3. 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. Semester Hours: 3.

RLST 2660 - World Religions: AH3. 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. Semester Hours: 3.

RLST 2680 - The American Indian Experience. Surveys the relationships between Indian and non-Indian peoples, particularly in the context of the unique interaction between tribes and the federal government. Semester Hours: 3. Cross-listed with: ETST 2606.

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. Semester Hours: 3. Cross-listed with: ENGL 2520.

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. Semester Hours: 3.

RLST 3060 - History of Early Christianity. History of the rise of Christianity and the decline of paganism in the Roman Empire from the birth of Jesus of Nazareth to ca. 500 A.D. Special emphasis on social, historical, legal, and cultural context of Christianity's rise and paganism's decline. Semester Hours: 3.

RLST 3080 - Reformation Europe. Between the early 16th and the middle 17th centuries, Europe was torn by explosive ideological conflicts, resulting in religious upheaval, political revolution, and civil and international wars, but also underwent important experiments in representative government and economic controls. Semester Hours: 3. Cross-listed with: HIST 4022, 5022.

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. Semester Hours: 3. Cross-listed with: P SC 4165.

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. Covers the 'Shramana' disciplines of India, probable source for the name 'shamanism,' Tibet, Central Asia Korea, China, Japan, Australia; Pacific Island, Native American, and traditional African cultures. Semester Hours: 3.

RLST 3400 - 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. Semester Hours: 3. Cross-listed with: PHIL 3666.

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. Semester Hours: 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. Semester Hours: 3. Cross-listed with: PHIL 3981.

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. Semester Hours: 3. Cross-listed with: ENGL 3520.

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. Semester Hours: 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. Semester Hours: 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. Semester Hours: 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. Semester Hours: 3.

RLST 4010 - 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. Semester Hours: 3. Cross-listed with: ANTH 4130, 5130, RLST 5010.

RLST 4020 - Sociology of Religion. An intensive review and analysis of the fundamental tenets of religion as a social institution, with emphasis on present-day religious cults, their beliefs and activities in society. Semester Hours: 3. Cross-listed with: RLST 5020 and SOC 4610, 5610.

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. Semester Hours: 3. Cross-listed with: RLST 5040.

RLST 4060 - Philosophy of Religion. Nature of religion and methods of studying it. Semester Hours: 3. Cross-listed with: HUM 5600, PHIL 4600, 5600, RLST 5060, and S SC 5600.

RLST 4070 - Western Religious Thought. Focuses on philosophers and theologians who have contributed to the evolution of the three great religious traditions of the West: Judaism, Christianity and Islam. Targets thinkers from three periods: the ancient or formative era, the medieval era, and the contemporary era. Semester Hours: 3. Cross-listed with: PHIL 4710. Note: Specific philosophers chosen may vary in different semesters.

RLST 4080 - 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. Semester Hours: 3. Cross-listed with: PHIL 4720.

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. Semester Hours: 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. Semester Hours: 3.

RLST 4260 - Kosmos: Theories of the Universe. A course in philosophical cosmology using material from the sciences, history and philosophy. The goal is to illuminate our present theories concerning the nature of the universe and the place of life within it. Semester Hours: 3. Cross-listed with: PHIL 3420.

RLST 4280 - Current Perspectives on the Evolution of Consciousness and Culture. Studies of evolution traditionally regard morphology (anatomy)/behavior and mind/consciousness as separate fields that belong either in biology/paleontology or in psychology/philosophy. The 'middle ground' behavior, anthropology, social systems, is also treated separately in most cases. Recent approaches tend toward a more holistic view using unifying principles and 'laws of nature' that show similar processes (dissipative effects, information theory, development theory) operating across all fields. Examines the relationships and common threads between the physical anatomical evolution of organisms and their behavior perception and consciousness. Semester Hours: 3. Prerequisite: Introductory course in evolution (biology/paleontology), psychology, philosophy, anthropology, or permission of instructor. Cross-listed with: GEOL 3100 and PHIL 3100.

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. Semester Hours: 3. Cross-listed with: RLST 5300.

RLST 4320 - Spirituality in the Modern World. Examines the issue of spiritual currents in the modern world. Joseph Campbell claimed that Western culture long ago lost an active sense of the sacred and that the traditional religions have not been the spiritual center for the vast majority of moderns for centuries. This class looks at the modern spiritual awakening in Shamanism, Eastern thought, the New Age movement, the men's movement, paganism and goddess religion, and the revival of traditional religious forms in recent decades. Semester Hours: 3. Prerequisite: RLST 4300.

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. Semester Hours: 3. Cross-listed with: ENGL 3530.

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. Throughout history, dreams have been regarded as prophetic, as the voice of the gods. These 'spiritual' approaches to dreams are examined, as well as some major theorists on dreams, especially the work of Sigmund Freud and C. G. Jung. Semester Hours: 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. Semester Hours: 3. Cross-listed with: RLST 5400, PHIL 4650 and 5655.

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. Semester Hours: 3. Cross-listed with: RLST 5420 and WGST 4420.

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. Semester Hours: 3. Cross-listed with: RLST 5440 and PHIL 4470, 5470.

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. Semester Hours: 3.

RLST 4480 - Perspectives on Good and Evil. Examines the 'problem of evil.' As formulated in the philosophical tradition: if the deity is understood as perfect, then why is there evil? How can a perfect entity create imperfection? Why would an absolutely benevolent God cause or allow the innocent to suffer? Presents the classical formulation of the problem, the traditional solutions offered, and the classical critiques of each answer. Considers the perspectives of the various religious orientations, each of which deals differently with the question of suffering. Semester Hours: 3. Cross-listed with: PHIL 4480.

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. Semester Hours: 3. Cross-listed with: P SC 4057, 5057 and RLST 5500.

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. Semester Hours: 3. Prerequisite: Nine hours of literature courses or instructor permission. Cross-listed with: ENGL 4510, ENGL 5510, RLST 5730 and WGST 4510.

RLST 4840 - Independent Study. Various topics in religious studies pursued in independent research. Semester Hours: 1 to 3.

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. Semester Hours: 3. Cross-listed with: ANTH 4130, 5130, RLST 4010.

RLST 5020 - Sociology of Religion. An intensive review and analysis of the fundamental tenets of religion as a social institution, with emphasis on present-day religious cults, their beliefs and activities in society. Semester Hours: 3. Cross-listed with: RLST 4020 and SOC 4610, 5610.

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. Semester Hours: 3. Cross-listed with: RLST 4040.

RLST 5060 - Philosophy of Religion. Nature of religion and methods of studying it. Semester Hours: 3. Cross-listed with: HUM 5600, PHIL 4600, 5600, RLST 4060, and S SC 5600.

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. Semester Hours: 3. Cross-listed with: RLST 4300.

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. Semester Hours: 3. Cross-listed with: RLST 4400, PHIL 4650 and 5655.

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. Semester Hours: 3. Cross-listed with: RLST 4420 and WGST 4420.

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. Semester Hours: 3. Cross-listed with: RLST 4440 and PHIL 4470, 5470.

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. Semester Hours: 3. Cross-listed with: P SC 4057, 5057 and RLST 4500.

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. Semester Hours: 3. Prerequisite: Nine hours of literature courses or instructor permission. Cross-listed with: ENGL 4510, ENGL 5510, RLST 4730 and WGST 4510.

School Library: SL (Education)

School Psychology: SPSY (Education)

SECE: Secondary Education (Education)

SECE 5060 - Improvement of Instruction. Designed to assist the educator in the systematic improvement of instruction. Emphasis is on emergent knowledge related to successful classroom practices, techniques of assessment, analysis and action related to the improvement of professional skills. Semester Hours: 3. Cross-listed with: ELED 5060.

SECE 5200 - Classroom Management. Instructional management, physical management, and behavior management are studied as interactive components in the establishment and maintenance of an effective learning environment. Semester Hours: 3. Cross-listed with: ELED 5200.

SECE 5300 - Introductory Curriculum and Methods in Secondary Mathematics. Surveys secondary mathematics curriculum and methods for pre-service teachers. Topics include planning lessons, motivation, grading, constructing tests, problem solving, teaching aids, expository and discovery lessons, teaching concepts, procedures and problem solving. Semester Hours: 3.

SECE 5340 - Multicultural Science Education. This course examines literature in science education related to multicultural issues, topics will be framed by an understanding of equity in diverse, urban classrooms and how it informs curriculum and instruction. Semester Hours: 3. Cross-listed with: ELED 5340.

SECE 5350 - Issues and Problems in Science Education. Recent developments in theory, curriculum, methods, and materials in secondary science, examined for their contribution to the objectives of science education. Semester Hours: 3.

SECE 5400 - Curriculum in Secondary Mathematics. Investigates curriculum in middle and high school mathematics, development, history and trends, and pertinent research. Participants construct and share curriculum relevant to their interest. Semester Hours: 3.

SECE 5401 - Assessment in Mathematics Education. Curriculum-based assessment covering nature of assessment and its relation to evaluation and grading; teacher-made assessments; validity and authentic assessment; techniques for assessing learning of mathematical concepts, procedures, and problem solving. Emphasis on assessment practices of mathematics teachers. Semester Hours: 3.

SECE 5410 - Advanced Methods and Strategies in Secondary Mathematics. An in-depth investigation of specific methods and strategies suitable for teaching mathematics for middle and senior high schools. Participants model and share various strategies, including the expository, collaborative discovery, laboratory, and Socratic methods. Semester Hours: 3.

SECE 5411 - Mathematics Education and Gender. Investigates gender-inclusive curriculum and teaching methods, equity and assessment, mathematical life histories, women in mathematics history, women's individual development and voice, single sex programs, and gender differences. Semester Hours: 3.

SECE 5417 - Structure of Rational Numbers. Emphasizes the use of multiple solution strategies to examine the structure of rational numbers. The assigned problems allow elementary and secondary teachers to investigate the mathematical notions of equivalence, properties, unitization, partitioning, ratios and proportionality. Semester Hours: 3. Prerequisite: Teaching license or permission of instructor. Cross-listed with: ELED 5417.

SECE 5418 - Mathematical Modeling. Elementary and secondary teachers explore settings where mathematics is utilized in everyday activities. Teachers create mathematical models to describe events or situations in the world and use a variety of modeling strategies to solve problems. Semester Hours: 3. Prerequisite: Teacher licensure or permission of instructor. Cross-listed with: ELED 5418.

SECE 5419 - Exploring the Structure of Geometry Using Technology. Develops elementary and secondary teachers' conceptual understanding of geometric properties and theorems through investigations on dynamic computer software. The software enhances and extends teachers' ability to solve complex problems by manipulating abstract ideas on the computer.

Semester Hours: 3. Prerequisite: Teaching license or permission of instructor. Cross-listed with: ELED 5419.

SECE 5420 - Teaching Mathematics to Low Achievers. Problems and characteristics of low achievers, motivation, attitudes, scaffolding with available materials, programs for low achievers, self-esteem, mathematics laboratory and activity approach to teaching mathematics. Appropriate for all grades. Semester Hours: 3.

SECE 5430 - Teaching Aids in Mathematics Education. Examination, production, and use of manipulative aids, audiovisual aids, and other materials for teaching mathematics. Open to elementary and secondary teachers. Semester Hours: 3.

SECE 5440 - Topics in Mathematics Education. An in-depth study of topics such as computers, testing, learning theory and mathematics laboratories. (May be repeated as topics vary.) Semester Hours: 3.

SECE 5460 - Secondary Social Studies Methods and Curriculum Design. Recent developments in theory and materials in the social studies are examined, and present practices are analyzed for their contribution to general goals of social studies education. Appropriate for secondary teachers and elementary teachers with a specialization in social studies. Semester Hours: 3.

SECE 5464 - Teaching About Ethnicity, Race and Prejudice.

Designed to introduce the nature of racial and ethnic groups, prejudice, discrimination and ethno violence. It also includes the teaching about these and related topics and deals with resolving problems of intergroup relations in schools and institutional settings. Semester Hours: 3. Cross-listed with: ELED 5464.

SECE 5465 - Teaching Critical Issues in Social Studies: An Interdisciplinary Approach. An in-depth study of critical social issues related to global or international; ethnicity, race, gender and minorities; cross-cultural studies; and current societal problems. Requires an interdisciplinary approach and covers the structure of the social science disciplines. Semester Hours: 3. Prerequisite: A minimum of 24 semester hours in history and social sciences.

SECE 5480 - Museum Studies in Paleontology. A practical laboratory-based course covering aspects of museum studies related to paleontological collections. Students learn how to stabilize and prepare bones removed from fossil quarries; learn molding and casting techniques for bones and fossils; assist with the cataloging and curation of the collection; and participate in designing museum displays. Semester Hours: 3. Prerequisite: At least one science class. Cross-listed with: GEOL 3415, ELED 5480.

SECE 5490 - Middle School Curriculum. Explores the unique curriculum requirements of transient youth. Topics to be addressed include team teaching, interdisciplinary curricula, flexible scheduling, basic skills development, guidance function, fine arts, practical arts, industrial arts, career education, teaching strategies and management techniques. Semester Hours: 3. Cross-listed with: ELED 5490.

SECE 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. Semester Hours: 3. Cross-listed with: ENVS 5500

SECE 5510 - Teacher Leadership: Theory to Reality. Working with colleagues in schools to make a difference as a team member and a change agent requires knowledge and skills that are 'more than teachers, yet different from administrators' (Danielson, 2006). This course will provide teachers with skill building related to what it takes for teachers to improve schools. Semester Hours: 3. Cross-listed with: ELED 5510.

SECE 5520 - Teacher Leadership: Essential Knowledge. Teacher leaders need expertise about what constitutes a quality curriculum and how best to guide others to develop lessons with assessments that reflect essential standards. They use culturally responsive and differentiated teaching strategies to assure that learning occurs. Semester Hours: 3. Cross-listed with: ELED 5520.

SECE 5530 - Teacher Leadership: Vital Skills. Teacher leaders need skills in collaboration, facilitation and coaching in order to work with colleagues in ways that will optimally impact student learning. This course will provide theory and practice in models of adult learning,

professional development and communication. Semester Hours: 3.
Cross-listed with: ELED 5530.

SECE 5650 - Environmental Education. Theory and practice of conservation education, which include use of resource personnel and the study of curricular and instructional development. Field experiences are incorporated. Primarily oriented to elementary and junior high school. Semester Hours: 3.

SECE 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. Included is a 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. Semester Hours: 3. Cross-listed with: ELED 5660.

SECE 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. Semester Hours: 1 to 4. Cross-listed with: ELED 5780.

SECE 5800 - Curriculum Workshop for Secondary Teachers. Opportunity to construct curriculum relevant to teachers' interests. Topics and credit hours vary. Semester Hours: .5 to 4

SECE 5840 - Independent Study. Semester Hours: 1 to 4.

SECE 5910 - Advanced Practicum in Teaching. This course is not to be used as independent study, but is to be used by students approved in advance by the director of teacher education. This course fulfills the student teaching requirement for students seeking a second endorsement. Semester Hours: 1 to 4. Prerequisite: Permission of instructor.

SECE 5920 - Readings in Secondary Education. Semester Hours: 1 to 4.

SECE 5930 - Internship in Secondary Education. Semester Hours: 3.

SECE 5950 - Master's Thesis. Semester Hours: 1 to 8.

SECE 6100 - Seminar in Secondary Education. Students work on individual topics and report orally and in writing. Semester Hours: 3. Prerequisite: Permission of instructor.

SECE 6110 - Curriculum Development and School Improvement. Places curriculum development in the historical, social, and political context of educational change. Considers underlying concepts and assumptions, examines the implications of implementation theory and practice for school restructuring, and professional development. Semester Hours: 3. Prerequisite: Graduate student status.

SECE 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. Semester Hours: 3. Prerequisite: FNDS 5500 or permission of instructor.

SECE 6840 - Independent Study. Semester Hours: 1 to 4.

SECE 6910 - Geology Field Study in Hawaii for Teachers. Integrated summer field study course in Hawaii with emphasis on science education. Topics include: structural geology/volcanism, marine biology or oceanography, botany, natural energy, astronomy and human interaction. Participants are involved in hands-on science activities utilizing the vast Hawaiian Island resources. Semester Hours: 3.

SECE 6950 - Master's Thesis. Semester Hours: 4.

SJUS: Social Justice (Liberal Arts and Sciences)

SJUS 2000 - Democratic Participation and 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. Semester Hours: 3.

SJUS 2010 - Social Justice: Theories, Narratives, and Technologies. How can citizens of a democracy address social justice issues? This course examines theoretical perspectives relevant to social justice, the narratives which express and question social order, and the technologies which

alternately shape and reflect local, regional, and global cultures.

Semester Hours: 3.

SJUS 4000 - Social Justice Capstone. 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. Semester Hours: 3. Prerequisite: Junior standing.

SL: School Library (Education)

SL 5020 - Collection Development. Principles and practices for developing information collections to meet user needs. Includes selection, evaluation and policy and procedure development for all materials, including print, electronic technologies and multimedia. Semester Hours: 3. Prerequisite: SL 5530.

SL 5030 - Information Literacy and Reference. Teaching, assessment, and integration of information literacy skills and educational technology standards with subject content areas. 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. Semester Hours: 4. Prerequisite: SL 5530, 5110 and 5020.

SL 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. Semester Hours: 2.

SL 5110 - Integrating Instructional Technology Practices in School Libraries. Analyze instructional technology use in school library settings. Discuss current trends and issues related to the use of technology within schools. Emphasis integrating instructional technology that focuses on student achievement and the students' ability to use technology resources that promote critical thinking skills, information evaluation and dissemination skills. Semester Hours: 2.

SL 5160 - Managing School Library Programs. 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 philosophies, copyright and intellectual freedom. Semester Hours: 3. Prerequisite: SL 5530, SL 5110, SL 5120, SL 5130 & SL 5140.

SL 5530 - Foundations of School Librarianship. This course is the first course in the School Library programs and provides an overview of school librarianship. The course is designed to develop an understanding of the history of school library programs, their current place in the public school system and society and their future. Semester Hours: 2.

SL 5911 - School Library Field Experience-Elementary. Provides practical experience in the management of a school library program. Includes 90 hours in an elementary school library plus instruction within an online seminar for practicum coaching and field experience goals and instructional development. Semester Hours: 3. Prerequisite: Prereq or Coreq: SL 5160.

SL 5912 - School Library Field Experience-Secondary. Provides practical experience in the management of a school library program. Includes 90 hours in a secondary (7-12) school library plus instruction within an online seminar for practicum coaching and field experience goals and instructional development. Semester Hours: 3. Prerequisite: Prereq or Coreq: SL 5160.

SL 6720 - Practitioner-Based Research in School Libraries. Analyze, evaluate and interpret published research conducted in library science. Provide an introduction to qualitative and quantitative data collection and data analysis measures. A school library practitioner-based action research project will be produced. Semester Hours: 3. Prerequisite: SL 5160.

SL 6999 - Leadership and Practice in School Libraries. Designed to be the final class in the Master's in School Libraries Program, it is a reflective examination of the nature of contemporary leadership and practice the field and provide a structure and forum for the successful completion of the comprehensive portfolio. Semester Hours: 3. Prerequisite: SL 5020, SL 5110, SL 5160 and SL 5530.

Social Justice: SJUS (Liberal Arts and Sciences)

Social Sciences: SSC (Liberal Arts and Sciences)

SOC: Sociology (Liberal Arts and Sciences)

SOC 1001 - Introduction to Sociology: SS3. A survey course in which the main concepts that define the sociological perspective are presented, and a picture of society is provided by examining major social institutions and forms of social organization within society. Semester Hours: 3.

SOC 1050 - Analysis of Modern Society. Examines various sociological views of modern society, including those of Lundberg, Mills, Riesman, Goffman, Sorokin, Cohen and others. Semester Hours: 3.

SOC 1111 - Freshman Seminar. Semester Hours: 1 to 3.

SOC 2462 - Introduction to Social Psychology: SS3. Studies the development and functioning of persons, especially within a group context, and the dynamics of small groups. Emphasis is on import of symbols for human behavior, development of self-concepts, and the processes of competition and cooperation in group dynamics. Semester Hours: 3.

SOC 3001 - Urban Sociology. The city and urban society are examined in terms of social structure, residential and institutional patterning, process of interaction, demographic processes, and patterns of growth and change. Semester Hours: 3. Cross-listed with: ETST 3001.

SOC 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. Semester Hours: 3. Cross-listed with: WGST 3010.

SOC 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. Semester Hours: 3. Prerequisite: Six hours of social science.

SOC 3030 - Social Change. Process of change in Western societies and its effects on the individual, communities, and economic and political institutions. Semester Hours: 3.

SOC 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 the ways in which they have shaped our society. Semester Hours: 3.

SOC 3050 - Sociology of Education. Topics covered include school socialization, A.D.D. diagnoses and drugs, special education, effects of standardized testing, race, ethnicity, gender, poverty in schools, public policies and funding, teacher burnout, student aspirations, secondary education and local issues in education. Semester Hours: 3.

SOC 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. Semester Hours: 3. Cross-listed with: WGST 3080.

SOC 3111 - Research Methods. Design of social research. Application of statistical techniques and procedures to social phenomena. Semester Hours: 3.

SOC 3121 - Statistics. Quantitative techniques used in analyzing social phenomena. Semester Hours: 4. Prerequisite: MATH 1070 or equivalent.

SOC 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. Semester Hours: 3. Cross-listed with: ETST 3297.

SOC 3300 - Advanced Social Problems. Social problems are the subject of controversy, such as that surrounding controversy may swirl

around definitions (e.g., the social net and the poverty line), around degree of seriousness, about 'causes,' and inevitably about solutions. Controversy also centers on the 'proper' role of the social theorist and social scientist, observer only or activist as Well? While other disciplines study social problems, they are the very heart of the sociology perspective, and the wellspring of sociological inquiry. Semester Hours: 3.

SOC 3460 - The Social Psychology of Intergroup Relations. Study of those aspects of human interaction which deal with individuals perceiving themselves, and/or being perceived by others, as members of a social category. Focuses on the dynamics of intergroup conflicts—how they arise, what course they may take, and how they might be resolved. Semester Hours: 3. Prerequisite: Six hours of sociology, psychology, or any combination of the two.

SOC 3480 - Global Issues. Social issues such as race relations, social inequality, urbanization, family dynamics and global competition are examined using different theoretical perspectives. Existing policies are used to study 'private troubles' and 'public issues' and the relationships among global, national and local levels. Semester Hours: 3.

SOC 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. Semester Hours: 3.

SOC 3500-3550 - Topics in Sociology. Special topics in sociology to be selected by the instructor. Semester Hours: 1 to 3. Note: Can be taken more than once when topics vary.

SOC 3560 - Death and Dying. Designed to examine the attitudes, customs, and institutions related to death and dying in contemporary American society. Several theoretical approaches from a sociological perspective are utilized, as well as historical and cross-cultural data. Semester Hours: 3.

SOC 3600 - Social Relations. The course has two aims: first, to improve the student's abilities to observe, analyze, and understand his own behavior and that of others in everyday interpersonal situations; and second, to improve his ability to see the small group as a social system. The student is expected to demonstrate his abilities by effective participation in his group as well as in periodic written analyses. Semester Hours: 3.

SOC 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. Semester Hours: 3.

SOC 3700 - Sociology of the Family. The family as a social institution. Historical development and contemporary cross-cultural analysis, with emphasis on the contemporary American family. Semester Hours: 3. Cross-listed with: WGST 3700.

SOC 3840 - Independent Study. Semester Hours: 1 to 3.

SOC 3939 - Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: Junior standing and 2.75 GPA.

SOC 4101 - Applied Statistics Using SAS and SPSS I. Teaches the practical statistical tools social scientists use to analyze real-world problems. Split into four modules, each taught by a different instructor. The first module introduces SAS and SPSS; modules 2-4 are problem-based and cover topics such as ANOVA, multivariate regression, and cluster analysis. Semester Hours: 3. Prerequisite: Any statistics course.

SOC 4102 - Applied Statistics Using SAS and SPSS II. Students use the skills they learned in the previous semester to analyze a social issue of their choosing and present their findings. Semester Hours: 3. Prerequisite: SOC 4101. Note: A continuation of SOC 4101. In addition to lectures, weekly one-on-one meetings between faculty and students are required.

SOC 4110 - Sociology of Health Care. Examines the health care institutions of the United States. Issues such as the rising cost, the effect of class, racial and gender inequality, the professionalization and monopolization of roles, the current restructuring, construction of illness and health, managed care, health care for profit and ethics

of health care decisions. Semester Hours: 3. Cross-listed with: SOC 4110.

SOC 4120 - Popular Culture and the American Family. A course in family sociology in which the ways American family is portrayed in the mass media and popular culture are studied. Even though the historical evolution of this reciprocal relationship is not ignored, the focus is on today's relevant issues. Semester Hours: 3. Cross-listed with: SOC 5120.

SOC 4150 - History of Sociological Theory. An analysis of the major contributions and determinants of earlier social analysts to present-day social thought and analysis of pertinent sociological issues. Semester Hours: 3.

SOC 4160 - Contemporary Sociological Theory. The explication of various conceptual approaches to the problems of social order, societal functioning and integration, social conflict, and social structural change by the examination of the work of contemporary theorists. Semester Hours: 3.

SOC 4220 - Population Change and Analysis. The sociological importance of population study. Advanced demographic analysis and population theory. Natality, mortality, problems of population growth and international and internal migrations, population policy, and aspects of population planning and control. Semester Hours: 3.

SOC 4280 - Urban Social Space. The city simultaneously attracts and repulses us. It has openness and beauty; it is also cramped, crowded, and ugly. The city provides us with freedoms undreamed of in other times and places, yet it restricts our movements and activities. This course examines how different professionals have viewed the city, with particular attention to the spaces in the city. Both social and physical spaces are discussed. Semester Hours: 3.

SOC 4290 - Aging, Society and Social Policy. The role of the aged in today's society. Emphasizes interrelationships of the aged with the family, community, work, retirement and leisure. Semester Hours: 3.

SOC 4340 - Juvenile Delinquency. Factors involved in delinquent behavior. Problems of adjustment of delinquents, and factors in treatment and post-treatment adjustment. Semester Hours: 3.

SOC 4440 - Social Stratification. The relations among the concentration of income and wealth, economic organization and power, power and class phenomena in the United States. Semester Hours: 3.

SOC 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. Semester Hours: 3. Cross-listed with: SOC 5680.

SOC 4475 - Self and Identity. A course in social psychology focusing on individuals in social interaction. Focuses on self-conception, identity presentation of self, and self and emotion management. Major theories and research in social psychology literature are examined. Semester Hours: 3. Cross-listed with: SOC 5475.

SOC 4510 - Advanced Study of Social Change. Historical change of societies from one epoch to another (e.g., from feudalism to capitalism) and from one stage to another (e.g., competitive capitalism to monopoly capitalism), with focus on attendant social processes such as development of the working class, the rise of the corporation, the expanding role of the state, the irrationality of growth, and economic crises and imperialism. Semester Hours: 3.

SOC 4520 - Collective Behavior. Social, cultural, and psychological factors affecting behavior in unpredictable situations. An in-depth analysis of social change through such phenomena as riots, crowds, publics and social movements. Semester Hours: 3.

SOC 4610 - Sociology of Religion. An intensive review and analysis of the fundamental tenets of religion as a social institution, with emphasis on present-day religious cults, their beliefs and activities in society. Semester Hours: 3. Cross-listed with: SOC 5610, RLST 4020, 5020.

SOC 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. Semester Hours: 3. Cross-listed with: SOC 5640.

SOC 4650 - Sociology of Adulthood and Aging. An in-depth overview of the theories and research using the life course understanding of adulthood and aging. Adult's lives, transition from adulthood to elderly status, and social policy issues are also studied. Semester Hours: 3. Cross-listed with: SOC 5650.

SOC 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. Semester Hours: 3.

SOC 4770 - Advanced Topics in Sociology. Advanced study of special topics in sociology to be selected by the instructor. Semester Hours: 3. Cross-listed with: SOC 5770. Note: May be repeated for credit when topics vary.

SOC 4771 - Advanced Topics in Sociology. Advanced study of special topics in sociology to be selected by the instructor. Semester Hours: 3. Cross-listed with: SOC 5771. Note: May be repeated for credit when topics vary.

SOC 4772 - Advanced Topics in Sociology. Advanced study of special topics in sociology to be selected by the instructor. Semester Hours: 3. Cross-listed with: SOC 5772. Note: May be repeated for credit when topics vary.

SOC 4773 - Advanced Topics in Sociology. Advanced study of special topics in sociology to be selected by the instructor. Semester Hours: 3. Cross-listed with: SOC 5773. Note: May be repeated for credit when topics vary.

SOC 4774 - Advanced Topics in Sociology. Advanced study of special topics in sociology to be selected by the instructor. Semester Hours: 3. Cross-listed with: SOC 5774. Note: May be repeated for credit when topics vary.

SOC 4831 - Senior Seminar. Seminar for senior sociology majors considering important concepts, issues, and problems in sociology. Semester Hours: 3. Prerequisite: SOC 3111 and 3121.

SOC 4840 - Independent Study. Semester Hours: 1 to 3.

SOC 4910 - Research Practicum. Practical experiences for undergraduates in application of principles of research design and data processing to a social research problem selected by the instructor. Semester Hours: 1 to 3. Prerequisite: Permission of instructor required.

SOC 5000 - Professional Seminar: Sociological Inquiry. Orients new graduate students to key elements of graduate and professional levels of sociological inquiry. Topics include analyses of basic theoretical and epistemological issues, the history and contemporary development of the discipline, essential research programs and an introduction to faculty research. Semester Hours: 3.

SOC 5014 - Classical Sociological Theory. Examines the emergence and development of sociological ideas, concepts, and principles. Introduces students to the historical and social contexts in which theories of society are instituted. Particular attention is paid to the importance of and implication to contemporary sociology made by classical sociologists such as Durkheim, Marx, and Weber. Semester Hours: 3. Prerequisite: SOC 4150.

SOC 5015 - Contemporary Sociological Theory. The explication of various conceptual approaches to the problem of social order, societal functioning and integration, social conflict, and social structural change by the examination of the work of contemporary theorists. Semester Hours: 3. Prerequisite: Must have successfully completed an undergraduate course in contemporary sociological theory and SOC 5014. Note: Required for M.A. students in sociology.

SOC 5024 - Seminar: Research Methods I. Problems and procedures in research design, data collection and processing. Semester Hours: 3. Note: Required for M.A. graduate students in sociology.

SOC 5110 - Sociology of Health Care. Examines the health care institutions of the United States. Issues such as the rising cost, the effect of class, racial and gender inequality, the professionalization and monopolization of roles, the current restructuring, construction of illness and health, managed care, health care for profit and ethics of health care decisions. Semester Hours: 3. Cross-listed with: SOC 5110.

SOC 5120 - Popular Culture and the American Family. A course in family sociology in which the ways American family is portrayed in the mass media and popular culture are studied. Even though the historical evolution of this reciprocal relationship is not ignored, the focus is on today's relevant issues. Semester Hours: 3. Cross-listed with: SOC 4120.

SOC 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. Semester Hours: 3. Note: Required for M.A. graduate students in sociology.

SOC 5220 - Population Change and Analysis. The sociological importance of population study, advanced demographic analysis, and population theory. Semester Hours: 3.

SOC 5430 - Societies in Transition. A description and analysis of changing social structures and social relationships as a response to technological innovation and change. Semester Hours: 3.

SOC 5440 - Seminar: Social Stratification. Historical development of various systems of production of social surplus, its differential distribution among distinct social groups, and the effects on social structure. Semester Hours: 3.

SOC 5475 - Self and Identity. A course in social psychology focusing on individuals in social interaction. Focuses on self-conception, identity presentation of self, and self and emotion management. Major theories and research in social psychology literature are examined. Semester Hours: 3. Cross-listed with: SOC 4475.

SOC 5550 - Seminar: Sociology of the Family. An intensive review and analysis of the family as a social institution. Semester Hours: 3.

SOC 5610 - Sociology of Religion. An intensive review and analysis of the fundamental tenets of religion as a social institution, with emphasis on present-day religious cults, their beliefs and activities in society. Semester Hours: 3. Cross-listed with: SOC 4610, RLST 4020, 5020.

SOC 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. Semester Hours: 3. Cross-listed with: SOC 4640.

SOC 5650 - Sociology of Adulthood and Aging. An in-depth overview of the theories and research using the life course understanding of adulthood and aging. Adult's lives, transition from adulthood to elderly status, and social policy issues are also studied. Semester Hours: 3. Cross-listed with: SOC 4650.

SOC 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. Semester Hours: 3.

SOC 5680 - 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. Semester Hours: 3. Cross-listed with: SOC 4460.

SOC 5750 - Seminar: Criminology. An intensive review and analysis of the literature and research dealing with sociology of crime in modern society. Semester Hours: 3.

SOC 5770 - Advanced Topics in Sociology. Advanced study of special topics in sociology to be selected by the instructor. Semester Hours: 3. Cross-listed with: SOC 4770. Note: May be repeated for credit when topics vary.

SOC 5771 - Advanced Topics in Sociology. Advanced study of special topics in sociology to be selected by the instructor. Semester Hours: 3. Cross-listed with: SOC 4771. Note: May be repeated for credit when topics vary.

SOC 5772 - Advanced Topics in Sociology. Advanced study of special topics in sociology to be selected by the instructor. Semester Hours: 3. Cross-listed with: SOC 4772. Note: May be repeated for credit when topics vary.

SOC 5773 - Advanced Topics in Sociology. Advanced study of special topics in sociology to be selected by the instructor. Semester Hours: 3.

Cross-listed with: SOC 4773. Note: May be repeated for credit when topics vary.

SOC 5774 - Advanced Topics in Sociology. Advanced study of special topics in sociology to be selected by the instructor. Semester Hours: 3.

Cross-listed with: SOC 4774. Note: May be repeated for credit when topics vary.

SOC 5840 - Independent Study. Semester Hours: 1 to 3.

SOC 5910 - Research Practicum. Semester Hours: 1 to 3.

SOC 5920 - Guided Readings in Sociology. Semester Hours: 1 to 3.

SOC 5930 - Internship in Sociology. Semester Hours: 1 to 6.

SOC 5939 - Cooperative Education. Semester Hours: 1 to 6.

SOC 5955 - Master's Thesis. Semester Hours: 1 to 4.

SOC 5964 - Master's Report. Semester Hours: 1 to 4.

SPAN: Spanish (Liberal Arts and Sciences)

SPAN 1000 - Introduction to Cultures of the Spanish Speaking World: AH4. 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. Semester Hours: 3. Note: Taught in English.

SPAN 1010 - Beginning Spanish I. Introduces basic Spanish pronunciation and grammar, useful vocabulary and idioms. Readings and class discussions relating to the Hispanic world. Semester Hours: 5. 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.

SPAN 1011 - Intensive Spanish. SPAN 1011/1021 combines both semesters of the first year, and meets the needs of highly motivated students of the language and culture. Semester Hours: 5. When Offered: *Offered only during the summer term.* Prerequisite: Students having studied Spanish previously should not enroll in SPAN 1011/1021 without first consulting a department advisor. Cross-listed with: SPAN 1021.

SPAN 1020 - Beginning Spanish II. (Continuation of SPAN 1010.) Further development of listening, speaking, reading and writing skills. Semester Hours: 5. Prerequisite: SPAN 1010 with grade of 'C' (2.0) or higher. 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.

SPAN 1021 - Intensive Spanish. SPAN 1011/1021 combines both semesters of the first year, and meets the needs of highly motivated students of the language and culture. Semester Hours: 5. When Offered: *Offered only during the summer term.* Prerequisite: Students having studied Spanish previously should not enroll in SPAN 1011/1021 without first consulting a department advisor. Cross-listed with: SPAN 1011.

SPAN 1111 - Freshman Seminar. Semester Hours: 1 to 3.

SPAN 1995 - Travel Study Topics. For students doing travel study in a Spanish-speaking country; register through the Office of International Education. Semester Hours: 1 to 15.

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. Semester Hours: 3. Prerequisite: SPAN 1020 with a grade of 'C' (2.0) or higher. 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.

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. Semester Hours: 3. Prerequisite: SPAN 2110 with a grade of 'C' (2.0) or higher. 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.

SPAN 2130 - Current Topics in the Spanish-speaking World. A fourth-semester course (parallel to 2120) designed for students majoring or minoring in international affairs, but open to anyone wishing to continue the study of Spanish beyond 2110. Along with development of language skills and grammar review, class work involves contemporary topics in cultural, political, economic and social affairs. Semester Hours: 3. Prerequisite: SPAN 2110 with a grade of 'C' (2.0) or higher or placement exam.

SPAN 2939 - Internship/Cooperative Education. Experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: 15 hours of 2.75 GPA.

SPAN 2995 - Travel Study Topics. For students doing travel study in a Spanish-speaking country; register through the Office of International Education. Semester Hours: 1 to 15.

SPAN 3010 - Advanced Conversation and 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. Semester Hours: 3. Prerequisite: SPAN 2120 or 2130.

SPAN 3020 - Advanced Conversation and 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. Semester Hours: 3. Prerequisite: SPAN 3010.

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. Semester Hours: 3. Prerequisite: SPAN 3010 or upper division standing in Spanish.

SPAN 3070 - 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. Semester Hours: 3. Prerequisite: SPAN 3010 for majors, or permission of instructor for non-majors.

SPAN 3073 - Bilingual Communities: Spanish in a Global Setting. Taught in English; no major or minor credit. Studies Spanish as a language of contact. Emphasis is placed on Spanish in the United States, as well as bilingualism in Spain and Latin America. Semester Hours: 3.

SPAN 3082 - 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. Semester Hours: 3. Prerequisite: Upper division standing in Spanish.

SPAN 3092 - Introduction to Translation II. Second course in a two-semester sequence (see SPAN 3082). Semester Hours: 3. Prerequisite: SPAN 3082, upper division standing in Spanish, or permission of instructor.

SPAN 3100 - Culture and Civilization of Spain. Surveys the development of Spanish civilization—the social, political, economic, religious, literary, and artistic life of Spain—within the framework of the Western tradition, and its later dissemination in the New World. Semester Hours: 3. Prerequisite: Minimum of sophomore standing. Note: Taught in English; no major or minor credit.

SPAN 3212 - Spanish American Culture and Civilization. Surveys the social, political, economic, religious, literary, and artistic life of Spanish America from the conquest to the present. Semester Hours: 3. Prerequisite: SPAN 2120 or 2130. Note: Taught in Spanish for major and minor credit.

SPAN 3221 - Culture and Civilization of Spain I. From prehistoric times through Phoenician, Greek, Roman, and Visigothic eras to the Moorish invasion in 711; the Arab period; the Reconquest; the Catholic Kings; the Imperial Period; and the Inquisition. Semester Hours: 3. Prerequisite: Upper division standing in Spanish.

SPAN 3222 - Culture and Civilization of Spain II. (Continuation of 3221.) Studies the social, intellectual, and artistic development of Spain from the time of the Bourbons (18th century) through the civil war of 1936, and the Franco regime to the restoration of democracy under Juan Carlos I and the present day. Semester Hours: 3. Prerequisite: Upper division standing in Spanish.

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. Semester Hours: 3. Prerequisite: SPAN 2120 or SPAN 2130, or consent of the instructor.

SPAN 3252 - 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. Semester Hours: 3. Prerequisite: SPAN 2120 or 2130 (or equivalent). Note: SPAN 3252 is a prerequisite (previous or concurrent) to all other literature courses taught in Spanish.

SPAN 3300 - Twentieth Century Spanish Literature. The literature of Spain from the beginning of the 20th century to the present through short stories, novels, poems and plays. Semester Hours: 3. Prerequisite: Prereq or coreq: SPAN 3252.

SPAN 3310 - Spanish Writing and Grammar I. A close study of the structure of the language and practice in its written use. Semester Hours: 3. Prerequisite: Upper division standing in Spanish. Note: Recommended for those intending to teach Spanish at the secondary level.

SPAN 3400 - Survey of Spanish Literature I. The most important works in the literature of Spain from the early Hispano-Arabic lyric poems through the golden age of the 17th century. Semester Hours: 3. Prerequisite: Prereq or coreq: SPAN 3252.

SPAN 3410 - Survey of Spanish Literature II. The most important works in the literature of Spain from the 18th century to the present. Semester Hours: 3. Prerequisite: Prereq or coreq: SPAN 3252.

SPAN 3510 - Survey of Spanish American Literature II. The most important works in the literature of Spanish America from the late 19th century to the present. Semester Hours: 3. Prerequisite: Prereq or coreq: SPAN 3252.

SPAN 3550 - Spanish American Short Story. The Spanish American short story from its beginnings in the romantic period of the 19th century to the present. Semester Hours: 3. Prerequisite: Prereq or coreq: SPAN 3252.

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. Semester Hours: 3. Prerequisite: Upper division standing in Spanish.

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. Semester Hours: 3. Prerequisite: Upper division standing in Spanish; SPAN 3700 desirable.

SPAN 3730 - Special Topics in Spanish for International Business. Variable topics not otherwise covered sufficiently in regular courses. Semester Hours: 3. Prerequisite: SPAN 3700. Note: May be taken more than once, provided that the topic is different each time.

SPAN 3830 - Topics in Spanish Literature. Varying topics in Hispanic literature for students not able to read Spanish well. Semester Hours: 3. Note: Taught in English; no major or minor credit. May be taken more than once, provided that the topic is different each time.

SPAN 3840 - Independent Study. Semester Hours: 1 to 3.

SPAN 3939 - Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: Junior standing and 2.75 GPA.

SPAN 3970 - Topics in Spanish Literature. Varying topics in Hispanic literature appropriate the 3000 level, not otherwise covered by regular courses. Semester Hours: 3. Prerequisite: SPAN 3252. Note: Taught in Spanish for major and minor credit. May be taken more than once, provided that the topic is different each time.

SPAN 3995 - Travel Study Topics. For students doing travel study in a Spanish-speaking country; register through the Office of International Education. 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. Semester Hours: 3. Prerequisite: Prereq for SPAN 4010: upper division standing. Cross-listed with: SPAN 5010.

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. Semester Hours: 3. Prerequisite: SPAN 3060. Cross-listed with: SPAN 5020.

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. Semester Hours: 3. Prerequisite: SPAN 3060. Cross-listed with: SPAN 5060.

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. Semester Hours: 3. Prerequisite: SPAN 3060. Cross-listed with: SPAN 5080.

SPAN 4110 - Contemporary Spanish Literature. Major works published since the Spanish Civil War, which ended in 1939. Semester Hours: 3. Prerequisite: SPAN 3252 and preferably at least one additional literature course. Cross-listed with: SPAN 5110.

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. Semester Hours: 3. Prerequisite: Prereq for SPAN 4130: SPAN 3252 and at least one additional literature course. Cross-listed with: SPAN 5130.

SPAN 4150 - Masterpieces of Spanish Literature. The most enduring works in the literature of Spain across the centuries. Semester Hours: 3. Prerequisite: SPAN 3252 and preferably at least one additional course in Hispanic literature. Cross-listed with: SPAN 5150.

SPAN 4160 - Masterpieces of Spanish-American Literature. Focuses on a limited number of outstanding works in Spanish-American literature across the centuries. Semester Hours: 3. Prerequisite: SPAN 3252 and at least one additional course in Hispanic literature. Cross-listed with: SPAN 5160.

SPAN 4220 - Mexican Literature. Mexican literature from pre-Columbian times to the present. Semester Hours: 3. Prerequisite: SPAN 3252 and at least one additional course in Hispanic literature. Cross-listed with: SPAN 5220.

SPAN 4230 - 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. Semester Hours: 3. Prerequisite: SPAN 3252 and one other Spanish/Spanish American literature course at the 3000-level. Cross-listed with: SPAN 5230.

SPAN 4300 - 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. Semester Hours: 3. Prerequisite: SPAN 3252 and preferably at least one additional literature course. Cross-listed with: SPAN 5300.

SPAN 4310 - Seminar in Spanish Creative Writing: Poetry and Short Fiction. A capstone writing course. Semester writing project will be collected poems and short stories. Semester Hours: 3. Prerequisite: SPAN 3252 and one other upper-division literature course, or permission of instructor. Cross-listed with: SPAN 5310.

SPAN 4400 - Romanticism in Spain. The romantic movement in 19th century Spain through plays, poems, essays. Semester Hours: 3. Prerequisite: SPAN 3252 and preferably at least one additional literature course. Cross-listed with: SPAN 5400.

SPAN 4410 - 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. Semester Hours: 3. Prerequisite: SPAN 3252 and at least one additional course in Hispanic literature. Cross-listed with: SPAN 5410.

SPAN 4500 - 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. Semester Hours: 3. Prerequisite: Prereq for SPAN 4500: SPAN 3252 and preferably at least one additional literature course. Cross-listed with: SPAN 5500.

SPAN 4510 - 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. Semester Hours: 3. Prerequisite: SPAN 3252 and at least one additional course in Hispanic literature. Cross-listed with: SPAN 5510.

SPAN 4520 - 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. Semester Hours: 3. Prerequisite: SPAN 3252 and at least one additional course in Hispanic literature. Cross-listed with: SPAN 5520.

SPAN 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. Semester Hours: 3. Prerequisite: SPAN 3252 and at least one additional literature course. Cross-listed with: SPAN 5540 and WGST 4540.

SPAN 4620 - 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. Semester Hours: 3. Prerequisite: SPAN 3252 and at least one additional literature course. Cross-listed with: SPAN 5620.

SPAN 4840 - Independent Study. Semester Hours: 1 to 3.

SPAN 4970 - Special Topics in Literature. Varying topics in Hispanic literature not otherwise covered by regular courses. Semester Hours: 3. Prerequisite: Prereq for SPAN 4970: SPAN 3252 and at least one additional course in Hispanic literature. Cross-listed with: SPAN 5970. Note: May be taken more than once, provided that the topic is different each time.

SPAN 4980 - Special Topics in Linguistics. Varying topics in Hispanic language and literature not otherwise covered by regular courses. Semester Hours: 3. Prerequisite: SPAN 3060 and at least one other upper division Spanish course. Cross-listed with: SPAN 5980. Note: May be taken more than once provided that the topics are different each time.

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. Semester Hours: 3. Prerequisite: Graduate standing.

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. Semester Hours: 3. Prerequisite: Graduate standing in Spanish. Cross-listed with: SPAN 4010.

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. Semester Hours: 3. Prerequisite: Graduate standing in Spanish. Cross-listed with: SPAN 4020.

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. Semester Hours: 3. Prerequisite: Graduate standing in Spanish. Cross-listed with: SPAN 4060.

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. Semester Hours: 3. Prerequisite: Graduate standing in Spanish. Cross-listed with: SPAN 4080.

SPAN 5110 - Contemporary Spanish Literature. Major works published since the Spanish Civil War, which ended in 1939. Semester Hours: 3. Prerequisite: Graduate standing in Spanish. Cross-listed with: SPAN 4110.

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. Semester Hours: 3. Prerequisite: Prereq for SPAN 5130: graduate standing in Spanish. Cross-listed with: SPAN 4130.

SPAN 5150 - Masterpieces of Spanish Literature. The most enduring works in the literature of Spain across the centuries. Semester Hours: 3. Prerequisite: Graduate standing in Spanish. Cross-listed with: SPAN 4150.

SPAN 5160 - Masterpieces of Spanish-American Literature. Focuses on a limited number of outstanding works in Spanish-American literature across the centuries. Semester Hours: 3. Prerequisite: Graduate standing in Spanish. Cross-listed with: SPAN 4160.

SPAN 5220 - Mexican Literature. Mexican literature from pre-Columbian times to the present. Semester Hours: 3. Prerequisite: Graduate standing in Spanish. Cross-listed with: SPAN 4220.

SPAN 5230 - 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. Semester Hours: 3. Prerequisite: Graduate standing. Cross-listed with: SPAN 4230.

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. Semester Hours: 3. Prerequisite: Graduate standing in Spanish. Cross-listed with: SPAN 4300.

SPAN 5310 - Seminar in Spanish Creative Writing: Poetry and Short Fiction. A capstone writing course. Semester writing project will be collected poems and short stories. Semester Hours: 3. Prerequisite: Graduate standing in Spanish. Cross-listed with: SPAN 4310.

SPAN 5400 - Romanticism in Spain. The romantic movement in 19th century Spain through plays, poems, essays. Semester Hours: 3. Prerequisite: Graduate standing in Spanish. Cross-listed with: SPAN 4400.

SPAN 5410 - 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 Rodriguez and others. Semester Hours: 3. Prerequisite: Graduate standing in Spanish. Cross-listed with: SPAN 4410.

SPAN 5500 - 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. Semester Hours: 3. Prerequisite: Graduate standing in Spanish. Cross-listed with: SPAN 4500.

SPAN 5510 - 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. Semester Hours: 3. Prerequisite: Graduate standing in Spanish. Cross-listed with: SPAN 4510.

SPAN 5520 - 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. Semester Hours: 3. Prerequisite: Graduate standing in Spanish. Cross-listed with: SPAN 4520.

SPAN 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. Semester Hours: 3. Prerequisite: SPAN 3252 and at least one additional literature course. Cross-listed with: SPAN 4540 and WGST 4540.

SPAN 5620 - 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. Semester Hours: 3. Prerequisite: Graduate standing in Spanish. Cross-listed with: SPAN 4620.

SPAN 5840 - Independent Study. Semester Hours: 1 to 3.

SPAN 5939 - Internship/Cooperative Education. Semester Hours: 1 to 6.

SPAN 5970 - Special Topics in Literature. Varying topics in Hispanic literature not otherwise covered by regular courses. Semester Hours: 3. Prerequisite: Graduate standing in Spanish. Cross-listed with: SPAN 4970.

SPAN 5980 - Special Topics in Linguistics. Varying topics in Hispanic language and literature not otherwise covered by regular courses. Semester Hours: 3. Prerequisite: Graduate standing in Spanish. Cross-listed with: SPAN 4980. Note: May be taken more than once provided that the topics are different each time.

SPED: Special Education (Education)

SPED 4021 - Exploring Diversity in Content and Pedagogy II. An essential feature of instructional and curriculum design, implementation, and evaluation is the ability of teachers to draw upon students' previous experience, help students make connections between new information and previous knowledge and skills, and support students to transfer new information to real-life contexts and environments. The purpose of this course is to explore multiple aspects of complex processes including: 1) standards-based instruction (e.g., the relationship between standards and curriculum); 2) instructional design including both direct and indirect instruction; and 3) assessment, including both selected response measures as well performance and portfolio assessment; and 4) differentiation in curriculum and instruction so that meaningful instruction becomes accessible to all students. Semester Hours: 2. Prerequisite: IPTE 4006. Admission into the IPTE Program. Cross-listed with: SPED 5021.

SPED 4111 - Teaching For the Success of All Adolescents. Understanding the impact of learner variance due to differences in abilities or disabilities, linguistic experiences, socio-economic backgrounds, and ethnicity on learning and development. These differences are examined through the cognitive, affective, communicative and physical or health domains as well as the socio-cultural context. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship or permission of instructor. Admission into the IPTE Program. Cross-listed with: SPED 5111.

SPED 4112 - Teaching for the Success of All Children. Understanding the impact of learner variance due to differences in abilities or disabilities, linguistic experiences, socio-economic backgrounds, and

ethnicity on learning and development. These differences are examined through the cognitive, affective, communicative and physical or health domains as well as the socio-cultural context. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship or permission of instructor required. Admission into the IPTE Program. Cross-listed with: SPED 5112.

SPED 4150 - Individualizing Instruction for Learners with Challenging Behaviors. Serves as an introduction to the knowledge, skills and dispositions necessary for teachers to proactively and systematically address student needs that underlie the presence of problem behaviors in schools and class rooms. Course content consists of specific strategies to promote social and communication skill development and introduction to functional behavior assessment and intervention, including guidelines for the role of general educators as specified in federal and state regulations. Semester Hours: 1. Prerequisite: SPED 5111 or 5112, IPTE 5120 or 5121. Cross-listed with: SPED 5150.

SPED 4200 - Autism Academy. The purpose of this academy is to provide the paraeducator with information and skills to assist paraeducators in the instruction of students with autism. It gives factual information to dispel the many myths that abound in this field and emphasizes the relationship between communication and behavior. It prepares paraeducators to make and use visual supports, to structure tasks and the environment and to provide appropriate supports for social skills instruction. Semester Hours: 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. Semester Hours: 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. Semester Hours: 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. Semester Hours: 1.

SPED 4740 - Life Skills Academy. This 18 clock hour academy is intended to provide the paraeducator with knowledge and skill in instructional methods and life skill support for youth and young adults who have moderate to severe cognitive, communicative, physical or affective needs. Semester Hours: 1.

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. Semester Hours: 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. Semester Hours: 2. Prerequisite: Completion of special education core or permission of instructor and advisor. Admission into the IPTE Program. Cross-listed with: SPED 5910.

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. Semester Hours: 2. Prerequisite: Completion of CO-TOP academies or permission of the CO-TOP Coordinator.

SPED 5010 - Instructional Strategies for Students with Special Needs. The content of this course extends three essential special education program areas: curriculum, instruction and assessment; to service provision for students with severe support needs. Semester Hours: 3.

SPED 5021 - Exploring Diversity in Content and Pedagogy II. An essential feature of instructional and curriculum design, implementation, and evaluation is the ability of teachers to draw upon students' previous experience, help students make connections between new information and previous knowledge and skills, and support students to transfer new information to real-life contexts and environments. The purpose of this course is to explore multiple aspects of complex processes including: 1) standards-based instruction (e.g., the relationship between standards and curriculum); 2) instructional design including both direct and indirect instruction; and 3) assessment, including both selected response measures as well performance and portfolio assessment; and 4) differentiation in curriculum and instruction so that meaningful instruction becomes accessible to all students. Semester Hours: 2. Prerequisite: IPTE 5006/4006. Cross-listed with: SPED 4021.

SPED 5111 - Teaching For the Success of All Adolescents. Understanding the impact of learner variance due to differences in abilities or disabilities, linguistic experiences, socio-economic backgrounds, and ethnicity on learning and development. These differences are examined through the cognitive, affective, communicative and physical or health domains as well as the socio-cultural context. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship or permission of instructor. Cross-listed with: SPED 4111.

SPED 5112 - Teaching for the Success of All Children. Understanding the impact of learner variance due to differences in abilities/disabilities, linguistic experiences, socio-economic backgrounds, and ethnicity on learning and development. These differences will be examined through the cognitive, affective, communicative and physical/health domains as well as the socio-cultural context. Semester Hours: 3. Prerequisite: Concurrent enrollment in an internship or permission of instructor required. Cross-listed with: SPED 4112.

SPED 5130 - Speech/Language Characteristics of Students with Severe Communication Needs. Provides a basis for identification and description of speech and language dysfunctions of students with severe communication needs. Careful attention is given to the transdisciplinary nature of speech or language and its effects on cognitive, affective or motor functioning. Semester Hours: 3. Prerequisite: SPED 5600, 5010, and IPTE 5120 or permission of instructor.

SPED 5140 - Advanced Assessment in Special Education. Provides the practitioner with an understanding of the special education assessment process as specified by federal and state guidelines. Students analyze formal and informal tests as well as observe and participate in performing assessments. Semester Hours: 4. Prerequisite: IPTE 5000, 5001, 5020, MATH 3040, SPED 5112, 5021, 5320 and 5600 or permission of instructor.

SPED 5150 - Individualizing Instruction for Learners with Challenging Behaviors. Serves as an introduction to the knowledge, skills and dispositions necessary for teachers to proactively and systematically address student needs that underlie the presence of problem behaviors in schools and class rooms. Course content consists of specific strategies to promote social and communication skill development and introduction to functional behavior assessment and

intervention, including guidelines for the role of general educators as specified in federal and state regulations. Semester Hours: 1. Prerequisite: SPED 5111 or 5112, IPTE 5120 or 5121. Cross-listed with: SPED 4150.

SPED 5151 - Positive Behavior Support. Provides in-depth knowledge, skills, and dispositions for special educators and other school professionals who lead systematic school renewal efforts to promote Positive Behavioral Support (PBS). The foci of this course are threefold: 1) to promote PBS at the level of the school and classroom; 2) to develop effective behavioral support teams; and 3) to lead the process of functional assessment and intervention for individual students whose problem behaviors are persistent and severe. Federal guidelines and Colorado regulations regarding functional assessment and intervention are addressed as well. Semester Hours: 2. Prerequisite: SPED 4150 or SPED 5150 or concurrent enrollment in an internship, or permission of instructor required.

SPED 5160 - Medical/Physical Challenges of Students with Special Needs. Provides an overview of the medical, sensory, communicative, and physical issues for students with special needs. Specific competencies include: identifying, examining, evaluating, and organizing a set of community resources to meet a wide range of medical and/or physical challenges. Semester Hours: 1.

SPED 5170 - Individualizing Instruction for Diverse Learners. Provides frameworks for understanding and choosing from an array of instructional strategies that can be incorporated into the instructional design, assessment and implementation processes that meet the needs of diverse learners, particularly students with disabilities and students learning English. Semester Hours: 1. Prerequisite: SPED 4111/5111 or SPED 4112/5112.

SPED 5180 - Curriculum Planning for Students with Special Needs. Designed to give teachers a framework for providing functional learning experiences in the domains of education, community access, employment, independent living, and social/recreational skills of students in special education. Emphasis is placed on creating, implementing, and evaluating educational placements for subsequent environments. Semester Hours: 3. Prerequisite: SPED 5010, 5600, IPTE 5000, 5120 and EPSY 5240 or permission of instructor.

SPED 5250 - Effective Practices for Young Children with Autism Spectrum Disorders. This course provides the learner with an understanding of ASD and provides information about evidenced based practices and practical teaching strategies. It provides a 20 hour hands on practicum component that allows students to implement strategies learned in class under the supervision of the instructor. Semester Hours: 3. Prerequisite: Taking online Autism 101 www.pdcenter.org.

SPED 5260 - Effective Practices for Elementary Children with Autism Spectrum Disorders. The purpose of this course is to emphasize evidence-based practices and practical teaching strategies for the elementary education student with ASD. Developmentally appropriate practices with an emphasis on educational strategies, inclusion and working collaboratively with other professionals and families will be embedded in this course. Semester Hours: 3. Prerequisite: Taking online Autism 101 www.pdcenter.org.

SPED 5270 - Effective Practices for Teenagers/ Young Adults with Autism Spectrum Disorder (ASD). The purpose of this course is to provide a thorough understanding of ASD and effective strategies/ evidence-based practices for students, ages 13-21. Developmentally appropriate practices with an emphasis on educational strategies, inclusion, transition and working collaboratively with other professionals and families will be embedded in this course. Semester Hours: 3. Prerequisite: Taking online Autism 101 www.pdcenter.org.

SPED 5300 - Collaborating In Schools and Communities. 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. Semester Hours: 3.

SPED 5310 - Collaboration with Families. Provides the school professional with the knowledge, skills, and values that foster effective working relationships with parents and families of the students they serve. Semester Hours: 1.

SPED 5320 - The Use of Technology in Special Education. Specifically designed for the special educator, this course addresses the use of computers with students in special education. Issues in augmentative communication, adaptation of software authoring systems, and adaptive hardware levels are addressed. Semester Hours: 2.

SPED 5400 - 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. Semester Hours: 3. Prerequisite: EPSY 5240, IPTE 5000, IPTE 5020, IPTE 5120, SPED 5112, SPED 5021, SPED 5140, SPED 5320, SPED 5600, or permission of instructor.

SPED 5500 - Transition and Secondary Issues in Special Education. Provides the practitioner with an understanding of the Special Education transition process as specified by federal and state guidelines. The content of this course focuses on the design and implementation of transition planning that meets students' physical, affective, cognitive, and communicative needs across the contexts of school, community, family life, career and vocation, and recreation/leisure. Semester Hours: 2.

SPED 5600 - Special Education for School Professionals. Designed for school professionals to compare and contrast service delivery options and to understand special education laws and underlying assumptions of special education practices. Through extensive study of original sources and current texts, students gain a comprehensive knowledge base for use in school applications. Readings and lectures are supplemented with direct observation of special education processes and instruction. Semester Hours: 3.

SPED 5780 - Literacy Intervention for Students with Disabilities. 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. Semester Hours: 3. Prerequisite: IPTE 4000 or IPTE 5000 and IPTE 4001 or IPTE 5001 or previous literacy course work with permission of instructor.

SPED 5800 - Workshop: Topics in Special Education. Semester Hours: 1 to 4.

SPED 5840 - Independent Study. Semester Hours: 1 to 4.

SPED 5910 - 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. Semester Hours: 2. Prerequisite: Completion of special education core or permission of instructor and advisor. Cross-listed with: SPED 4910.

SPED 5911 - 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. Semester Hours: 2. Prerequisite: SPED 5910.

SPED 5912 - 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. Semester Hours: 3. Prerequisite: SPED 5910 and SPED 5911.

SPED 5913 - 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. Semester Hours: 1 to 6. Prerequisite: SPED 5910, SPED 5911, SPED 5912 or permission of instructor and/or advisor.

SPED 6100 - Communication Development for Students with Severe to Profound Needs. An in-depth analysis of the development of communicative competence in students with severe or profound needs. Semester Hours: 3. Prerequisite: Completion of special education core or permission of instructor.

SPED 6300 - Teaching Methods for Students with Severe Communication Needs. Offers training in defining and elaborating the needs of students identified as having severe communication needs. Students learn to expand and apply various theories of instruction. They will administer and interpret procedures for assessing speech and language skills. They will be able to plan for maintenance and generalization within the student's environment. Semester Hours: 3. Prerequisite: Permission of instructor.

SPED 6950 - Master's Thesis. Semester Hours: 4.

SPSY: School Psychology (Education)

SPSY 5600 - Functional Behavior Assessment and Planning. Prepares educational professionals in functional behavior assessment as it applies to the development of behavioral support plans. Students gain knowledge and experience in working collaboratively with others to design strategies that help students with challenging behaviors to be more successful in school. These strategies include the implementation of environmental supports and skills training, as well as behavioral interventions. Semester Hours: 3.

SPSY 5800 - Workshop: Topics in School Psychology. Semester Hours: 1 to 3.

SPSY 5840 - Independent Study: SPSY. Semester Hours: 1 to 4.

SPSY 6000 - BrainSTARS: TBI-Strategies for Teams and Re-Educ. This interdisciplinary course provides a knowledge base in Traumatic Brain Injury (TBI) in children utilizing foundational learning experiences in sources of brain injury, various sequelae, interventions, educational modifications, IEP development, and resources for educators and families of children with TBI. Semester Hours: 3. Prerequisite: Admission to TBI Certification Program.

SPSY 6020 - Consultation and Leadership in TBI. This interdisciplinary course focuses on consultation, teamwork and leadership strategies needed for providing family-centered, culturally competent, community-

based services for children with traumatic brain injury and other disabilities and their families. Semester Hours: 3. Prerequisite: Admission to TBI Certification Program.

SPSY 6040 - Applied Research in TBI for School Psychologists.

This seminar focuses on the development of skills in conducting applied research with children and youth who have suffered a traumatic brain injury and addresses the need for school psychologists to develop and interpret research designs used for applied research. Semester Hours: 3. Prerequisite: Admission to TBI Certification Program.

SPSY 6100 - School Psychology: Professional & 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. Semester Hours: 3. Prerequisite: Admission to School Psychology Program.

SPSY 6150 - Psychoeducational Assessment I. Focuses on psychoeducational assessment of children from infancy to adolescence. Primary emphasis is directed toward cognitive and achievement evaluation in clinical and school settings. Topics include selection, administration and interpretation of individually administered tests; an introduction to psychological report writing and historical, theoretical and psychometric issues associated with cognitive ability and processing. Test administration is required. Semester Hours: 4. Prerequisite: REM 5300 or equivalent and permission of instructor.

SPSY 6160 - Psychoeducational Assessment II. An in-depth study of the major techniques of formal and informal assessment and their applicability to problems found in psychoeducational settings. Administration and interpretation of special ability, personality, and achievement tests with attention to case study integration is required. Semester Hours: 3. Prerequisite: SPSY 6100 and 6150.

SPSY 6200 - Risk, Resilience, and Prevention in School Mental Health. Examines sources of biological and social risk that prevent children from infancy through adolescence from reaching their full adult potential, the prevalence of these risk factors in North American communities, and the wellness models of intervention that ameliorate the effects of risk factors before problems manifest themselves and become disabling. Semester Hours: 3.

SPSY 6300 - Legal and Ethical Issues in School Psychology. Examines the legal and ethical issues in the practice of school psychology include current professional issues; national, state and local statutes; regulations and case law that govern the practice of school psychology; ethical standards; and ethical decision making of the profession. Semester Hours: 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. Semester Hours: 4. Prerequisite: EPSY 5100 or EPSY 5140.

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. Semester Hours: 3.

SPSY 6410 - Psychoeducational Services for Linguistically Diverse Students. Prepares students to provide current 'best practices' in cognitive assessment and psychotherapeutic services for students who are linguistically diverse. Attention will be paid to differentiating between students with language disorders and students in the process of acquiring English as a second language. Service recommendations will be grounded in an understanding of the unique psychological and educational needs of linguistically diverse students and the legal and ethical standards governing their education. Semester Hours: 3. Prerequisite: 30 graduate semester hours in the School Psychology program.

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. Semester Hours: 3. Prerequisite: SPSY 6350 and CPCE 5100 (or equivalent) and experience required.

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. Semester Hours: 3. Prerequisite: REM 5100, REM 5300 and SPSY 6350.

SPSY 6500 - Identifying and Planning for the Mental Health Needs

of Children and Adolescents. Provides students with advanced concentrated study of the etiology, diagnostic criteria, recommend intervention strategies, and diagnostic procedures appropriate for the identification of children's mental health needs. Semester Hours: 3.

SPSY 6911 - School Psychology Practicum. This 500 hour practicum allows students to integrate theory with school psychology practice under supervision of a licensed school psychologist. Consultation, psycho-educational assessment, and other school psychological services are stressed. Semester Hours: 1 to 6. Prerequisite: SPSY 5600, SPSY 6100, SPSY 6150, and SPSY 6160.

SPSY 6930 - School Psychology Internship. The internship stresses the professional practice of school psychology in a psychoeducational facility. Field experiences will encompass an array of psychological services. Semester Hours: 1 to 6. Prerequisite: CPCE 5100, SPSY 6911 and permission of instructor.

SPSY 6935 - Practicum in Evidence-Based Interventions: TBI.

Practice Implementing interventions with children and youth with a variety of behavioral, learning, and emotional problems related to traumatic brain injury. Includes special emphasis on identifying and implementing evidence-based interventions including the BrainSTARS curriculum and consultation methodology, under supervision. Semester Hours: 3. Prerequisite: Admission to BRI Certification Program.

S SC: Social Sciences (Liberal Arts and Sciences)

S SC 5000 - 19th Century Philosophy. Covers the systematic work of such German idealists as Hegel, Fichte, and Shelling, as well as responses to those systems by such authors as Marx, Kierkegaard, and Nietzsche. Semester Hours: 3. Prerequisite: PHIL 3002 or 3022. Cross-listed with: PHIL 4000/5000 and HUM 5000.

S SC 5013 - Philosophical Problems in the Social Sciences and Humanities. Presents an overview of key theoretical issues currently emerging across academic disciplines. Examines questions about reality, knowledge, ethics that affect social research and writing in the humanities. Readings explore how contemporary philosophical and cultural discourses have altered theory and method. Assignments include influential theoretical pieces by key historical and contemporary thinkers, examples of application in social research, and interpretations of thought and affect in cultural contexts. Semester Hours: 3. Cross-listed with: HUM/PHIL 5013.

S SC 5020 - Elements of Social Thought. Introduces students to the disciplines that comprise the social sciences (classical anthropology, sociology, sociology of religion, philosophy of history, political theory, classical psychology, etc.). Provides necessary tools for interdisciplinary students to understand the social infrastructure of contemporary society. Semester Hours: 3. Cross-listed with: HUM 5020 and PHIL 5020.

S SC 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. Semester Hours: 3.

S SC 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. Semester Hours: 1 to 3.

S SC 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. Semester Hours: 3. Prerequisite: An introductory course in philosophy. Cross-listed with: PHIL 4101, 5101, HUM 5101.

S SC 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. Semester Hours: 3. Cross-listed with: PHIL 4242, PHIL 5242, HUM 5242.

S SC 5250 - 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. Semester Hours: 3. Cross-listed with: PHIL 4250/5250 and HUM 5250.

S SC 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. Semester Hours: 3.

S SC 5520 - The City Beautiful: Art, Architecture and Theory in Urban History. How did cities develop and what were the buildings that filled these spaces? Posing this question initially, this course takes a case-study approach to surveying the concerns confronting different cultures as they developed their urban environments sociologically, anthropologically, architecturally and spatially. Semester Hours: 3. Cross-listed with: HUM 5520.

S SC 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. Semester Hours: 3.

S SC 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. Semester Hours: 3. Cross-listed with: HUM 5550 and PHIL 5550.

S SC 5600 - Philosophy of Religion. Nature of religion and methods of studying it. Semester Hours: 3. Cross-listed with: HUM 5600, PHIL 4600, 5600, RLST 4060, and 5060.

S SC 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. Semester Hours: 3. Cross-listed with: HUM 5650 and PHIL 5650.

S SC 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. Semester Hours: 3. Cross-listed with: HUM 5720.

SC 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. Semester Hours: 3. Cross-listed with: HUM 5750, PHIL 5755.

SC 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. Semester Hours: 3. Cross-listed with: P SC 5830.

SC 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. Semester Hours: 3. Cross-listed with: PHIL 4833/5833 and HUM 5833.

SC 5840 - Independent Study. Semester Hours: 1 to 3.

SC 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. Semester Hours: 3. Cross-listed with: PHIL 4920, 5920, HUM 5920.

SC 5933 - Philosophy of Eros. Why is philosophy an erotic activity, and what are the implications of this insight? We will explore these issues, first, by reading Plato's erotic dialogues: *Lysis*, *Symposium* and *Phaedrus*. Then we will focus on Freud's influential (and controversial) appropriation of Plato's thought in the writings that span his career, from *The Interpretation of Dreams* (1900) to *Civilization and its Discontents* (1930) and beyond. Finally, we will survey post-Freudian theories of eros, such as Michel Foucault's *History of Sexuality*, as well as the more recent contributions of thinkers such as Jonathan Lear, Thomas Nagel, Martha Nussbaum and Slavoj Žižek. Semester Hours: 3. Cross-listed with: HUM 5933, PHIL 4933, PHIL 5933, WGST 4933.

SC 5939 - Internship/Cooperative Education. Semester Hours: 1 to 4.

SC 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. Semester Hours: 3. Cross-listed with: WGST 6010.

SC 6950 - Master's Thesis. Semester Hours: 1 to 8.

SC 6960 - Master's Project or Report. Research which may be based on field work. Semester Hours: 1 to 6.

Student Exchange: EXCH

SUST: Sustainability (Liberal Arts and Sciences)

SUST 3010 - The Non-Sustainable Past. This is the first of a two-course sequence that assesses the interrelations among the historical, political, cultural, ecological, and economic aspects of contemporary environmental issues. SUST I focuses on the non-sustainable use of water, land, energy, manufactured goods, and food. Semester Hours: 3. Prerequisite: 1 Natural Science Core and 1 Social Science Core.

SUST 3011 - The Sustainable Present. This is the second of a two-course sequence that examines the interrelations among the historical, political, cultural, ecological, and economic aspects of contemporary environmental issues. SUST II provides students with theoretical perspectives on sustainability through a series of current, problem-oriented case studies. Semester Hours: 3. Prerequisite: 1 Natural Science Core and 1 Social Science Core.

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. Semester Hours: 3. Prerequisite: SUST 3011. Note: Topics variable depending on region under study, student interest, and faculty specialty.

T ED: Teacher Education (Education)

T ED 1111 - TEACH - Imagine the Possibilities. What's possible with a career in teaching? Education offers so many possibilities for future teachers and concerned citizens. In this seminar, you'll explore education through interactive, field-based experiences while collaborating with peers, teacher education faculty and leaders in today's urban and diverse schools. Semester Hours: 3.

T ED 2400 - Issues in Chicano/a Education. A historical overview of segregation, landmark court cases, and immigration policy in the education of Chicanos/as in Colorado and nationally from 1900 to the present is offered. The intersection of these issues in the education of undocumented students is also examined. Semester Hours: 3. Cross-listed with: ETST 2400.

T ED 4800 - Workshop: Teacher Education. This is a workshop course and the description varies each time the course is offered. Semester Hours: .5 to 4.

T ED 5000 - Special Topics: Teacher Education. This is a workshop course and the description will vary each time the course is offered. Semester Hours: .5-4.

THTR: Theatre (Arts & Media)

THTR 1001 - Introduction to Theatre: AH1. Discussion, workshops, and lectures designed to discover, analyze, and evaluate all aspects of the theatre experience: scripts, acting, directing, staging, history, criticism and theory. Play-going and field trips to several Denver-area theaters, demonstrations and participation in live productions. This course will not satisfy any degree requirements for Theatre or Film majors. Semester Hours: 3.

THTR 1050 - Video Production/Post-Production I. Students gain knowledge of single camera video techniques and are introduced to nonlinear digital editing. Course work is hands-on and collaborative, with several projects shot and edited. Learning centers on storytelling, including pacing and aesthetics. Semester Hours: 4. Prerequisite: BA TFVP majors, minors. Cross-listed with: FILM 1050.

THTR 1100 - Introduction to Theatre, Film and Television. An introduction to dramatic and cinematic texts, styles and productions; students will research and analyze a play and develop it into a film script. They will present their understanding by storyboards and multi-media presentations, exams and written work. Semester Hours: 3. Prerequisite: Majors, minors or permission of instructor. Cross-listed with: FILM 1100.

THTR 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. Semester Hours: 3. Prerequisite: Majors, minors or permission of instructor. Note: Introduction to Art or Art Survey I is strongly recommended, but not required.

THTR 1550 - Scriptwriting I. Each student conceptualizes, designs and creates short dramatic scripts. These scripts are for stage and screen, with production lengths from one to ten minutes. Instruction includes story development through first draft and rewrites, incorporation of critical feedback and the merger of image and idea to convey dramatic concepts. Students compare theatrical and video performance realization. Semester Hours: 3. Prerequisite: Majors, minors or permission of instructor. Cross-listed with: FILM 1550.

THTR 1611 - Acting Lab I. Students will perform scenes, have required readings and write research papers introducing them to the

basic performance skills required for Stage and Screen Acting. This work will provide a foundation and vocabulary for future projects, where students interact with performers Semester Hours: 3. Prerequisite: BA TFVP majors, minors. Cross-listed with: FILM 1611.

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. Semester Hours: 3. Cross-listed with: MUS 2450.

THTR 2530 - Acting: Character and Staging. Fully prepared scene studies leading to advance work in characterization and staging. Methods of discovering and utilizing the range of creative potential play scripts from the current production season are emphasized. Semester Hours: 3. Prerequisite: Voice and Movement I (or equivalent), and Performance and Visualization I and II (or equivalent).

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. Semester Hours: 3.

THTR 2560 - Topics in Theatre. 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. Semester Hours: 3. Prerequisite: Performance Visualization I & II or permission of instructor.

THTR 2700 - Art for the Theatre. Students will study principles of theatre and screen productions design. They will do exercises in drawing, sketching, drafting, rendering and model building with practical application towards theatre, film, and video design techniques. Upon completion, student will have a basic production design skills. Semester Hours: 3.

THTR 2840 - Independent Study. Semester Hours: 1 to 3. Prerequisite: Written permission of the supervising instructor.

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. Semester Hours: 3. Prerequisite: THTR/FILM 1600 or THTR/FILM 1610 or instructor permission.

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. Semester Hours: 3. Prerequisite: THTR/FILM 1611.

THTR 3531 - Theatre of Social Responsibility. The research and development of a one-act interactive theatre piece based on a selected social, political, or community concern, (peer pressure, gender identification and substance abuse) which are toured to appropriate locales for performances and follow-up workshops and discussions. Semester Hours: 3. Prerequisite: At least one Arts and Media class or permission of instructor following an interview.

THTR 3540 - Directing: Text and Analysis. Explores the director's analytical processes and interpretative choices in preparing a script for production with primary focus on representational theater. Semester Hours: 3. Prerequisite: Performance Visualization I & II or permission of instructor.

THTR 3560 - Topics in Theatre. Various topics in the study of the theatre of special interest to majors with an emphasis in theatre. Semester Hours: 1 to 3.

THTR 3610 - Performance: Theory/History/Criticism I. Part one of two semester course sequence exploring questions of dramatic theory and dramaturgy in context of the development of Western Theater before 1850 and an analysis of historical modes of production, dramatic text and artistic creation in relation to contemporary theatrical practice.

Semester Hours: 3. Prerequisite: THTR 1100 or FILM 1100 or permission of instructor.

THTR 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. Semester Hours: 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. Semester Hours: 3. Prerequisite: THTR/FILM 1100 and THTR 2700 or permission of instructor.

THTR 3730 - Scene Design. Introduces the principles and practices of scenic design for the theatre. Emphasizes textual analysis, the aesthetic and practical elements of design, design development and theatrical graphics. Requirements include related experiences working departmental production. Semester Hours: 3. Prerequisite: THTR/FILM 1100 and THTR 2700 or permission of instructor.

THTR 3740 - Costume Design. Introduces the principles and practices of costume and make-up design for the theatre. Costume design focuses on basic figure drawing, practical elements of design, design development and different costume rendering techniques. Make-up design encompasses basic and specialty make-up application along with creating life masks. Semester Hours: 3. Prerequisite: THTR 1100 or FILM 1100 and THTR 2700 or permission of instructor.

THTR 3760 - Sound Design for the Theater. Studies sound design with practical application towards usage in the theatrical discipline. Includes studio techniques, live playback, script analysis, graphic techniques for sound plots and selection and recording techniques to amplify or otherwise manipulate the performer's voice, recreate sounds as they naturally occur and influence the emotional content of the drama. Semester Hours: 3. Prerequisite: THTR/FILM 1100 or permission of instructor.

THTR 3820 - Production Process. Part of four course sequence; students gain theoretical and practical applications of the tools, vocabulary and experience in a variety of presentations. Students participate as crewmembers for both theatrical and film events. They maintain a record/portfolio of their participation. Semester Hours: 2. Prerequisite: Majors, minors or permission of instructor. Note: Must be taken 2 times for BA degree.

THTR 3838 - Applications Seminar. Reflection on the intellectual competencies, artistic capabilities and skill sets gained throughout student's academic career. Coursework in this seminar includes investigation of career opportunities and trends in theatre. This course is designed to be an alternative if THTR 3939-Internship, is not appropriate or available. Semester Hours: 1 to 3. Prerequisite: Senior standing.

THTR 3840 - Independent Study. Semester Hours: 1 to 3. Prerequisite: Written permission of supervising instructor.

THTR 3910 - BA Junior Project. This course consists of structured work and independent work sessions assisting student with portfolio and career path. Students will be required to work on planning an event, either in theatre or film and produce professional portfolio for faculty review. Semester Hours: 1. Prerequisite: BA majors, minors, junior status or permission of instructor. Cross-listed with: FILM 3910. Note: Not for BFA majors.

THTR 3939 - Internship/Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Semester Hours: 1 to 3. Prerequisite: Junior standing and 2.75 GPA.

THTR 4530 - Acting: Character and Media. Provides the study, skill development and workshop experience for the actor in media work-film, television, video and voice over. Semester Hours: 3. Prerequisite: THTR 1611 or FILM 1611. Cross-listed with: THTR 5530.

THTR 4540 - Directing: Staging and Process. Explores the Director's contemporary staging options, rehearsal processes and production

development of text and non-text-based work in the context of traditional as well as experimental approaches to theatricality. Semester Hours: 3. Prerequisite: THTR 1100 or FILM 1100. Cross-listed with: THTR 5540.

THTR 4550 - Playwriting: The Short Form. Writing workshop in one-act plays, with special emphasis on the demands of production: space, acting, staging conventions and techniques. Semester Hours: 3. Prerequisite: A creative writing course or permission of instructor. Cross-listed with: THTR 5550.

THTR 4560 - Topics in Theatre. Various topics in the study of the theatre of special interest to acting majors, with an emphasis in theatre. Semester Hours: 1 to 3.

THTR 4610 - Performance: Theory/History/Criticism II. Part two of two semester course sequence exploring questions of dramatic theory and dramaturgy in context of the development of Western Theater after 1850 and an analysis of historical modes of production, dramatic text and artistic creation in relation to contemporary theatrical practice. Semester Hours: 3. Prerequisite: Studio II or permission of instructor.

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. Semester Hours: 3. Prerequisite: THTR 1100 and 1110.

THTR 4760 - Topics in Design. A special topics investigation of trends in production design and experimental practices in traditional and non-traditional endeavors. Semester Hours: 3. Prerequisite: THTR 3730 and 4730 or permission of instructor.

THTR 4840 - Independent Study. Semester Hours: 1 to 3. Prerequisite: Written permission of supervising instructor.

THTR 4910 - BA Senior Project. This course consists of structured and independent sessions of advanced work assisting senior students with portfolios and careers. Students will work on planning an event, either in theatre or film and will produce a portfolio to professional standards for faculty review. Semester Hours: 1. Prerequisite: Majors, minors, THTR 3910 and permission of instructor. Cross-listed with: FILM 4910.

THTR 4999 - Senior Seminar & Project. A two semester seminar integrating the development of four capstone projects (research, creative work, collaborative process and service/outreach) with a continuing forum focused on current issues in professional practice. Semester Hours: 3. Prerequisite: Senior status in Theater.

THTR 5530 - Acting: Character and Media. Provides the study, skill development and workshop experience for the actor in media 'work-film', television, video and voice over. Semester Hours: 3. Prerequisite: THTR/FILM 1611 or permission of instructor. Cross-listed with: THTR 4530.

THTR 5540 - Directing: Staging and Process. Explores the Director's contemporary staging options, rehearsal processes and production development of text and non-text-based work in the context of traditional as well as experimental approaches to theatricality. Semester Hours: 3. Prerequisite: THTR/FILM 1100. Cross-listed with: THTR 4540.

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. Semester Hours: 3. Prerequisite: A creative writing course or permission of instructor. Cross-listed with: THTR 4550.

THTR 5560 - Topics in Theatre. Covers different areas of theatre. Can be taken more than once for credit when topics vary. Semester Hours: 1 to 3. Prerequisite: Permission of instructor.

THTR 5840 - Independent Study. Semester Hours: 1 to 3. Prerequisite: Written permission of supervising instructor.

U D: Urban Design (Architecture and Planning)

U D 6610 - Infrastructure Studio. Introduces urban structure and morphology, presenting city as complex, ecological organism comprised of interrelated systems. Working on urban/metropolitan scale, students deconstruct city into series of infrastructural layers, then recompose and restructure it in a more integrated fashion. Semester Hours: 6.

U D 6611 - Regulatory Studio. Advances understanding of tools, methods and practice of urban design. Operating on neighborhood scale, studio emphasizes proactive role designers play in shaping regulations. Students consider real estate development economics, aesthetic criteria, historic preservation, and methods of effective community participation. Semester Hours: 6.

U D 6612 - Urban Synthesis Studio. Synthesizes learning from previous studios, emphasizing exploration and experimentation on variety of scales. Civic engagement is paramount component, with the studio taking place in a variety of challenging contexts, including metropolitan regions in China, India and the Middle East. Semester Hours: 6.

U D 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. Semester Hours: 3.

U D 6641 - Design Process/Practice. Advances current practice by exploring innovative methods of design analysis, production, representation, and communication. Community participation and civic engagement are integral components of seminar, and students are introduced to business of urban design through contact with prominent urban design professionals. Semester Hours: 3.

U D 6642 - 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. Semester Hours: 3.

U D 6643 - Graphics for Planners. Professional planners must be able to communicate their design concepts through graphical means. Students will learn to communicate with use of hand and technical drawings, color renderings, computer modeling and graphic layout design. Semester Hours: 3. Cross-listed with: URP 5500.

U D 6686 - Special Topics in Urban Design. Various topical concerns are offered in urban design history, theory, elements, concepts, methods, implementation strategies, and other related areas. Semester Hours: 1 to 6.

U D 6840 - Independent Study. Studies initiated by students or faculty and sponsored by a faculty member to investigate a special topic or problem related to urban design. Semester Hours: 1 to 3.

U D 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. Semester Hours: 3.

UHL: University Honors and Leaders

UHL 1100 - Introduction to University Honors and Leadership.

The UHL 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. Semester Hours: 3.

UHL 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. Semester Hours: 3. Prerequisite: UHL 1100.

UHL 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. Semester Hours: 3.

UHL 3502 - The History and Literature of Science in the 19th Century. This course will examine the literature of the 19th Century, the history of science in that period, and how those works and that history impact how we think about science today. Semester Hours: 3. Prerequisite: UHL 1100.

URP: Urban and Regional Planning (Architecture and Planning)

URP 5500 - Graphics for Planners. Professional planners must be able to communicate their design concepts through graphical means. Students will learn to communicate with use of hand and technical drawings, color renderings, computer modeling and graphic layout design. Semester Hours: 3. Cross-listed with: U D 6643.

URP 5501 - Planning Issues and Processes. Provides an overview of planning history and theory. The philosophical, political, and economic roots of the various theories are discussed. Ideas are placed in the context of the planning profession's history and its present aims, interests, and ethics. Semester Hours: 3.

URP 5510 - Planning Methods I. Focuses on application of methodological techniques commonly used in planning practice. Course covers data collection, management, analysis, communication and presentation. Semester Hours: 3. Prerequisite: Major topics include primary/secondary data analysis, database construction, descriptive and inferential statistics, sampling, probability distributions, hypothesis testing, and correlation. Cross-listed with: GEOG 4000.

URP 5511 - Planning Methods II. Addresses advanced models associated with the estimation, prediction, and prescription of conditions and trends in population, employment, land use and transportation. Examines orchestrating analytic studies that inform all phases of a project, including effective methods for engaging the public, presentation techniques, etc. Semester Hours: 3.

URP 5520 - Urban Spatial Analysis. Examines urban spatial patterns and processes. Considers city as system. Major topics: defining urban/spatial/analysis; economic theory of city origin; urban land value; social space; industrial and retail structure; economic base/urban growth, sustainable development; city of mind. Semester Hours: 3.

URP 5530 - Planning Law. Focuses on the legal setting for urban and regional planning in the United States and major constitutional issues in the effectuation of planning policy. Contemporary controversies are put into the larger context of attempts by the judicial system to redefine the balance between individual rights and governmental power in an increasingly weakened society. Semester Hours: 3.

URP 6612 - Geographic Information Systems for Planners. Introduces the use of geographic information systems for environmental, economic, and physical planning. Focuses on what a GIS is and how it works, data issues, and using a GIS to improve planning and decision making. Semester Hours: 3.

URP 6630 - Planning Studio I. Focuses on plan design in urban and regional planning and explores basic concepts, techniques, and issues related to urban planning, urban design, site planning, and environmental awareness. Semester Hours: 6.

URP 6631 - Planning Studio II. Focuses on plan-making related to urban and regional planning. An understanding of the plan-making process is emphasized. Students have direct experience with the various steps in planning, including data-gathering, goal-setting, identification of alternatives, analysis, synthesis, and presentation of the plan. The plan may be for a city sector, a neighborhood, an entire community, a region, or it may be a policy plan. Where possible, students work with an actual client. Semester Hours: 6. Prerequisite: URP 6630.

URP 6632 - City Design Policy. Focuses on historical and contemporary relationship between regulatory policy and urban form. Course views zoning and land use regulations as ways of intervening in built environment's production, providing analytical methods for evaluating morphological outcomes suggested by given zoning codes. Semester Hours: 3.

URP 6633 - Urban Form Theory. An analysis of social, economic, political and cultural forces shaping historical and contemporary production of urban form. Course examines crucial links between design and society, and theories are evaluated according to practicality of their strategies for implementing their ideal. Semester Hours: 3.

URP 6634 - 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. Semester Hours: 3.

URP 6635 - City Building. Examines changing norms in city planning and design from 1800 to the present and the production of the built environment by a variety of actors. Discussions of zoning, land use regulation, management, and the creation of ordinary/everyday urban space. Semester Hours: 3.

URP 6636 - 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. Semester Hours: 3. Cross-listed with: U D 6642.

URP 6637 - Comprehensive Planning. This course will review and analyze the theory, practice and role of comprehensive planning. The focus will be on moving from theory to practice while integrating real world examples, planning skills and methods, forecasts, data collection, surveys, public process, visioning and strategic planning. Semester Hours: 3.

URP 6640 - Community Development Process. Introduces community development, a field closely allied with planning, in its devotion to working with people to strengthen their communities in accordance with locally-determined goals. Emphasis is placed on understanding groups, organizations, and communities, and on developing skills in such areas as community analysis, goal setting, group facilitation, and problem solving. Semester Hours: 3.

URP 6641 - Social Planning. An increasingly important specialty in contemporary planning practice is social planning. This course covers the process of formulating public policies and designing, implementing, and evaluating programs in such areas as social services, housing, health care, employment and education. Attention is given to the historical perspective and the present-day social and political context within which social policy formation and social planning occurs. Semester Hours: 3.

URP 6649 - Environmental Planning I: Ecology. Studies the physiography, cultural factors, and aesthetic criteria in relation to landscape and spatial organization and structure. Covers data sources and interpretation, and looks at environmental factors in development and site analysis. Semester Hours: 3. Prerequisite: URP 5510 or permission of instructor.

URP 6650 - Environmental Planning II: Policy and Law. Provides a comprehensive perspective on environmental planning policy. Focuses on major environmental issues and problems, methods of evaluation, and legislative responses. Semester Hours: 3. Prerequisite: URP 5530 or permission of instructor.

URP 6651 - 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. Semester Hours: 3. Prerequisite: URP 5530 or permission of instructor. Cross-listed with: GEOG 4220, 5220.

URP 6652 - Growth Management. Examines environmental and land regulations such as zoning, subdivision controls, and growth management systems in the context of public policy. Emphasis is placed on case studies, the analysis of past and present practices, improvement of existing systems, and the design of new regulatory systems. Semester Hours: 3. Prerequisite: URP 5530 or permission of instructor.

URP 6653 - Natural Resource Planning and Management.

Considers methods for managing renewable and non-renewable resources using both legislative and economic controls. The role of technology, ideologies, and equity are discussed. Decision making techniques are applied to problems of resource and environmental management. The ability to allocate and control resource usage to ensure sustainability is discussed. Semester Hours: 3. Cross-listed with: GEOG 4260.

URP 6654 - STNBL Land Use Planning. Provides a thorough grounding in methods of land use planning with reference to problems of environmental and community sustainability. Students will formulate a plan in a professional manner, appropriate to the community context, and create a plan for a small hypothetical city. Semester Hours: 3.

URP 6656 - Regional Land Use Analysis and Planning. Considers the means for documenting land use, appraising environmental constraints, establishing developmental options, directing growth, and preserving natural, agricultural, and other open space in both metropolitan and rural regional settings. Stresses spatial analysis, policy prescription, regulatory constraint, and institutional development for subnational regional strategic growth management. Semester Hours: 3.

URP 6660 - Real Estate Development Process. A detailed analysis of components of real estate process and its relationship to the design profession and other key participants. Students learn what variables are within the real estate development business, how they interrelate, and why projects succeed or fail. Semester Hours: 3.

URP 6661 - Real Estate Development Finance. Focuses on financial analysis of real estate investments. Covers topics including measures of value, capitalization rate, capital budgeting, debt and equity markets and taxation. Cash flow and appraisal techniques, complex deal structuring, innovations in debt financing, syndications, tax shelters, tax-exempt financing, and micro-computer applications also are covered. Semester Hours: 3.

URP 6665 - Urban Market Analysis. Considers how markets for land and real estate, labor, capital, and private and public goods and services deploy resources and shape both social and spatial outcomes in urban settings. Posits models of policy intervention whose effects are transmitted by private actions orchestrated within the interlocking markets that form the economy of cities. Provides selected examples of the analysis of markets in such policy venues as land development, public transit, urban housing, and regional labor markets. Semester Hours: 3. Prerequisite: URP 5510 and 5520.

URP 6670 - Urban Economic Development. Examines the process of local economic development and seeks from the theory of economic change essential modes of policy intervention. Local economies are seen to serve these central functions: employment, fiscal betterment, and growth enabling certain efficiencies of public and private goods and services, and a greater diversity of opportunities. Weighs the merits of indigenous development versus external recruitment, and both in relation to regional carrying capacities that ultimately define growth's limits. Addresses tools needed to analyze, induce, and regulate change. Posits economic development in relation to physical planning via strategic policy. Semester Hours: 3.

URP 6671 - Regional Economic Development. Examines the economies of metropolitan, rural, state, and national regions, placing each within the fabric of global relations that direct capital, manage productive activities, and govern prosperity's geography. Organized both sectorally and spatially, the course addresses key sectors of the emerging global economy, as well as the rationale of the 'entrepreneurial' state at the public-private interface. Posits institutional approaches and professional roles in the management of regional economies. Seeks in theory a template of regional change, and both the means and purpose of policy intervention. Finds in strategic planning an integration of developmental and environmental perspectives. Semester Hours: 3. Prerequisite: URP 5520 or permission of instructor. Cross-listed with: GEOG 4400.

URP 6673 - Transportation Planning I: Land Use and Transport. Examines several important aspects of the transport network: accessibility and connectivity of nodes and linkages and the volume and direction of

the flow of a transport network. Descriptive, predictive, and planning methods and models discussed include graph theoretical measures, connectivity matrices, gravity model, abstract mode model, entropy-maximization, trip generation model and flow allocation models. Semester Hours: 3. Prerequisite: URP 5510 or permission of instructor. Cross-listed with: GEOG 4630.

URP 6674 - Transportation Planning II. Examines issues of transportation in urban development, the urban transportation system, the relationship between land use planning and transportation planning, urban transportation planning processes and selected issues. Covers theoretical, policy, and practical perspectives to understand the merits of employing specific planning policies or other infrastructure investments. Semester Hours: 3. Prerequisite: URP 6673. Cross-listed with: GEOG 4670.

URP 6676 - Urban Housing. Examines planning and other aspects of urban housing, focusing primarily on U. S. urban housing conditions with some references to international conditions and comparisons. Major topics of the course include aggregate trends and patterns, housing in spatial context, the allocation process of housing markets and submarkets (supply/finance, demand/mobility/demographic change), housing problems and failures), (substandardness, inequitable distribution, special group needs, segregation and discrimination, market problems), the role of government, and alternative approaches. Semester Hours: 3.

URP 6680 - Urbanization in Developing Countries. A description, analysis, and evaluation of urbanization and planning in less developed countries. The special problems of planning, housing, transportation, environmental quality, and economic development in cities of these countries are addressed. Comparisons are made among cities of third-world countries and between third-world countries and first-world countries. Semester Hours: 3.

URP 6686 - Special Topics in Urban and Regional Planning. Various topical concerns are offered in urban and regional planning, theory, concepts, methods, case studies and practice. Semester Hours: 1 to 3.

URP 6840 - Independent Study. 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. Semester Hours: 1 to 3.

URP 6910 - Planning in Other Cultures II: Field Experience. Students travel to their respective cities and undertake agreed-upon study proposals. Intends not only to help students consider their own design and planning attitudes, but also to help them see the world from a more balanced perspective. Semester Hours: 6.

URP 6930 - 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. Semester Hours: 1 to 3.

URP 6950 - Thesis Research and Programming. Semester Hours: 3. Prerequisite: Minimum of 24 credit hours earned toward completion of Master of Urban and Regional Planning degree.

URP 6951 - Urban and Regional Planning Thesis. Semester Hours: 3.

WGST: Women and Gender Studies (Liberal Arts and Sciences)

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. Semester Hours: 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. Semester Hours: 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. Semester Hours: 3. Cross-listed with: SOC 3010.

WGST 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. Semester Hours: 3. Cross-listed with: P SC 3034.

WGST 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. Semester Hours: 3. Cross-listed with: P SC 3035.

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. Semester Hours: 3. Cross-listed with: SOC 3080.

WGST 3343 - Women in U.S. History. An analysis of women's place in society, in the work place, and in the political arena over the last 300 years. Semester Hours: 3. Cross-listed with: HIST 3343.

WGST 3450 - Twentieth Century 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. Semester Hours: 3. Cross-listed with: ENGL 3450.

WGST 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. Semester Hours: 3. Cross-listed with: PHIL 3500.

WGST 3700 - Sociology of the Family. The family as a social institution. Historical development and contemporary cross-cultural analysis, with emphasis on the contemporary American family. Semester Hours: 3. Cross-listed with: SOC 3700.

WGST 3840 - Independent Study. Semester Hours: 1 to 3.

WGST 3939 - Cooperative Education. Designed experiences involving application of specific, relevant concepts and skills in supervised employment situations. Junior standing and 2.75 GPA. Semester Hours: 1 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. Semester Hours: 3. Prerequisite: 6 hours of political science or permission of instructor. Cross-listed with: P SC 4215.

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. Semester Hours: 3. Cross-listed with: HIST 4230, HIST 5230.

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. Semester Hours: 3. Cross-listed with: P SC 4248, 5245.

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. Semester Hours: 3. Cross-listed with: HIST 4303, HIST 5303.

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. Semester Hours: 3. Cross-listed with: ENGL 4306, 5306, HIST 4306, 5306, WGST 5306.

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. Semester Hours: 3. Cross-listed with: HIST 4307, 5307.

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. Semester Hours: 3. Prerequisite: Upper division and/or graduate standing. Cross-listed with: HIST 4345, HIST 5345.

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. Semester Hours: 3. Cross-listed with: RLST 4420, RLST 5420.

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. Semester Hours: 3. Prerequisite: Nine hours of literature courses or instructor permission. Cross-listed with: ENGL 4510, ENGL 5510, RLST 4730, RLST 5730.

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. Semester Hours: 3. Prerequisite: FR 3112 or FR 3122 plus one other 3000-level French course or permission of instructor. Cross-listed with: FR 4510, FR 5510.

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. Semester Hours: 3. Prerequisite: SPAN 3252 and at least one additional literature course. Cross-listed with: SPAN 4540, SPAN 5540.

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. Semester Hours: 3. Cross-listed with: P SC 4555, P SC 5555 and ETST 4555.

WGST 4564 - Gender and Politics. Analysis of the political experience of women and of strategies for change. Emphasis on the U.S. Semester Hours: 3. Cross-listed with: P SC 4564.

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. Semester Hours: 3. Cross-listed with: P SC 4827 and ETST 4827.

WGST 4933 - Philosophy of Eros. Why is philosophy an erotic activity, and what are the implications of this insight? We will explore these issues, first, by reading Plato's erotic dialogues: *Lysis*, *Symposium* and *Phaedrus*. Then we will focus on Freud's influential (and controversial) appropriation of Plato's thought in the writings that span his career, from *The Interpretation of Dreams* (1900) to *Civilization and its Discontents* (1930) and beyond. Finally, we will survey post-Freudian theories of eros, such as Michel Foucault's *History of Sexuality*, as well as the more recent contributions of thinkers such as Jonathan Lear, Thomas Nagel, Martha Nussbaum and Slavoj Žižek. Semester Hours: 3. Cross-listed with: HUM 5933, PHIL 4933, 5933, S SC 5933.

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. Semester Hours: 3. Cross-listed with: ENGL 4306, 5306, HIST 4306, 5306, WGST 4306.

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. Semester Hours: 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. Semester Hours: 3. Cross-listed with: S SC 6010.