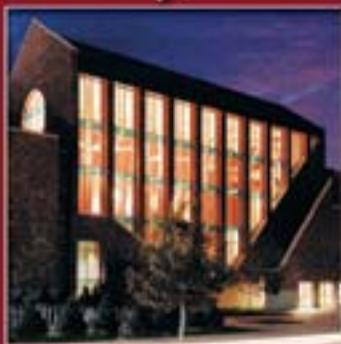




The University of  
OKLAHOMA



*"The Impact of Excellence"*



Course Descriptions 2006 - 2008

The General Catalog was produced by the University of Oklahoma Office of Academic Publications, Judy K. Cain, Coordinator of Curricular Changes and Academic Publications, assisted by Jean Ware, Manager of Administration and Operations for Admissions and Records. The Office of Academic Publications is a division of the Office of Admissions and Records, directed by Matt Hamilton, Registrar and Associate Vice President for Enrollment and Student Financial Services, Norman Campus. This publication, printed by University Printing Services in October 2006, is issued by The University of Oklahoma and authorized by The University of Oklahoma Board of Regents. 1,250 administrative paper copies and 10,000 copies on CD have been prepared at a cost of \$46,000 to the taxpayers of Oklahoma. This publication is also available on the Internet at <http://catalog.ou.edu>.

Copies of the General Catalog are available for examination in Oklahoma high schools, colleges and in each office of the University. A copy of the General Catalog CD is provided to each first-time-entering student at the time of their admission. Copies may also be purchased from University area bookstores.

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Current information regarding fees, important dates and the availability of courses can be found in the Class Schedule, which is available before pre-enrollment begins for each term.

Campus visits are available through the Office of Prospective Student Services. To arrange a campus tour, call Prospective Student Services at (405) 325-2151 or toll-free 1-800-234-6868.

## The Catalog Cover Design

The cover design of this catalog illustrates "The Impact of Excellence" on the Norman campus of the University of Oklahoma. The front cover features the Mary and Howard Lester Wing of the Fred Jones Jr. Museum of Art, which opened in 2005, and the back cover features the National Weather Center — the largest center of its kind in the world — which opened in 2006. Insets on the front cover depict (left to right) the Ammonite and Nautiloid Fossil (photo by Candeh Powell) in Sarkeys Energy Center; Gaylord Hall, home of the Gaylord College of Journalism and Mass Communication; and the dome of the interior of Holmberg Hall in the Reynolds Performing Arts Center. The insets on the back cover show (left to right) the Pastoral Dreamer, a bronze sculpture by OU graduate David Phelps; "We Have It All" (photo by Shevaun Williams); and the Foucault pendulum suspended in the recent addition to Nielsen Hall (photo by Angela Startz). Unless otherwise noted, all photos by Robert H. Taylor, Senior Photographer for the University of Oklahoma. Cover art designed by Edward Buntario, graphic artist, in collaboration with Judy K. Cain.

The catalog CD project is produced in cooperation with Joey White, Real Media FX, a Digital Media Group located in Tulsa, OK.

**The mission of the University of Oklahoma is to provide the best possible educational experience for our students through excellence in teaching, research and creative activity, and service to the state and society.**

Welcome to the University of Oklahoma!

Our university offers very strong educational opportunities with more than 150 areas of study from which you can select a major. Here you will find gifted teachers, learned scholars and dedicated staff members all committed to your success.

In addition, the university community offers many opportunities outside the classroom for your continued growth and development. Our students are actively involved in a variety of extracurricular activities and organizations. Through these activities they develop personal, social, intellectual, and occupational skills as well as recreational, wellness and ethical values essential for success. The vast range of opportunities at OU include campus governing bodies, sororities and fraternities, athletic teams, music groups, theater and the arts, and the campus media. We also offer many opportunities for study abroad through exchange agreements with 150 universities in 60 countries worldwide and a chance to interact with more than 1,400 outstanding international students on our own campus.

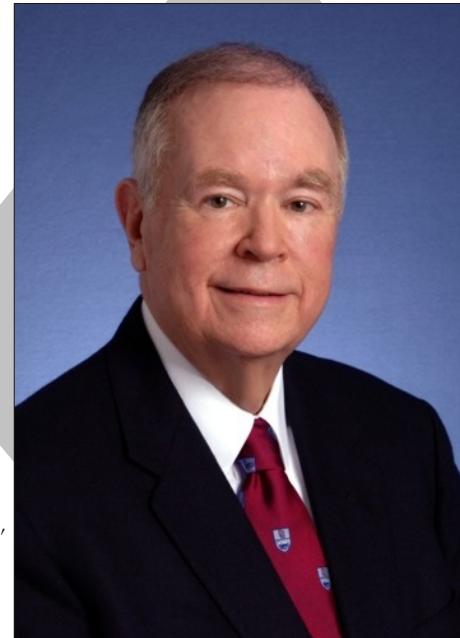
Through campus employment, cooperative opportunities and internships in business and industry, we introduce our students to the world of the competitive workforce. We offer a wide array of services for career planning, and we work to attract employers from across the nation to meet and recruit future employees from OU.

Whether you are a new or prospective student, a parent, or just interested in knowing more about OU, I invite you to explore this catalog which contains extensive information about our numerous academic and student-supported programs. If possible, I invite you to visit the campus to experience OU firsthand and to share our pride in being part of the tradition and future of the University of Oklahoma.

Sincerely,

A handwritten signature in black ink that reads "David L. Boren".

David L. Boren  
President of The University of Oklahoma



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## How to Read a Course Description

### Course Listings

The Course Listings section describes all courses approved for offering by the University of Oklahoma. The courses are listed alphabetically by department.

The word "course" refers to a subject taken during a semester (or summer session) with a certain number of prescribed meetings each week. Successful completion of a course usually earns a specified number of semester hours of credit toward a degree. The words "curriculum" or "program of study" refer to an organized plan of work composed of a number of courses. The completion of a curriculum ordinarily leads to a degree.

The Class Schedule lists the specific courses available that semester, the time of meeting, and building and room numbers where the course meets.

### Explanation of Course Listings

A course listing is comprised of the following elements, in order:

#### COURSE NUMBER

All courses are identified by numbers composed of four digits. Courses numbered 1000–2999 are referred to as "lower division," those numbered 3000–4999 are "upper division," and those numbered 5000 and above are "graduate-level."

The first digit indicates the class year in which the subject is ordinarily taken, although enrollment is not exclusive as to student classification:

1. Courses numbered 0000 to 0999 are developmental remedial courses offering no college credit.
  2. Courses numbered 1000 to 1999 are primarily freshman level.
  3. Courses numbered 2000 to 2999 are primarily sophomore level.
  4. Courses numbered 3000 to 3999 are primarily junior level.
  5. Courses numbered 4000 to 4999 are primarily senior level.
  6. Courses numbered 5000 to 5999 are primarily for post-baccalaureate students, except by permission of the department and the graduate dean.
  7. Courses numbered 6000 to 6999 are restricted to post-baccalaureate students, except by permission of the department and the graduate dean.
- The second and third digits identify the course within the field.

The fourth digit denotes the number of credit hours assigned to the course. A zero (0) as the fourth digit indicates the course is offered for a variable number of credit hours. No change may be made in the number of credit hours specified for the various courses as indicated in the catalog.

A **G** before the course number indicates the course is approved for graduate credit.

The only exception is University course 4000 which carries graduate credit when completed through the Scholar-Leadership Enrichment Program.

A dagger (†) before the G indicates the course is not applicable for graduate credit in that department.

#### CREDIT

The unit of credit at the University of Oklahoma is the semester hour. Each semester hour represents one class period of 50 minutes in length each week for sixteen weeks (including final examinations) or the equivalent. Laboratory or field courses require two or three class periods per week for each hour of credit. During the summer session, the number of clock hours is doubled.

#### COURSE TITLE

The title of the course is printed in bold letters.

#### CROSSLISTING/SLASHLISTING COURSES

Crosslisting of courses will be indicated after the course title, where the departments in which the course is crosslisted will be shown. This means that a course is offered through all of the departments indicated so that students may take a class through their major department.

Slashlisting of courses will also be indicated after the course title. Courses are slashlisted so undergraduate students may take an undergraduate 4000-level course in a department while graduate students may take a graduate 5000-level course in the same department. The lectures in a slashlisted course are the same. However, students in the 5000-level course have substantial additional requirements beyond those for students in the 4000-level course. These additional requirements are listed in the slashlisted course syllabus. No student may earn credit for both the 4000- and the 5000-level course.

#### STATEMENT OF VARIABLE CREDIT

The credit that may be earned in a variable-credit course (course number ending in 0) is shown after the course title. A typical entry is 1 to 3 hours.

#### PREREQUISITES

Prerequisites are the courses or requirements that must be completed prior to enrolling in a certain course. Prerequisites for a course are listed after the course title or, in some departments, before numbered sections of courses. Prerequisites from the same department as the course being described are listed first, with no departmental designation and in ascending numerical order. If from another department, that departmental designation precedes the number of the prerequisite course. Courses having prerequisites from inside and outside the department will have combination entries such as 3153, Mathematics 3123.

It is the student's responsibility to make sure he/she has completed the proper prerequisites before enrolling any class.

An academic standing prerequisite is stated by classification. Freshmen have accumulated between 1 and 29 semester hours; sophomores between 30 and 59 hours; juniors between 60 and 89 hours; seniors more than 90 hours; and graduate students must have been admitted to the Graduate College.

Courses listed as "corequisite" or "concurrent with" are to be taken in the same semester as the course desired.

The statement "or permission of instructor" means the instructor may waive prerequisites when a student's background justifies. However, "and permission of instructor" means the student must have the instructor's permission as well as the prerequisite courses.

#### DESCRIPTION OF CONTENT

The content of the course and its major emphases are described.

#### LABORATORY

If a course has a laboratory, the word laboratory is printed in boldfaced letters at the end of the course description.

#### SEMESTER OFFERED

At the end of the course description the semester or term in which the course is likely to be taught may be indicated. (F), (Sp), (Su) indicate fall, spring, summer; (Alt. F), (Alt. Sp), (Alt Su) mean alternate fall, spring, summer. The notation (Irreg.) indicates the course is offered on irregular basis and the student should check with the school or department to determine when the course will be taught. The Class Schedule should be consulted for the courses to be offered in a semester or summer session and also for information about which courses meet the University-wide General Education requirements.

#### GENERAL EDUCATION DESIGNATION

If a course has been approved for University-Wide General Education it is indicated at the end of the course in brackets with a Roman numeral, indicating the core area, followed by numbers or upper-case letters, indicating core component. An explanation of these codes is as follows:

#### Core Areas and Components

**I – Symbolic and Oral Communication:** ENGL –English 1113; ENGL–English 1213 or EXPO 1213; ENGL–Other English Composition; FL–Foreign Language; M–Mathematics; O–Other.

**II – Natural Science:** NL–No Lab; LAB–With Lab.

**III – Social Science:** PSC–Political Science 1113; SS–Social Sciences.

**IV – Humanities:** US–U.S. History; AF–Artistic Forms; WC–Western Civilization and Culture; NW–Non-Western Culture.

**V – Capstone.**

The University reserves the right to cancel any course without notice.

## Accounting (ACCT)

**2113 Fundamental Financial Accounting.** Prerequisite: Business Administration 1001 or concurrent enrollment. Basic principles of financial accounting. Emphasis on the preparation and use of the income statement, balance sheet and statement of funds flow for corporations. Coverage includes the analysis and recording of transactions involving cash, inventories, fixed assets, bonds and capital stock as well as closing, adjusting and reversing entries for revenue and expense items. (F, Sp, Su)

**2123 Fundamental Managerial Accounting.** Prerequisite: 2113. Introduction to managerial accounting. Analysis of cost behavior and the use of this knowledge for both short- and long-term decision. An introduction to budgeting and the accumulation of product costs for planning and performance evaluation. Specific coverage includes cost-volume-profit analysis, capital budgeting, allocations, variances from standard costs and the measurement of divisional performance. (F, Sp, Su)

**3023 International Financial Statement Analysis (Crosslisted with Business Administration 3023).** Prerequisite: 2113 and 2123. A review of international financial reporting development, procedures and standards with an emphasis on financial statement interpretation and analysis. Not open to accounting majors. (Sp)

**3033 Financial Reporting Issues in Energy.** Prerequisite: Energy Management 3001 or concurrent enrollment and student must be a declared Energy Management major and have been approved for degree candidacy by Price College. Study of financial reporting issues directed toward energy companies. Review of the accounting cycle with an emphasis on the accounting treatment for acquisition of mineral interests, geological and geophysical costs, intangible drilling costs, delay, rental, dry hole costs, lease and well equipment, joint interest billing and royalties payable. (Sp)

**3113 Intermediate Accounting I.** Prerequisite: 2123. Valuation and other theoretical problems in accounting for cash, temporary investments, receivables, inventories, long-term investments, plant and equipment and intangible assets. (F, Sp, Su)

**3123 Intermediate Accounting II.** Prerequisite: 3113 and junior standing. Stockholders' equity, dilutive securities, investments, issues related to income determination including revenue recognition, accounting for income taxes, pensions, leases and error analysis, preparation and analysis of financial statements, including price level changes and statement of changes in financial position. (F, Sp, Su)

**3313 Cost Accounting.** Prerequisite: 2123, junior standing. Basic cost principles. Job order costing, process and joint costing, and estimated costs. (F, Sp, Su)

**3353 Accounting Information Systems/Databases (Crosslisted with Management Information Systems 3353).** Prerequisite: Student must be approved for degree candidacy by Price College, or permission. A study of the structure, flow and use of financial and non-financial data in computer-based environments with a heavy emphasis on ensuring data integrity. Conceptual data modeling using business rules, normalization, structured query language (SQL), and physical database design and data administration. Course includes cross-functional team project with phased deliverables. (F, Sp)

**3603 Income Tax Accounting I.** Prerequisite: 3113 or permission, junior standing. Introduction to the taxation of income including issues related to the measurement and recognition of income, deductions and losses; the taxation of property transactions; basis and cost recovery concepts; and alternative forms of business organization. (F, Sp)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: junior or senior standing, admission to the Honors Program. May be repeated; maximum credit six hours. Independent study in field of accounting and related disciplines to broaden student's perspective in general field of business. (F, Sp, Su)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: junior or senior standing, admission to the Honors Program. May be repeated; maximum credit six hours. Independent research in field of accounting and related disciplines to apply research techniques learned in research tool courses to actual business situations. (F, Sp, Su)

**4113 Advanced Accounting (Slashlisted with 5113).** Prerequisite: 3113, 3123, and junior standing. Consolidated financial statements, business combinations, branch accounting, foreign currency transactions and financial statements, governmental accounting, partnerships. No student may earn credit for both 4113 and 5113. (Sp-Irreg.)

**4323 Governmental Accounting.** Prerequisite: 2113, 2123, and 3113. Study of governmental and non-profit accounting. An analysis of funds that reflect activity for government units, hospitals, and educational institutions. (F)

**G4543 Auditing.** Prerequisite: 3113, 3123, 3363 and one of the following: 3313, 3603, 4113, 4323 or 4703. Auditing concepts, standards, principles, and procedures; coverage includes professional ethics, auditors' legal responsibilities, EDP control systems, audit sampling, and audit reports. (F, Sp)

**G4553 Accounting Theory.** Prerequisite: 24 hours of accounting, junior standing. A study of the current rules governing financial accounting and financial reporting as promulgated by the Financial Accounting Standards Board. (F, Sp)

**4703 Income Tax Accounting II (Slashlisted with 5703).** Prerequisite: 3603 or permission, junior standing. Advanced issues related to the taxation of multi-jurisdictional operations and transactions involving corporations, partnerships, estates, and trusts, and their owners throughout the life of the entity. No student may earn credit for both 4703 and 5703. (F, Sp)

**4710 Special Topics in Accounting.** Prerequisite: 2113, 2123. May be repeated with change of topic; maximum credit six hours. Topics may include any accounting related area. (F, Sp, Su)

**G4990 Special Problems in Accounting.** 1 to 2 hours. Prerequisite: 24 hours of accounting. Directed readings and problems under staff supervision for advanced students. A comprehensive report and/or examination is required. (F, Sp, Su)

**G5013 Quantitative Financial Controls.** Prerequisite: graduate standing, permission. Basic accounting concepts and conventions. A general survey of accounting techniques employing the case study approach. Relationship of accounting to other functional areas of business. Not open to accounting majors. (F, Sp, Su)

**G5023 International Financial Statement Analysis.** Prerequisite: 5013 or permission. A review of international financial reporting developments, procedures, and standards with an emphasis on financial statement interpretation and analysis. (Irreg.)

**G5113 Advanced Accounting (Slashlisted with 4113).** Prerequisite: 3113, 3123, and graduate standing. Consolidated financial statements, business combinations, branch accounting, foreign currency transactions and financial statements, governmental accounting, partnerships. No student may earn credit for both 4113 and 5113. (Sp-Irreg.)

**G5313 Managerial Accounting Tools.** Prerequisite: 5013, Economics 5023 or equivalent, graduate standing and permission. Theories, concepts and techniques that are involved in meeting the information needs of managers. The development of management control systems that guide managerial decision making. These information issues, in the context of a business firm, provide the focus of the course. (Sp)

**G5353 Financial Statement Analysis.** Prerequisite: graduate standing or permission of instructor. Topics in analysis and use of general purpose financial statements for decision making, ratio analysis, credit risk, and valuation will be covered. (Sp)

**G5363 Accounting Information Systems Seminar.** Prerequisite: Permission Advanced Accounting information systems topics and current trends in accounting information systems. (Irreg.)

**G5543 Contemporary Auditing Issues.** Prerequisite: 4543, graduate standing and permission. Designed to enhance students' understanding of the fundamental concepts of auditing through the analysis and discussion of actual problematic audits or audit-related situations. Emphasis is also placed on the key ethical issues that face audit practitioners. (Su)

**G5553 Fraud Examination.** Prerequisite: 4543, graduate standing or permission. To develop a broad understanding of the different types of fraud that affect organizations, as well as to learn how and why fraud occurs. To understand the fundamentals regarding fraud prevention and detection. To learn how to conduct fraud investigations. To learn what is required of external auditors regarding fraud. The course focuses on organizational fraud (e.g. employee and management fraud). (Irreg.)

**G5613 Tax Research and Practice.** Prerequisite: 4703. Focus on the development of skills necessary to resolve issues in tax practice. Objectives include: 1) develop knowledge of tax research resources; 2) understand the framework of tax law; and 3) understand ethics as applied to tax practice. (Sp)

**G5703 Income Tax Accounting II (Slashlisted with 4703).** Prerequisite: 3603 or permission and junior standing. Advanced issues related to the taxation of multi-jurisdictional operations and transactions involving corporations, partnerships, estates, and trusts, and their owners throughout the life of the entity. No student may earn credit for both 4703 and 5703. (F, Sp)

**G5951 Research Methods in Accounting.** Prerequisite: candidacy for the degree of Master of Arts with a major in accounting, permission. Enrollment for one semester will be required of all graduate students working toward the degree of Master of Arts with a major in accounting. This seminar must be completed as a condition precedent to enrollment in 5980 and writing the master's thesis. (F, Sp, Su)

**G5970 Seminar.** 1 to 3 hours. Prerequisite: graduate standing and permission. May be repeated with change of subject matter; maximum credit eight hours. A seminar for graduate students, with topics to be announced each time the course is offered. (F, Sp, Su)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp, Su)

**G5990 Research in Accounting.** 1 to 4 hours. Prerequisite: graduate standing and permission of department. May be repeated; maximum credit eight hours. (F, Sp, Su)

**G6193 Accounting Research Seminar.** Prerequisite: graduate standing and permission. A survey of current topics appearing in the academic accounting literature. Students will analyze and critique emerging original research in accounting. Intended for, but not restricted to, doctoral accounting students to provide a foundation for their future research efforts. Required for all Ph.D. students whose dissertation topic is in the area of accounting. (Irreg.)

**G6313 Seminar in Controllership.** Prerequisite: a course in statistics, graduate standing, permission. The study of theoretical, conceptual and technical issues in financial planning and control. Primary emphasis is on the performance measurement components of control and related costing issues. These issues studied from the perspective of a controller. (F, Sp)

**G6323 Strategic Cost Analysis.** Prerequisite: 3313 with graduate standing; or 5013; or Business Administration 5233 (Part B). Study of principles of cost systems design for strategic cost analysis and identifying the symptoms and causes of cost system failure in today's highly competitive and technologically advanced environment. The systems used by actual organizations are described and the managerial uses of cost accounting information for various decisions are explored. (Irreg.)

**G6343 Seminar in Auditing.** Prerequisite: graduate standing, 24 hours of accounting, permission. The application of auditing principles and procedures to actual situations, using case studies. Analysis of auditing bulletins promulgated by the American Institute of Certified Public Accountants. (F)

**G6553 Seminar in Accounting Theory.** Prerequisite: graduate standing, 24 hours of accounting and permission. Study of the development of accounting theory, the theory of income, asset valuation and history of accounting thought. (F)

**G6613 Federal Income Taxation of Corporations and Shareholders.** Prerequisite: graduate standing, 4613 (or concurrent enrollment in 4613) and permission. An advanced study of corporate income taxation including: corporate formation, concept of earnings and profits, acquisitions and liquidations, reasonable compensation, stock redemptions, accumulated earnings tax, personal holding companies, reorganizations, Subchapter S corporations and other tax areas. (Irreg.)

**G6623 Federal Income Taxation of Partnerships.** Prerequisite: graduate standing, 4613 (or concurrent enrollment in 4613) and permission. An advanced study of acquisitions of partnership interests, the basis of a partner's partnership interest, taxing partnership operations, transfers of partnership interests, partnership distributions, death or retirement of a partner and adjustments to the basis of partnership assets. (F, Sp)

**G6643 Federal Estate and Gift Tax Planning and Practice.** Prerequisite: 4613 (or concurrent enrollment in 4613), graduate standing and permission. An intensive study of property owned by the decedent, powers of appointment, life insurance, valuation issues and techniques, deductions from the gross estate, estate tax credits, transactions subject to the gift tax, gift and estate tax returns and procedures, and emphasis on pre- and post-mortem estate planning. (Irreg.)

**G6663 Federal Income Tax in Extractive Industries.** Prerequisite: graduate standing, 4613 (or concurrent enrollment in 4613) and permission. Concepts of taxation unique to the oil and gas industry and other extractive industries. Concerned with acquisition and development of properties, mineral rights, sharing arrangements, unit of property concept, depletion allowances, conveyances of mineral properties, operating problems and joint operations. (Irreg.)

**G6980 Research for Doctor's Dissertation.** (F, Sp, Su)

## *Aerospace and Mechanical Engineering (AME)*

The school offers courses which are slashlisted so undergraduate students may take an undergraduate 4000-level course while graduate students may take a graduate 5000-level course. The lectures in a slashlisted course are the same. However, students in the 5000-level course have substantial additional requirements beyond those for students in the 4000-level course. These additional requirements are listed in the slashlisted course syllabus.

**2113 Statics.** Prerequisite: Physics 2514 and Mathematics 2433 or concurrent enrollment in Mathematics 2433. Vector representation of forces and moments; general three-dimensional theorems of statics; centroids and moments of area and inertia. Free-body diagrams, equilibrium of a particle and of rigid bodies, distributed loads, friction and internal shear and moment loads. Analysis of trusses, frames, and machines. (F)

**2213 Thermodynamics.** Prerequisite: Mathematics 2433 and Physics 2524, or concurrent enrollment (in both). First and second law of thermodynamics are developed and applied to the solutions of problems from a variety of engineering fields. Extensive use is made of differential calculus to interrelate thermodynamics functions. (F)

**2223 Introduction to Aerospace Engineering.** Prerequisite: Physics 2514. Nature of atmospheric and space flight and of associated vehicles, conceptual design of flight and space vehicles, and current problems in aerospace engineering. (F)

**2281 Engineering Co-Op Program (Crosslisted with CH E, CE, CS, ECE, ENGR, EPHY, ES, GE, IE, PE 2281).** Prerequisite: student participation in the program. The Co-Op program provides student placement in jobs outside the University, but in a position related to the student's major. On completion of a semester work period, the student submits a brief written report. One hour of credit (elective) granted for each work period; maximum credit six hours. (F, Sp, Su)

**2303 Materials, Design and Manufacturing Processes (Crosslisted with Industrial Engineering 2303).** Prerequisite: 2113 or Civil Engineering 2113 or Engineering 2113. Mechanical and physical properties of engineering materials. Introduction to design concepts, manufacturing processes and equipment used in engineering. (Sp)

**2401 Engineering Computing.** Prerequisite: Mathematics 1823 or concurrent enrollment. Introduction to computer programming and university computing facilities. Program design and development: computer application exercises in engineering. (F)

**2533 Dynamics.** Prerequisite: 2113, Mathematics 2433. Dynamics (kinematics and kinetics) of particles and rigid bodies for rectilinear, curvilinear and angular motion; work and energy methods; conservations of impulse and momentum; introduction to mechanical vibrations. (Sp)

**2623 Circuits and Sensors.** Prerequisite: Mathematics 3113 or equivalent or concurrent enrollment; Physics 2524 or concurrent enrollment. Formulation and solution of circuit equations, network theorems, sinusoidal steady-state analysis, simple transients. Introduction to digital logic circuits. Physical principles of sensing and actuation. Applications to engineered systems of computer programming, embedded systems, and controls. (Sp)

**3103 Interactive Engineering Design Graphics.** Prerequisite: Mathematics 1823. Visualization and modeling techniques for product design and development. Design methodology, graphic standards, projection theory, freehand sketching, spatial geometry, CAD systems, geometric modeling, and tolerancing. Solving open-ended design and visualization problems. **Laboratory** (Sp)

**3112 Solid Mechanics Lab.** Prerequisite: 2113 or Engineering 2113; 3143 or concurrent enrollment. Measurement of displacement; velocity, acceleration, force, torque, strain, stress, data acquisition and processing; data analysis. **Laboratory** (F)

**3122 Heat Transfer and Fluid Mechanics Lab.** Prerequisite: 2113 or Engineering 2113, 3173 or concurrent enrollment. Basic measurement concepts in fluid mechanics and thermal science. Concepts and methods of measuring pressure, temperature, flow, thermal and transport properties. Data acquisition and analysis. **Laboratory** (Sp)

**3143 Solid Mechanics.** Prerequisite: 2113 or Engineering 2113, Mathematics 3113. Concepts of stress and strain; mechanical behavior of engineering materials; analysis of uniform stress states; analysis of members

in torsion; stresses and deflections in beams; modes and theories of failure; design criteria. (F)

**3153 Fluid Mechanics.** Prerequisite: 2113, 2213, or Engineering 2113, 2213, Mathematics 3113. Principles of fluid mechanics: fluid statics, flow descriptions, conservation equations, dimensional analysis, potential flow, viscous flow and internal flow. (F)

**3173 Heat Transfer.** Prerequisite: 2213 or Engineering 2213, 3153. Heat transfer by conduction, convection, and radiation; mass transfer and combined modes of heat transfer. (Sp)

**3223 Thermodynamics II.** Prerequisite: Engineering 2213. Properties of fluids; gas and vapor tables, charts and diagrams; power cycles for gases and vapors; mixtures of gases and vapors; psychrometry; flow of fluids; refrigeration fundamentals, gas compression. (Irreg.)

**3253 Aerodynamics.** Prerequisite: 2223, 2533, Mathematics 3113 or equivalent. Fluid properties, fluid statics, flow description, conservation equation; incompressible inviscid flow dynamics; characteristic airfoil parameters; two-dimensional flow around thin airfoils; flow around wings of finite span; boundary layer development; compressibility; governing equations for inviscid compressible flow normal and oblique shock relations; Prandtl-Meyer expansion waves; quasi-one dimensional flow through nozzles and diffusers. (F)

**3272 Windtunnel Laboratory.** Prerequisite: 3253 or concurrent enrollment. Operation and calibration of subsonic and supersonic wind tunnels, power and measurement. Experimental testing of model airplanes and aerodynamic shapes; determination of drag of flight vehicle components. **Lecture and Laboratory** (F)

**3333 Flight Mechanics.** Prerequisite: 2223, 2533. Performance of aerospace vehicles, weight and balance, equations of motion for rigid aircraft, introduction to static stability and control (open loop) and fundamentals of aircraft analysis and design. (Sp)

**3353 Design of Mechanical Components.** Prerequisite: 2303 and 3143. Analysis and design of mechanical subsystems and selection of elements such as gears, shafts, clutches, brakes and modern mechanical components. (Sp)

**3363 Design of Thermal-Fluid Systems.** Prerequisite: 2401 or Engineering 1001, 3153 or 3253, and 3173. Design of fluid flow, heat transfer and energy systems including analysis, synthesis and optimization. Topics include but are not limited to: ducts and piping systems, fluid machinery, heat exchangers, thermal storage devices, furnaces, combustors, refrigeration and air conditioning systems. (F)

**3413 Vibrating Systems.** Prerequisite: 2533 and Mathematics 3113. Free and forced vibrations in lumped-parameter linear systems of one, two or more degrees of freedom. Resonance phenomena, dynamic absorbers; vibration-measuring equipment. Introduction to Laplace transforms and transient vibrations, distributed systems. (Irreg.)

**3523 Aerospace Structural Analysis.** Prerequisite: 3143, Mathematics 3113 or equivalent. Advanced concepts of stress and strain; introduction to the analysis of aerospace engineering structures: complex bending and torsion, shear flows in thin-walled and stringer-skin sections; buckling; introduction to the finite element method; introduction to composite materials. (Sp)

**3623 Embedded Real-Time Systems.** Prerequisite: 2623 or equivalent, Computer Science 1313 or equivalent, or permission from the instructor. The fundamentals of real-time embedded systems are covered including processes, scheduling, frequency requirements, and watchdog timers. Includes work with actual real-time systems. (Sp)

#### **+G3723 Numerical Methods for Engineering Computation (Crosslisted with Chemical Engineering, Computer Science and Petroleum**

**Engineering 3723).** Prerequisites: 2401 or Chemical Engineering 2002 or Computer Science 1313 or Computer Science 1323 or Engineering 1001 or Engineering 2003, and Mathematics 3113. Basic methods for obtaining numerical solutions with a digital computer. Included are methods for the solutions of algebraic and transcendental equations, simultaneous linear equations, ordinary and partial differential equations, and curve fitting techniques. The methods are compared with respect to computational efficiency and accuracy. This course may not be taken for graduate credit within the College of Engineering. (F)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. Coverage includes materials not usually presented in the regular courses. (F, Sp, Su)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. The projects covered will vary. Deals with concepts not usually presented in regular coursework. (F, Sp, Su)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work on a special project in the student's field. (F, Sp, Su)

**4163 Principles of Engineering Design.** Prerequisite: 2103 or 3103, 2533, 3143. Design process and methodology from concept through analysis, layout and report: Types of design problems, human element in design, computer aid in design, specification development, concept generation, concept evaluation, product generation, function and performance evaluation, design for manufacturing, design for assembly, design for life-cycle, sustainability, final product documentation, ethics, safety and economics. (F)

**G4193 Introduction to Computer-Aided Design.** Prerequisite: senior standing in an engineering curriculum and knowledge of a computer programming language. Topics include: computer-aided design, engineering, drafting and manufacturing; CAD systems, geometry, computer graphics, hardware, design synthesis. System demonstrations and labs. (Irreg.)

**4213 Biomechanics I (Slashlisted with 5213; Crosslisted with Bioengineering 4213).** Prerequisite: 3143 and 3153 or permission of instructor. Introduction to physiological systems with emphasis on structure and function of tissues and organs; application of continuum mechanics to understanding of tissue and organ behavior at microscopic and macroscopic levels; viscoelastic and solid biomaterials. No student may earn credit for both 4213 and 5213. (F)

**4223 Biomechanics II (Slashlisted with 5223; Crosslisted with Bioengineering 4223).** Prerequisite: 3143 and 3153 or permission of instructor. Biofluid mechanics; non-Newtonian behavior of blood and body fluids; basic mechanical properties of muscle, bone, cartilage, and other living tissues; application of continuum mechanics to circulation; growth and change of living organs in response to stress and strain. No student may earn credit for both 4223 and 5223. (Sp)

**4233 Biomaterials (Slashlisted with 5233; Crosslisted with Bioengineering 4233).** Prerequisite: junior or senior standing in the College of Engineering and permission of instructor. Introduction to materials used in biomedical environment, the design and use of implantable materials, such as metals, polyethylene, ceramics, and composites, biocompatibility, test methods, and tissue growth on biomaterials. No student may earn credit for both 4233 and 5233. (Sp)

**G4243 Aerospace Propulsion Systems.** Prerequisite: 2213 or Engineering 2213, and 3153 or 3253 or permission. Propulsion systems, thermodynamic cycles, combustion and thermochemical analysis, reciprocating engines, gas turbine and jet engines, current developments in propulsion systems. (F)

**4253 Implantable Devices (Slashlisted with 5253; Crosslisted with Bioengineering 4253).** Prerequisite: 3143. Provides student with a basic understanding of design, testing and application of implants/implantable devices and current development of implantable prostheses and devices in heart, cardiovascular system, soft tissue, bone and joint replacements, sensory system (ear and eye), and drug delivery system. No student may earn credit for both 4253 and 5253. (Irreg.)

**4263 Computer Integrated Manufacturing (Slashlisted with 5263).** Prerequisite: 2303, 4283. A general understanding on computer-based methods for manufacturing and assembly of mechanical products. The concept and methods for product manufacturing and assembly will be introduced from design viewpoint. No student may earn credit for both 4263 and 5263. (Irreg.)

**4273 Aerospace Systems Design I.** Prerequisite: 3253, 3333. Analysis and design of an aerospace system such as a complete flight vehicle, a propulsion system, a structural system, or a control system; market analysis, operating studies, mission specification, certification requirements; configuration selection; multidisciplinary character of design, classical design and analysis methods. **Laboratory** (F)

**4283 Concurrent Design and Manufacturing (Slashlisted with 5283).** Prerequisite: 2303, 2533, and 3143. The general concepts and methods in performing concurrent design and manufacturing for product development. Fundamental design theories and methods such as utility theory, state transition matrix method, game theory, and system life-cycle modeling and

optimization will be introduced. No student may earn credit for both 4283 and 5283. (F)

**G4362 Experimental Stress Analysis (Crosslisted with Civil Engineering 4362).** Prerequisite: Engineering 2153; AME 3112 or equivalent or graduate standing. Determination of stress by means of bonded wire, metal film and semiconductor strain gages, brittle coating and photoelasticity. Design, selection and use of gauges for measuring static, dynamic and combined strains. **Laboratory** (Irreg.)

**4373 Aerospace Systems Design II.** Prerequisite: 4273. Analysis and design of an aerospace systems such as a complete flight vehicle, a propulsion system, a structural system, or a control system; handling qualities, propulsion system integration design case studies; consideration of operational aspects, reliability, and maintainability; ground and flight testing; advanced design and analysis methods. **Laboratory** (Sp) [V]

**G4383 Control Systems.** Prerequisite: 2533, Mathematics 3113 or equivalent. Introduction to the concepts and theory of feedback control systems. Representation of electromechanical systems and aerospace vehicles by transfer and state variable methods. Stability and performance analysis, design techniques and synthesis methods for linear control systems. (F)

**4433 Advanced Thermodynamics (Slashlisted with 5433).** Prerequisite: 2213, 3173, 3363, or permission of instructor. Material focuses on applying advanced thermodynamic principles and tools to real-world application. Topics include: thermodynamic property relations, phase changes and mixtures, improved accuracy power cycle modeling, entropy relations, using exergy analysis as a design tool, and non-equilibrium thermodynamics. No student may earn credit for both 4433 and 5433. (F)

**G4442 Internal Combustion Engines Laboratory.** Prerequisite: 3122 or graduate standing. Test equipment and instrumentation, propulsion systems, reciprocating engines, supercharger fuel systems, tests and evaluation. **Lecture and Laboratory** (Sp)

**4493 Space Sciences and Astrodynamics (Slashlisted with 5493).** Prerequisites: Physics 2524, Mathematics 2443. Selected topics in astrophysics which may include astrodynamics, stellar structure and evolution, stellar pulsation, supernovae black holes, interstellar medium, galactic structure and clusters and superclusters, active galaxies, quasars, and cosmology. No student may earn credit for both 4493 and 5493. (F)

**G4513 Flight Controls (Slashlisted with 5513).** Prerequisite: 3333, 4383. Classical control theory with applications to aircraft flight control system design. No student may earn credit for both 4513 and 5513. (F)

**4553 Design Practicum.** Prerequisite: senior standing, 3353 and/or 3363, 4163, or permission. Design study of actual problems in industry. Lecture and **Laboratory** (Sp) [V]

**4593 Space Systems and Mission Design (Slashlisted with 5593).** Prerequisite: 4493 or permission from instructor. Topics include basic orbital mechanics, orbit determination, perturbations, numerical techniques, interplanetary transfer, influence of space environment, atmospheric re-entry. Space vehicles subsystems design; propulsion, attitude determination and control, structural design, thermal control, power and telecommunications. Investigation into mission design concepts and consideration. No student may earn credit for both 4593 and 5593. (Sp)

**4613 Multimedia in Engineering (Slashlisted with 5613).** Prerequisite: junior, senior, or graduate standing or permission of instructor. Introduces engineering students to electronic media. Topics will center on engineering and how electronic media can be used by engineers to illustrate technical topics such as three-dimensional motion, data visualization, time-based physical actions, and real-time simulations. Emphasizes developing effective interactive media programs for all engineering disciplines. No student may earn credit for both 4613 and 5613. (F)

**4623 Systems Engineering.** Prerequisite: junior standing in College of Engineering. Aerospace systems engineering will prepare aerospace or other engineers who may work in the aerospace industry to understand, analyze, and design overall aircraft and spacecraft systems, including ground operations systems. To include guest lecturers from the aerospace industry who will introduce real world applications of aerospace systems engineering, and a team project relevant to aerospace systems engineering. (Irreg.)

**G4802 Robotics Laboratory.** Prerequisites: 3112, Computer Science 1313 or equivalent, or graduate standing. Hands-on studies of robot systems with emphasis on semi-autonomous mobile robots. Mechanical, electrical and computational features of robots will be investigated. **Lecture and Laboratory** (F)

**G4812 Dynamics and Controls Laboratory.** Prerequisite: 3112 or equivalent or graduate standing. May be repeated with change of project; maximum credit four hours. Objectives are to teach the implementation of instrumentation and controls for mechanical systems and explore design factors of the control of mechanical systems. **Lecture and Laboratory** (Sp)

**G4822 Fluid and Thermal Laboratory.** Prerequisite: 3173; 3122 or equivalent or graduate standing. May be repeated with change of content; maximum credit six hours. Experimental studies in heat transfer or fluid mechanics. **Lecture and Laboratory** (F)

**G4832 Nondestructive Evaluation of Materials.** Prerequisite: 3112, 3143 or equivalent or graduate standing; Engineering 2313. Principles and practices of nondestructive determination of properties and integrity of solids. Topics include: ultrasonics, liquid penetrants, magnetic particles, eddy current, electron exoemission, thermography and acoustic emission. **Laboratory** (Irreg.)

**4971 Seminar (Slashlisted with 5971).** Prerequisite: senior standing. May be repeated without limit; maximum credit one hour for a B.S. degree. Recent developments in selected subjects in aerospace and mechanical engineering presented by invited experts from on and off campus. No student may earn credit for both 4971 and 5971. (F, Sp)

**4980 Undergraduate Research Studies.** 1 to 3 hours. Prerequisite: permission of instructor. May be repeated; maximum credit six hours. Work with various faculty members on individual research projects. The nature of the research and the hours credit varies. (F, Sp, Su)

**G5023 Elastic Stress Analysis.** Prerequisite: 3143 and Mathematics 3113; or permission. Theory of stress for continuous media, large displacement strain theory, stress-strain relations for elastic media, plane elasticity, application of theory to modern engineering problems. (F)

**G5033 Vibrating Systems II.** Prerequisite: 3413. Exact and approximate techniques for free and forced vibration of discrete and continuous linear mechanical systems. LaGrange's and Hamilton's methods of formulation. Eigenvalue problems; Rayleigh-Ritz, Galerkin, collocation and assumed mode methods. Approximate analysis of damped systems. Fourier and convolution integral techniques for nonperiodic excitation. (Irreg.)

**G5053 Elastic Plate Structures.** Prerequisite: 3143, Mathematics 3113. Cylindrical and biaxial bending; axisymmetric bending of circular plates; general equations for arbitrary planform shape; rectangular plates; plates on elastic foundations; plates of various shapes; approximate methods of analysis; anisotropic plates; combined lateral and in-plane loading, including buckling; large deflections. (Irreg.)

**G5063 Composite Materials.** Prerequisite: 3143 or permission. Nature and scope of composite materials; stress-strain relations and strength of a single layer of a laminated composite; laminated composite-material beams, plates and cylindrical shells; micromechanics and characterization of stiffness, fracture and transport properties; applications and optimal design. (Irreg.)

**G5083 Engineering Acoustics.** Prerequisite: 3413, Engineering 3223. Acoustic wave motion, the radiation of sound, scattering of sound, sound waves in ducts and rooms, acoustic noise control. (Irreg.)

**G5163 Turbomachinery.** Prerequisite: 3153 or permission. Energy transfer between a fluid and a rotor; flow of fluids in turbo machines; centrifugal pumps and compressors; radial and axial flow turbines; axial flow compressors and pumps; comparison of types. (Sp)

**G5203 Bioengineering Principles (Crosslisted with Chemical Engineering 5203).** Prerequisite: Engineering 2113 and 2613, and Mathematics 3113. Principles of bioengineering for the areas of the biomechanics of solids and fluids, mass transfer, biomaterials, electrical networks, imaging, and ionizing radiation as they apply to the human body. (Alt. F)

**G5213 Biomechanics I (Slashlisted with 4213).** Prerequisite: 3143 and 3153 or permission of instructor. Introduction to physiological systems with emphasis on structure and function of tissues and organs; application of continuum mechanics to understanding of tissue and organ behavior at microscopic and macroscopic levels; viscoelastic and solid biomaterials. No student may earn credit for both 4213 and 5213. (F)

**G5223 Biomechanics II (Slashlisted with 4223).** Prerequisite: 3143 and 3153 or permission of instructor. Biofluid mechanics; non-Newtonian behavior of blood and body fluids; basic mechanical properties of muscle, bone, cartilage, and other living tissues; application of continuum mechanics to circulation; growth and change of living organs in response to stress and strain. No student may earn credit for both 4223 and 5223. (Sp)

**G5233 Biomaterials (Slashlisted with 4233).** Prerequisite: junior or senior standing in the College of Engineering and permission of instructor. Introduction to materials used in biomedical environment, the design and use of implantable materials, such as metals, polyethylene, ceramics, and composites, biocompatibility, test methods, and tissue growth on biomaterials. No student may earn credit for both 4233 and 5233. (Sp)

**G5253 Implantable Devices (Slashlisted with 4253).** Prerequisite: 3143. Provides student with a basic understanding of design, testing and application of implants/implantable devices and current development of implantable prostheses and devices in heart, cardiovascular system, soft tissue, bone and joint replacements, sensory system (ear and eye), and drug delivery system. No student may earn credit for both 4253 and 5253. (Irreg.)

**G5263 Computer Integrated Manufacturing (Slashlisted with 4263).**

Prerequisite: graduate standing in engineering. A general understanding on computer-based methods for manufacturing and assembly of mechanical products. The concept and methods for product manufacturing and assembly will be introduced from design viewpoint. No student may earn credit for both 4263 and 5263. (Sp)

**G5283 Concurrent Design and Manufacturing (Slashlisted with 4283).**

Prerequisite: graduate standing in engineering. The general concepts and methods in performing concurrent design and manufacturing for product development. Fundamental design theories and methods such as utility theory, state transition matrix method, game theory, and system life-cycle modeling and optimization will be introduced. No student may earn credit for both 4283 and 5283. (F)

**G5293 Transport in Biological Systems (Crosslisted with Chemical**

**Engineering 5293).** Prerequisite: Chemical Engineering 3123 or permission of instructor. Theoretical and practical aspects of transport phenomena in living organisms and biomedical technologies. Applications include hemorheology, drug delivery, extracorporeal circulation, and artificial organs. (Irreg.)

**G5333 Thermodynamics and Combustion.** Prerequisite: Engineering 2213 or permission. Thermodynamics of non-reacting and reacting mixtures, chemical equilibrium, flame temperature, transport processes in combustion, chemical kinetics, fuels and their combustion properties, premixed and diffusion flames, deflagrations and detonations, practical combustion systems, pollutant emissions. (F)

**G5413 Processes in Fluid Mechanics.** Prerequisite: 3153, or permission of instructor. Introduction to the mechanics of non-Newtonian fluids and polymer processing techniques such as extrusion, molding and coating will be analyzed at the fundamental and applied level. Some of the computational methods will be discussed. (Irreg.)

**G5433 Advanced Thermodynamics (Slashlisted with 4433).** Prerequisite: 2213, 3173, 3363, or permission of instructor. Material focuses on applying advanced thermodynamic principles and tools to real-world applications. Topics include: thermodynamic property relations, phase changes and mixtures, improved accuracy power cycle modeling , entropy relations, using exergy analysis as a design tool, and non-equilibrium thermodynamics. No student may earn credit for both 4433 and 5433. (F)

**G5493 Space Sciences and Astrodynamics (Slashlisted with 4493).**

Prerequisite: Physics 2524, Mathematics 2443. Selected topics in astrophysics, the solar system; basic orbital mechanics, orbit determination and maneuvers, perturbations, numerical techniques, rendezvous and proximity operations, the N-body problem and approximations, interplanetary transfers. Design considerations. No student may earn credit for both 4493 and 5493. (F)

**G5513 Flight Controls (slashlisted with 4513).** Prerequisite: 3333, 4383. Classical control theory with applications to aircraft flight control system design. No student may earn credit for both 4513 and 5513. (F)

**G5553 Mechanical Behavior of Materials.** Prerequisite: 3143 or 3523, Engineering 2313 and Mathematics 3113; or permission. Combined stresses, failure theories, ductile and brittle fracture, creep and thermal effects, fatigue, impact, damping, homogeneous and composite materials. (F)

**G5573 Advanced Engineering Analysis I.** Prerequisite: Mathematics 3113. Vector and tensor analysis. Calculus of variations followed by variational methods and/or the method of weighted residuals. (F)

**G5583 Advanced Engineering Analysis II.** Prerequisite: 5573 or permission. Selected topics in advanced engineering analysis, such as lie theory for ordinary differential equations; eigenvalue problems and spectral analysis; transform methods; solution methods for partial differential equations. (Irreg.)

**G5593 Space Systems and Mission Design (Slashlisted with 4593).**

Prerequisite: 4493 or permission from instructor. Topics include basic

orbital mechanics, orbit determination, perturbations, numerical techniques, interplanetary transfer, influence of space environment, atmospheric re-entry. Space vehicles subsystems design; propulsion, attitude determination and control, structural design, thermal control, power and telecommunications. Investigation into mission design concepts and consideration. No student may earn credit for both 4593 and 5593. (Sp)

**G5613 Multimedia in Engineering (Slashlisted with 4613).** Prerequisite: graduate standing or permission of instructor. Introduces engineering students to electronic media. Topics will center on engineering and how electronic media can be used by engineers to illustrate technical topics such as three-dimensional motion, data visualization, time-based physical actions, and real-time simulations. Emphasizes developing effective interactive media programs for all engineering disciplines. No student may earn credit for both 4613 and 5613. (F)

**G5663 Matrix Methods in Structural Analysis.** Prerequisite: 3143 or equivalent. Review of matrix algebra and solution of linear equations. Energy concepts and principle of virtual work. Fundamentals of flexibility and stiffness methods. Coordinate transformation and matrix assemblage. Computer-oriented direct stiffness method and computer code developments. Secondary effects: support settlement and temperature change. Method of finite differences and application to beam and plate problems. (F)

**G5710 Topics in Solid Mechanics.** 1 to 3 hours. Prerequisite: permission of instructor. May be repeated with change of content; maximum credit nine hours for master's degree or twelve hours for a doctoral degree. Selected topics in continuum mechanics, such as theory of continuum mechanics, finite element methods, fatigue analysis and fracture mechanics.

**G5720 Topics in Fluid Mechanics.** 1 to 3 hours. Prerequisite: 5903 or permission of instructor. May be repeated with change of content; maximum credit nine hours for master's or 12 hours for a doctoral degree program. Concentration in a particular field of specialization in fluid mechanics, such as: rotating flows; hypersonic flow theory; advanced aerodynamics; advanced stability theory; plasma and laser dynamics. (Irreg.)

**G5740 Topics in Design.** Prerequisite: permission of instructor. May be repeated with change of content; maximum credit nine hours for master's or 12 hours for doctoral degree program. Selected topics in conceptual, preliminary and final design; CAD and optimization applications.

**G5750 Topics in Dynamics and Controls.** 1 to 3 hours. Prerequisite: permission of instructor. May be repeated with change of content; maximum credit nine hours for master's or 12 hours for a doctoral degree program. Selected topics in dynamics and control systems, such as: advanced structural dynamics, dynamics stability of nonconservative systems, and discontinuous control systems.

**G5763 Introduction to the Finite Element Method (Crosslisted with Civil Engineering 5763).** Prerequisite: 5663. Weighted residual and variational approaches. Finite element formulation for rod, truss and beam elements; plane stress and plane strain problem; axisymmetric and three-dimensional analysis; isoparametric elements; conforming and nonconforming plate and shell elements. (Sp)

**G5773 Structural Optimization.** Prerequisite: 5763 or equivalent, or permission of instructor. An introduction to optimization and to the optimization of simple structures modeled by the finite element method. Specifically truss structures will be optimized by various methods for minimum weight, subject to constraints such as strength and displacement. (F)

**G5803 Principles of Heat Transfer.** Prerequisite: 3173 or permission. Steady and transient heat conduction in multi-dimensional systems, convective heat transfer for external flows, convective heat transfer for internal flows, radiant heat transfer in lumped systems, integral equations of thermal radiation, and combined mode heat transfer. (F)

**G5813 Classical Aerodynamics.** Prerequisite: 5573, 5903, or permission of instructor. Classical theoretical methods in aerodynamics. Topics include lifting-line theory, conformal transformations, biplane theory, low aspect ratio wings, thin airfoil theory, small-disturbance theory, hodograph transformation, compressibility corrections.

**G5823 Principles of Heat Convection.** Prerequisite: 3173; Mathematics 3113. Conservation principles, boundary layer equations, flow inside tubes, flow over surfaces, turbulent flow, heat transfer, influence of temperature dependent properties, convective heat transfer at high velocities. (Irreg.)

**G5833 Radiative Heat Transfer.** Prerequisite: 3173, Physics 3223 or permission. Nature of radiant heat transfer, radiation characteristics of matter, calculation of radiant heat transfer in lumped systems, integral equations for exact representation, transfer through media which absorb, scatter and emit radiant energy. (Irreg.)

**G5853 Principles of Heat Conduction.** Prerequisite: 3173; Mathematics 3113. Basic relations, classical solutions to heat conduction problems. Variational methods, approximate methods, nonlinear boundary-value problems of heat conduction, numerical solution to heat conduction problems, heat conduction in anisotropic solids. (Irreg.)

**G5890 Guided Individual Studies.** 1 to 4 hours. Prerequisite: graduate standing and permission. May be repeated; maximum credit nine hours. May be subject to restricted applicability for specific degree requirements. Guided study of selected topics not offered in regularly scheduled classes. Arrangements and work requirements established by prior agreement of instructor and student(s). Students should expect to spend at least sixty hours of reading and study for each credit hour. (F, Sp, Su)

**G5903 Fundamental Fluid Dynamics.** Prerequisite: 3153, 5573 or concurrent enrollment, or permission. Basic laws of fluid motion; Navier-Stokes equations, kinematics of the flow field, vorticity and circulation, basic theorems for inviscid, incompressible flows, potential-flow application, exact solutions. (F)

**G5913 Viscous Fluid Dynamics.** Prerequisite: 5903 or permission. Fundamental exact solutions of viscous flow; Stokes' flow, boundary-layer flow, drag and resistance to motion, elements of heat transfer, effects of compressibility, thin shear layers, jets and wakes, elements of turbulence. (Sp)

**G5933 Aeroelasticity.** Prerequisite: 3143 or equivalent, 3253. Review of structural and aerodynamic theorems. The steady aeroelastic equations and solution methods; divergence and rolling effectiveness. The flutter equations and solution methods; panel flutter; the transonic flutter problem. (Irreg.)

**G5943 Rocket Propulsion.** Prerequisite: permission of instructor. Rocket history, nozzle theory and thermochemistry, propellants, liquid engines, solid engines, heat transfer, trajectory analysis, preliminary design of rocket vehicles and advanced rocket concepts. (Irreg.)

**G5953 Turbulence I.** Prerequisite: 5913 or permission. Description of turbulence; Reynolds averaging, momentum equations and energy budgets for the mean flow and fluctuations. Mean velocity profiles, skin friction and spreading rates for shear flows in various geometries, origin of turbulence from flow instability. (Irreg.)

**G5962 Experimental Methods in Fluid Mechanics.** Prerequisite: 3122, 5573, 5903 or permission. Theory of basic mechanical, optic and electronic components. Theory of instruments: hot wires, laser Doppler anemometers, pressure sensors, visualization techniques, special detectors, data acquisition and analysis. **Laboratory** (Irreg.)

**G5971 Seminar (Slashlisted with 4971).** Prerequisite: graduate standing. May be repeated without limit; maximum credit two hours for master's degree or four hours for a doctoral degree. Recent developments in selected subjects in aerospace and mechanical engineering presented by invited experts from on and off campus. No student may earn credit for both 4971 and 5971. (F, Sp)

**G5973 Computational Heat and Fluid Flow.** Prerequisite: 3173 and Engineering 3723, or permission of instructor. Computational techniques to solve conservation equations representing heat transfer, mass transfer, and fluid flow processes. The topics include discretization methods for multi-dimensional diffusion and convection problems, and pressure-correction algorithms. Applications involving comprehensive computer codes are also covered. (Sp)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, six hours. (F, Sp, Su)

**G5983 Computational Fluid Dynamics.** Prerequisite: 5573, 5903, 5973, or permission of instructor. Methods for the numerical solution of the Euler, boundary-layer, Navier-Stokes and parabolized Navier-Stokes equations. (Irreg.)

**G5990 Special Projects.** 1 to 9 hours. Prerequisite: graduate standing and permission of instructor. May be repeated but total credit applicable to any degree may be limited. Individual or group R & D projects involving original laboratory, analytical or theoretical investigations and syntheses. Specific objectives and work requirements established by prior agreement of the instructor and student. Students should expect to spend at least 60 hours for each credit hour and to submit appropriate reports or papers. (F, Sp, Su)

**G6033 Fracture Mechanics.** Prerequisite: 5023 or equivalent. Elastic crack-tip stress field, crack-tip plastic zone, energy principle, plane strain fracture toughness, crack opening displacement criterion, fatigue crack propagation and applications. (Irreg.)

**G6213 Dynamics of Real Gases.** Prerequisite: 5573, 5923 or permission. Equilibrium gas properties and equilibrium flow. Rotational, vibrational and chemical rate processes and flow with nonequilibrium processes. Applications such as chemical laser flow. (Irreg.)

**G6333 Combustion Processes II.** Prerequisite: 5333 or permission of instructor. Heterogeneous reaction kinetics, liquid droplet and spray combustion, solid particle combustion, kinetically controlled phenomena, fire-related problems, pollutant generation and control. (Irreg.)

**G6663 Advanced Finite Element Methods (Crosslisted with Civil Engineering 6663).** Prerequisite: 5763. Selected topics such as: nonlinear material problems, plasticity, creep (visco-plasticity), fracture, etc.; geometrically nonlinear problems; large displacements and structural stability; dynamic problems and analytical solution procedures; soil-structure interactions, application of the finite element method to fluid and heat transfer problem. (Irreg.)

**G6970 Advanced Topics in Aerospace and/or Mechanical Engineering.** Prerequisite: permission of instructor. May be repeated with change of content; maximum credit nine hours for a master's and twelve hours for doctoral degree program. Selected advanced topics in all aspects of aerospace and/or mechanical engineering.

**G6980 Research for Doctor's Dissertation.** (F, Sp, Su)

## Aerospace Studies (AERO)

**1011 Introduction to Aerospace Studies.** Prerequisite: departmental permission; concurrent enrollment in 1300. A study of the doctrine, mission and organization of the United States Air Force. Emphasis is placed on the purpose of strategic offensive and defensive forces and their inherent relationship to the function and employment of aerospace power. (F)

**1021 The Air Force Today.** Prerequisite: departmental permission; concurrent enrollment in 1300. A study of aerospace defense, missile defense, general purpose forces and aerospace support forces. The mission, resources and operation of tactical air forces, with special attention to limited war; and a review of Army, Navy and Marine general purpose forces. (Sp)

**1300 Leadership Laboratory.** Prerequisite: concurrent enrollment in 1011, 1021, 2011, 2021 or permission. May be repeated a maximum of three times. Designed to introduce the student to the customs and courtesies associated with the Air Force. Also provides a practicum for the initial development of leadership and command abilities. (F, Sp)

**2011 The Evolution of USAF Air and Space Power I.** Corequisite: 1300. The development of air power to include the technological advances which made military aviation possible. American attitudes toward aviation, evolution of pursuit, reconnaissance, bombardment and ground support tactics, the interwar years (1919-1939), air power during World War II, the Berlin Airlift, the Korean War, the development of an independent Air Force, and the Air Force build-up/force modernization of the 1950s. (F)

**2021 The Evolution of USAF Air and Space Power II.** Corequisite: 1300. A study of the development of airpower in the post-World War II period. Special emphasis is placed upon airpower and Cold War strategies, the Cuban Missile Crisis, Airpower in southeast Asia, the 1970s—a decade of change, the 1980s force modernization, the changing balance and role of airpower relative to today's major military powers. An introductory study of leadership, team building, and problem solving. (Sp)

**3013 Principles of Air Force Management.** Prerequisite: departmental permission. An introductory study of the basic concepts and practices of management in the military, private and public sectors. Emphasis is placed upon the principles of organizational communications and the development of oral and written communicative skills. Case studies are used to integrate and extend these principles to actual situations. Concurrent enrollment in 3100 is required. (F)

**3023 Leadership and Organizational Dynamics.** Prerequisite: 3013 or permission. The study of the fundamentals, traits and techniques of leadership. Included are such topics as job design, motivation, group dynamics, decision making and organizational change. Continued emphasis on the development of communicative skills. Case problems are

utilized to relate subject material to managerial principles. Concurrent enrollment in 3100 is required. (Sp)

**3100 Management and Leadership Practicum I.** Prerequisite: concurrent enrollment in 3013 or 3023. May be repeated once. Practical application of the principles, policies and methodologies associated with management as applied to a broad range of governmental and military situations. Emphasis is placed upon the fundamental managerial functions to include planning, organizing, staffing, directing and controlling. (F, Sp)

**4013 American National Security I.** Prerequisite: 3023 or departmental permission. Conceptual study of the U.S. national security policy examining the formulation, organization and implementation of national security; the context of national security; the evolution of strategy; and the management of conflict. Included is a block of instruction on the military justice system. Concurrent enrollment in 4100 is required. (F)

**4023 American National Security II.** Prerequisite: 4013 or departmental permission. Examines U.S. national security policy in the international setting; arms control and peacekeeping efforts; and civil-military interaction. Includes a study of the military profession and officership. Designed to provide future Air Force officers with a background in the profession and U.S. national security policy so that they can function effectively in today's Air Force. Concurrent enrollment in 4100 is required. (Sp)

**4100 Management and Leadership Practicum II.** Prerequisite: 3100 and concurrent enrollment in 4013 or 4023. May be repeated once. A continued practical application of the principles of management and leadership to include the dynamics of group behavior, decision making, communication and the effects of organizational change. Emphasis is given to applications in a variety of organizational, administrative and financial contexts. (F, Sp)

## African and African-American Studies (AFAM)

### 2003 Introduction to African and African-American Studies.

Prerequisite: permission of instructor. Introduces students to African and African-American Studies at the University of Oklahoma, and at other institutions of higher education in the U.S. Students will study the major ideas, concepts, problems, issues, research and scholars in the field. Provides career focus and information for students who will major or minor in African and African-American Studies. (F, Sp) [IV-NW]

**2113 Africa and the Diaspora.** The course introduces students to the study of Africa and the dispersion of African people throughout the New World. Focus is placed upon the geographical and historical understanding of the continent of Africa and the identification of central causes of underdevelopment within the continent. (Irreg.)

**2913 Perspectives on the Digital Divide: Theory and Application.** This course focuses on the issue of the digital divide and the impact of computer illiteracy in today's society, with special focus on developing regions of Africa. The lack of access to communication technologies, including personal computers and the internet, is examined as an obstacle to the economic, social and political development in these regions. Focus is directed to theory and application. (Irreg.)

**3123 West African & African-American Experiences.** Prerequisite: any course that focuses on African or African American content, or English 1213. Provides a basis for understanding discourse concerning the future of West Africa and Africans in the American Diaspora. Examines significant issues concerning West African people, their past, their priorities, and prognoses. (Irreg.)

**3133 Introduction to African Aesthetics.** Prerequisite: any course that focuses on African or African American content, or English 1213. Explores the philosophy, culture, and aesthetic expressions of African Americans before, during, and after enslavement through a comparison of African and African American culture. Emphasis is placed upon developing a body of knowledge and analytic skills that will enable students to deepen their understanding of traditional and contemporary culture practiced by the African American community. (Irreg.)

**3313 A Social History of Black Military Life: 1877-1895.** Prerequisite: any course that focuses on African and African American content, or English 1213. Course presents a social history of black military life during the post-Reconstruction era. Examines the nexus between the common attitude toward African Americans in American society and American military racial policy during the post-Reconstruction era. (Irreg.)

### 3323 Black Military Presence in the American West: 1866-1891.

Prerequisite: any course that focuses on African or African American content, or English 1213. After the Civil War, Congress enacted legislation to authorize regiments of black enlisted men and white officers for service in cavalry and infantry units throughout the American west. This course examines African American service and heroism to this nation from 1866 to 1891 in Texas, Indian Territory, New Mexico, the Dakotas, Montana, and Arizona. The course is reading and writing intensive. (Irreg.)

**3333 Blacks in Oklahoma: A Stolen Legacy.** Prerequisite: Junior standing and any 2000-level African and African American Studies class. This course examines the unique interrelationships that encouraged black migration into Oklahoma prior to statehood. The experience of African Americans in Oklahoma is characterized by the chattel slavery exercised by members of the five civilized tribes, a legacy of military service and law enforcement, organized efforts to establish Oklahoma as an all-black state, significant socio-political activity (led primarily by editors of black newspapers) and a number of historic cultural contributions. This course will provide an in-depth exploration of the historic interrelationships, socio-political activism, economic development and culture of black Oklahomans. (Irreg.)

**3413 African-American Education in the United States.** Prerequisite: any course that focuses on African or African-American content, or English 1213. Examines two major historical features of African American education: the ways in which the African American community has sought to educate itself and the ways in which white Americans have sought to educate African Americans. Emphasis is placed on the purpose of education, and alternative visions of educational possibility. (Irreg.)

**3423 African-American Men.** Prerequisite: any course that focuses on African and African-American content, or English 1213. Examines the status and role of the African-American male, from the perspective of contemporary research and literature which should frame the extant disclosure and discussions, policy-making, and future research. (Irreg.)

**3433 African American Women.** Prerequisite: any course that focuses on African or African American content, or English 1213. Examines the history and experience of African American women, focusing on race, gender, and socio-economic status and the corresponding effects of these forces in their lives. (Irreg.)

**3443 African American Athlete.** Prerequisite: any course that focuses on African or African American content, or English 1213. Examines the history, participation, and the influences of the black athlete. Provides a forum for discussion of the contemporary issues related to the African American athlete. (Irreg.)

**3513 AFAM Research Methods.** Prerequisite: AFAM major or minor, junior standing. This course is designed to introduce students to research methods in African and African American studies. Qualitative and quantitative research methods are studied, discussed, and undertaken. Course design stresses the importance of using both methods to cross-validate findings. (Irreg.)

### 3613 Visual Culture and African American Identity: 1895-1939.

Prerequisite: any course that focuses on African or African American content, or English 1213. Examines the visual commodities of black and white cultural producers to analyze issues of caste and class status, gender, and sexuality that historically and currently inform competing notions of blackness within the public sphere. (Irreg.)

**3643 African Folklore.** Prerequisite: Junior standing and any 2000-level African and African American Studies class. This course investigates the continuation of traditional elements produced in diverse media and circumstances in a modern, largely urban Africa. Issues such as identity, difference, diversity; tradition and history; modernity and development; wealth and power; political change and gender relations are topics to be explored through folk expression. (Irreg.)

### 4003 Senior Seminar in African and African-American Studies.

Prerequisite: completion of 12 hours of required AFAM or AFAM-related courses. Provides students the opportunity to review and integrate their study in African and African-American courses. Students will be involved in academic experiences that facilitate the translation from theory to practice. Experiences will vary depending on the instructor. (Sp) [IV]

**4010 Special Topics in African and African-American Studies.** 1 to 3 hours. Prerequisite: junior standing and any course covering African and African-American issues. May be repeated with change of content; maximum credit nine hours. Designed to permit the study of specific and changing issues and problems in AFAM Studies. Course will also be used for special workshops, conferences, seminars, etc. and individually planned and supervised activities focused on specific areas of concern. (Irreg.)

**4113 African Civilizations.** Prerequisite: any course that focuses on African or African-American content, or English 1213. Examines major ancient and recent African civilizations. Includes study of state formation, kinship, government, iconography, ritual, habitat and dance, music, and art. (Irreg.)

**4123 African Politics.** Prerequisite: Junior standing and any 2000-level African and African-American Studies course. The course examines African politics as it relates to civil-military relations, military coups d'état and political liberalization and democratization. The overriding objective of the course is to familiarize students with the problems and transformation of African political systems. (Irreg.)

**4133 Contemporary Visual Art of Africa.** Prerequisite: junior standing and any 2000-level African and African-American Studies (AFAM) class. This course explores current visual arts developments in Africa. The course traces the historical evolution, influences and status of contemporary African art, with special reference to established visual artists who either work within or outside of Africa. (Sp)

**4143 Africa's Role in the Contemporary World.** Prerequisite: Junior standing and any 2000-level African and African-American Studies class. This course will resent Africa's contemporary reality – the positive as well as the negative—by examining major current issues after surveying Africa's history, geography, societies, and culture. Themes covered will include: political developments, regional conflicts, human rights and women's issues, economic development and poverty, refugees and migration, and the environment. The course will also examine Africa's role in US global policy priorities, including the war against terrorism. (Irreg.)

**4153 African Youth Cultures.** Prerequisite: Junior standing and any 2000-level African and African-American Studies class. This course examines African youth cultures and sub cultures as they enter and transform political, social, cultural, and economic spaces. It also explores their relationship with adult, mainstream societies. We will investigate African youth's identity project—how and why they articulate and mobilize an individual and group identity. Some issues of exploration will be the following: What is youth culture and subculture? How do western concepts of individualism apply to an African context? (Irreg.)

**4213 African Dance.** Prerequisite: any course that focuses on African or African American content, or English 1213. Examines various essential dance movements from the African Diaspora. Theory and praxis meet in an effort to better understand the culture and language of dance amongst African people. (Irreg.)

**4223 African Dance II.** Prerequisite: any course that focuses on African or African American content, or English 1213. The course is designed to deepen understanding of African dance through a combination of praxis, theory, and choreography. In this course the Umfundalai technique is taught at an accelerated pace. Students are challenged to perform advanced combinations of this dance technique. Students conduct research on African dance and African dance aesthetics. Theoretical applications of African aesthetics to African dance are made. Students explore aesthetic theory, relevant historical information and traditional African cultural philosophy through choreography. (Irreg.)

**4233 Blacks & the Movies: Hollywood & Black Independent Film.** Prerequisite: any course that focuses on African or African American content, or English 1213. Historical overview of the development of African American cinema. Examines how film has been used to culturally define the parameters of black cultural identity and how black cultural producers promoted alternate constructions of black identity. (Irreg.)

**4313 Harlem Renaissance.** Prerequisite: any course that focuses on African or African American content, or English 1213. Examines the artistic and literary strivings of African Americans produced during the period between the post-World War I era and the Great Depression. Examines work of individual artists and literary figures. Also examines the impact of African and African American aesthetics on the development of American Modernism. (Irreg.)

**4323 Afro-Caribbean Prose.** Prerequisite: Junior standing and any 2000-level African and African-American Studies class. The course will examine the theme of black identity by exploring writers from the Dominican Republic, Puerto Rico, New York, and from Cuba, who humanize the image of blacks by illustrating different aspects and dimensions if the psyche in Spanish-speaking Caribbean islands. Selected texts will be examined to explore how they illustrate representations of silenced voices, address the absence of authentic characterization of blacks, and conscientiously and progressively concentrate on a new racial reality. (Sp)

**4413 Issues in the African American Family.** Prerequisite: any course that focuses on African or African American content, or English 1213. The purpose of the class is to explore the inter- and intra-structural components of the African American family using an applied social systems and ecological approach. Great emphasis will be placed on historical and concurrent social, religious, political and economic factors that influence the psyche of both the family and in a broader sense a culture rooted in the Afrocentric paradigm. (Irreg.)

**4423 African American Health Issues.** Prerequisite: any course that focuses upon African or African American content, or English 1213. Examines health problems, health status, and health behavior of African American men and women. A life course perspective is emphasized from birth to later life. It is assumed that being African American predisposes persons to health problems that increase the risk of disease or that influence health based on the diversity of cultural beliefs, values, and practices. Access to health services will be addressed. (Irreg.)

**4433 Women of the Diaspora.** Prerequisite: any course that focuses on African or African American content, or English 1213. A comparative study of the complex roles of women of African descent in cross-cultural perspective. Examines the issue in the socio-cultural contexts of South Africa, United States, and the Caribbean. Topics include gender relations, impact of urbanization, class status, and Diasporan women as culture workers. (Irreg.)

**4453 Black/White Relations in America.** Prerequisite: any course that focuses on African and African American content, or English 1213. Examines race relations in general and black/white relations in particular; creative race relations problem-solving and decision-making strategies; and self-awareness as it affects race relations. (Irreg.)

**4613 African American Music Traditions.** Prerequisite: any course that focuses on African or African American content, or English 1213. Examines African cultural retentions in African American music. Emphasis is placed upon traditional African rhythms, attitudes, themes, and sounds. Investigates how these devices inform African American musical traditions. (Irreg.)

**4623 Hip Hop Culture and Contemporary America.** Prerequisite: any course that focuses on African or African American content, or English 1213. Historical inquiry into behavioral and sociopolitical trends of hip hop culture. Attempts to codify and recognize dominant cultural attitudes, concepts and paradigms as global phenomenon shaping understanding of contemporary African American character, identity, and culture. (Irreg.)

**4633 African American Religious Traditions.** Prerequisite: any course that focuses on African or African American content, or English 1213. An anthropological and historical inquiry into the nature of the religious experience of Africans enslaved and involuntarily brought to the United States. Emphasis is placed upon the identification and understanding of the central cultural and religious practices and products form black peoples' experiences of the holy. (Irreg.)

**4643 Contemporary Black Feminism.** Prerequisite: Junior standing and any 2000-level African and African-American Studies class. This course analyses the way race, gender, sexuality, and socioeconomic status have historically dominated, intersected and/or competed within the lives of African-American women. This course examines the way African-American women have drawn upon these internal struggles to serve as voices of power and agents of social change. Readings in this course will highlight the life experiences, work, and contributions of both early and contemporary African-American feminists, particularly their efforts toward advocating for black women's liberation, womanism, and black feminist agendas. (Irreg.)

**4713 Afrocentric Thinking and the Civil Rights Movement.** Prerequisite: any course that focuses on African or African American content, or English 1213. Examines afrocentric thinking and identifies key afrocentric patterns and strategies within the civil rights movement. Students will analyze African American leadership and how leaders brought afrocentric thinking to the forefront. (Irreg.)

**4723 Leadership in the African American Community.** Prerequisite: any course that focuses on African or African American content, or English 1213. Comprehensive analysis of leadership skills and development from afrocentric perspective applied historically for social change; how these strategies are enacted for empowerment within contemporary society. (Irreg.)

**4733 Civil Rights Law: Employment and Education.** Prerequisite: any course the focuses on African or African American content, or English 1213. Analyzes civil rights law in employment and education. Focuses on laws that address discrimination, equal employment opportunity, equal

educational opportunity and affirmative action, as well as the legal foundation for diversity initiatives. Examines regulations of enforcement agencies, and agency grievance procedures, including selected court cases. (Irreg.)

**4990 Independent Study.** Prerequisite: permission of instructor. Permits the student to study in depth, under the guidance of the instructor, particular and special African and African-American topics of interest to the student and within the expertise of the instructor. Generally, students and the instructor meet to determine the nature of independent study, schedule progress reports and meetings, timelines for the submission of assignments, nature of the evaluation process and culminating effort or activity. (F, Sp, Su)

## Allied Health Studies (AHS)

**1400 Orientation to the Health Professions.** Typically, a one-hour survey course to introduce and explore the health professions offered by the colleges of the University of Oklahoma Health Sciences Center. Through a series of lectures, students will interact with educators, practitioners, and students in: Audiology, Dental Hygiene, Dentistry, Medicine, Nuclear Medicine, Nursing, Nutritional Sciences, Occupational Therapy, Pharmacy, Physical Therapy, Physician Associate, Public Health, Radiation Therapy, Radiography, Sonography, and Speech-Language Pathology. (F, Sp)

## Anthropology (ANTH)

The department offers courses which are slashlisted so undergraduate students may take an undergraduate 4000-level course while graduate students may take a graduate 5000-level course. The lectures in a slashlisted course are the same. However, students in the 5000-level course have substantial additional requirements beyond those for students in the 4000-level course. These additional requirements are listed in the slashlisted course syllabus.

**1113 General Anthropology.** An introduction to the anthropological way of thinking about biological evolution, fossil hominids, prehistory, the rise of civilization, ecology, war, the energy crisis, racism, sexism and other contemporary controversies. Emphasis is placed on cross-cultural, linguistic and relativistic perspectives. (F, Sp, Su) [III-SS]

**1203 Language Across Cultures (Crosslisted with Linguistics 1203).** Theories of language family origins and their relationship to human migration; types of human languages; linguistic concept of genetic relatedness; writing systems development; non-Western sociolinguistic and usage phenomena; cultural and scientific importance of endangered languages; how languages become endangered; factors involved in preservation. This course may not count for major credit. (Sp) [IV-NW]

**1253 Folklore and Folklife.** Introduces the academic study of folklore and folklife by introducing four key concepts: Tradition, community, art and performance. Verbal folklore, material culture, performance genres and customary knowledge will be examined. Issues of cultural diversity and historical change will be addressed. Special emphasis will be placed on exploring traditional cultures in the United States and Europe. (F) [IV-AF]

**1413 Great Discoveries in Archaeology.** Introduces students to the accomplishments of ancient civilizations around the world. A brief overview of archaeological methods and research and of the precursors of civilizations. Concentrates on major civilizations of the world including Mesopotamia, Europe, Egypt, sub-Saharan Africa, India, China, Southeast Asia, Mesoamerica, South America, and the North American Midwest. (F) [IV-NW]

**1523 Prehistoric Foundations of Old World Civilization.** The history of humans throughout the Eolithic, Paleolithic, Mesolithic, Neolithic, Bronze and Iron Ages. Emphasis is placed upon the prehistory of Europe, although Africa and Asia are included wherever a broader knowledge contributes to a better understanding of the prehistoric foundations of Western European cultures. (F) [III-SS]

**1613 Indian Peoples of Oklahoma.** A general introduction to the traditional cultures and current condition of the 38 diverse Native American groups now resident in Oklahoma. (F, Su) [IV-NW]

**1713 Beginning American Indian Languages I (Crosslisted with Native American Studies 1713).** May be repeated with change of language; maximum credit 12 hours. Introduction to the structure of an American Indian language with special attention to its phonology, morphology, and

syntax. Conversational practice, vocabulary-building and the history and culture of the native speech community also are emphasized. (F, Sp) [I-FL]

**1723 Beginning American Indian Languages II (Crosslisted with Native American Studies 1723).** Prerequisite: 1713 in the native language listed as course topic. May be repeated with change of language; maximum credit 12 hours. Introduction to the structure of an American Indian language with special attention to its phonology, morphology and syntax. Conversational practice, vocabulary-building, and the history and culture of the native speech community also are emphasized. (F, Sp) [I-FL]

**1823 Religion in Everyday Life.** World religions are surveyed using an anthropological approach. Students are introduced to social and cultural analyses of religious concepts and behaviors using a comparative approach. The place of religion in everyday life is considered from this cross-cultural, anthropological perspective. (F) [IV-NW]

**1913 Plagues & People: Health & Disease in Human Society.** The study of the impact of diseases such as malaria, bubonic plague, and AIDS on human society, from their effects on populations to how they have influenced the course of history. Identification of social and cultural factors, conditions that influence and impede the spread of contagious diseases, ethical issues concerning the treatment of the sick, and policies designed to halt epidemics will be examined. The contemporary threat of biological weapons and the impact on local and national public health efforts in the U.S. will be discussed. (Irreg.)

**2113 Introduction to Archaeology.** To acquaint the beginning student with the discipline of archaeology as it is now practiced within the science of anthropology. (F, Sp) [III-SS]

**2203 Peoples of the World.** A survey of world cultures, dealing with representative hunting and gathering, horticultural, pastoralist and complex societies. Designed to familiarize the student with the full range of variation of human behavior. (F, Sp, Su) [IV-NW]

**2243 Introduction to Sociocultural Anthropology.** Introduction to theory and practice in sociocultural anthropology. Review key theoretical approaches from the twentieth century, explore how they are applied ethnographically in the study of social institutions—economic, political, familial, religious—and cultural processes, and critique them. Selected topics and issues will be explored from different theoretical perspectives. (F, Sp)

**2303 General Linguistics (Crosslisted with Linguistics 2303).** Humanistic and formal study of natural languages: how they are similar to and different from one another in their use of speech sounds, logical structures and mechanisms that integrate events, objects and speakers in spatio-temporal contexts. The relationship between language and culture; language acquisition and language change. (F, Su) [I-O]

**2313 Language Use.** An introduction to anthropological approaches for understanding language use in social context. These approaches include: sociolinguistics, the ethnography of speaking, symbolic interactionism, interpretive anthropology and discourse analysis. Both western and nonwestern examples will be used to illustrate these approaches. (F, Sp) [I-O]

**2503 Introduction to Biological Anthropology.** Prerequisite: 1113. The student is exposed to historical, theoretical and applied perspectives of biological anthropology. Concentration on human biocultural evolution; human adaptability, variation, and genetics; primatology and primate behavior. The major emphasis is on understanding modern man as a product of biological, cultural, behavioral and environmental interactions throughout his/her evolutionary development.

**2613 Native Peoples of North America.** An introduction to the native societies and cultures north of Mexico from pre-Columbian times to the present. (Sp, Su) [IV-NW]

**2733 Intermediate American Indian Languages (Crosslisted with Native American Studies 2733).** Prerequisite: 1723. May be repeated with change of language; maximum credit 12 hours. A systematic review of the structure of an American Indian language. Syntactic control and vocabulary expansion are emphasized. Conversational practice and traditional oral texts are used to develop proficiency. (F, Sp)

**2953 Topics in Anthropology.** May be repeated with change of topic; maximum credit nine hours. Topics will vary. Acquaints the student with a topic within a subdiscipline of anthropology including anthropological theory and methods. (Irreg.)

**Unless otherwise noted, the prerequisite for courses in anthropology numbered 3000-4999 is 1113 or junior standing.**

**3033 Phonetic Description (Crosslisted with Linguistics 3033).**

Prerequisite: 2303. Study of the basic principles in forming the phonetic description of human speech. (Sp)

**3043 Mythology and Folklore (Crosslisted with Modern Languages and Literatures 3043).** Prerequisite: none. The nature and function of myth and folklore in human societies, and the uses to which the study of folklore have been put by anthropologists in both functional and culture-historical analyses of preliterate societies. (F, Sp) [IV-WC]

**3053 Grammar: Phonology (Crosslisted with Linguistics 3053).**

Prerequisite: Anthropology or Linguistics 2303. Description of human speech sounds. Analysis of speech sound systems: study of the varied ways human communities use speech sounds to convey and share information. Principled development of writing systems for unwritten languages. Includes the description and analysis of non-Indo-European language materials. (F, Sp)

**3063 Language and Culture (Crosslisted with Linguistics 3063).**

Prerequisite: 2303. The relationships between language and the rest of culture, with emphasis on diachronic as well as synchronic problems. Such crucial issues as the limitation of language on thought and perception and language and conceptualization are also considered. (Sp)

**3143 Peasant Societies.** Prerequisite: 1113 or junior standing. The anthropological approach to peasantries, peasants and peasant societies. Both theoretical and substantive studies will be examined. (Irreg.)

**3263 Studies in Ethnography.** Prerequisite: 1113, or 2203 or 2243. Examines the relationship between theory and method in selected ethnographic studies. (Irreg.)

**3333 The Aztec World.** Prerequisite: 1113 or junior standing. An in-depth analysis of Aztec culture (circa 1519), history, customs, and life-ways leading to an appreciation of a starkly different world view and culminating in a research paper based on primary sources. (F) [IV-NW]

**3353 Syntax (Crosslisted with Linguistics 3353).** Prerequisite: 2303. An introduction to the fundamental concepts of Chomskyan syntax. Includes theory of categories and constituents, basic syntactic relations, case theory, and binding theory. (F)

**3423 Anthropology of Religion.** Prerequisite: 1113 or junior standing. A consideration of the nature and role of religion in small-scale societies. Emphasis will be given to the relationship of the various anthropological approaches to religion with the intellectual history of anthropology as a discipline. (Irreg.)

**3453 Contemporary Native American Issues.** Prerequisite: Prerequisite: 1613 and junior standing, or permission of instructor. A survey of the social, political and economic issues of modern Native American groups. The relationship between native tribal cultures and American economic and government interests will be examined. (Irreg.) [IV-NW]

**3503 Oklahoma Prehistory.** Prerequisite: 1113 or junior standing. Traces the evolution of Oklahoma's native people from specialized early hunters of 12,000-30,000 years ago to protohistoric villagers representing links to contemporary Indian tribes. The emphasis is on adaptation to diverse environmental settings and evolution of complex societies. (Irreg.) [IV-NW]

**3553 Peoples of the Pacific Islands.** Prerequisite: 1113 or junior standing. An ethnographic and historical survey of the various peoples of the Pacific (Indonesia, Australia, Melanesia, Micronesia, Polynesia) with emphasis on the peopling of Oceania and varying cultural and social developments and elaborations on an insular environment. (F, Sp) [IV-NW]

**3713 Native American Artistic Traditions.** Prerequisite: 1613 or junior standing. Covers the artistic traditions of Native Americans and how these traditions offer insight into the thinking, lifeways, beliefs, and philosophies of differing groups of native peoples. Artisans, orations, music and dance will be explored, as well as kinship, infant care, concepts of death and self-respect. (Sp)

**3743 American Indian Justice in Cultural and Western Law.** Prerequisite: 1613 or junior standing. Clarification and investigation of American Indian tribal law as it compares and contrasts with western law. Also includes considerations of kinship, social and political organization, and religious influences on traditional tribal law. (Sp)

**3803 Asian Prehistory.** Prerequisite: 1113 or junior standing. A survey of the archaeological remains from the Asian continent beginning with the Paleolithic and continuing through to the beginning of the Historic period. Some emphasis will be placed on the development of Chinese civilization. (Irreg.) [IV-NW]

**3843 South Asia.** Prerequisite: 1113. Anthropology of cultures and nations of the Indian subcontinent, with emphasis on the diversity of south Asian cultures, the roots of sociocultural phenomena in the history of the region, ways deep-rooted cultural understandings are manifested in everyday life, and the rapid changes and challenges now being experienced by the people and nations of south Asia. (Irreg.) [IV-NW]

**3883 Archaeology of South America.** Prerequisite: 1113 or junior standing. A survey of the archaeological remains from South America with special emphasis on the development of civilization. (F, Sp) [IV-NW]

**3893 Maya, Aztec and Inca: High Civilizations of Ancient America.** Prerequisite: 1113 or junior standing. An archaeological and ethnological study of the pre-Spanish cultures of Mesoamerica and the Central Andes giving primary emphasis to the Maya of Yucatan, the Aztec of Mexico and the Inca of Peru. (F, Sp) [IV-NW]

**3920 Internship in Museum Anthropology.** Prerequisite: 1113 and six credit hours in Anthropology. May be repeated: maximum credit six hours. Designed to provide hands-on training in anthropological museum work. Internships are arranged on an individual basis with professional museum anthropologists or with professionals working in a museum in which anthropology-oriented museum work is undertaken. Students must meet criteria for acceptable performance and submit a final report. (F, Sp, Su)

**3930 Fieldwork in Anthropology.** 1 to 8 hours. Prerequisite: permission of instructor or adviser. May be repeated; maximum credit eight hours. Designed to teach the student field methods in archaeology, ethnology or linguistics through actual participation in a field program. The subject matter depends upon the specific summer session and varies from year to year. The course is given during the summer session for a period of eight weeks. (Su)

**3940 Internship in Archaeology.** Prerequisite: 1113, 2113, 3930. May be repeated; maximum credit six hours. Designed to provide advanced archaeological field and/or laboratory training for students who already have some archaeological field and/or laboratory experience. Internships are arranged on an individual basis with professional archaeologists. Students must meet criteria for acceptable performance and submit a final report. (F, Sp, Su)

**3943 Psychological Anthropology.** Prerequisite: 1113 or junior standing. Survey of anthropological studies that make systematic use of psychological concepts and methods; emphasis on the relationship between individual experience and sociocultural phenomena; how the history of the field has influenced current methodological approaches; and topics of interest. (Irreg.)

**3950 Internship in Cultural Anthropology.** Prerequisite: 1113 and six credit hours in cultural anthropology. May be repeated; maximum credit six hours. Designed to provide field training in cultural anthropology. Internships are arranged on an individual basis with professional cultural anthropologists or with professionals working in a setting in which cultural anthropology research can be performed. Students must meet criteria for acceptable performance and submit a final report. (F, Sp, Su)

**3953 Proseminar in Anthropology.** Prerequisite: 1113 or junior standing. May be repeated; maximum credit six hours. Topics will vary and are intended to acquaint undergraduate majors with subdisciplines through specialized study involving anthropological theory, methodology, the preparation, development and writing of reports. (F, Sp)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Honors Reading will provide students with the opportunity to develop an appropriate body of reading materials on topics not covered in detail in routine coursework. Students will be obliged to assume the primary initiative in selecting the topic, compiling the bibliography and completing the reading, and will report their progress in weekly sessions to their instructor. Credit will be given in this course only after an intensive oral examination. (F, Sp)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. The topics addressed in this course will cover highly circumscribed areas of anthropological inquiry which are intensively investigated during the course of the semester. Originality of research and approach will be required and each student will be expected to contribute to the proceedings as a relatively mature scholar. (Irreg.)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work at a special project under the guidance of a professor in the student's major department. (F, Sp)

**G4003 Museum Anthropology I.** Prerequisite: 1113 or junior standing. Introduces the student to a wide range of topics and issues in the practice of anthropology in museums. Museums will be examined as cultural, political, and educational institutions. Students will gain exposure to exhibition design, collection curations, and museum operations. (F)

**G4023 Museum Anthropology II.** Prerequisite: 4003. Consideration of the philosophical and practical issues of education programs in museum settings. Case studies in community-museum relations. Planning and development of exhibit and program components. Policies and procedures or curatorial practice for collection preservation and documentation. (Sp)

**4033 Story, Performance, Event.** Prerequisite: 2303 and junior standing. Covers the verbal art and performance aspects of linguistic anthropology. Focuses on oral storytelling as we have come to understand it and will have as its main concern how people tell stories. Students will get an overview of verbal art and performance where and when storytelling occurs. (Irreg.)

**4053 Morphology (Slashlisted with 5053; Crosslisted with Linguistics 4053).** Prerequisite: 3053 and 3353. Introduces and develops theories and concepts of morphology including word formation, derivation, inflection, non-concatenative morphs, covert categories, prosodic phenomena, morphosyntactic categories and clitics. Data from non-Western languages will be prominent. No student may earn credit for both 4053 and 5053. (Irreg.)

**4103 People and Plants.** Prerequisite: 1113 or junior standing. Examines the direct relationships between people and plants, focusing on traditional peoples of the world. Topics include paleoethnobotany, folk classification, agriculture, hallucinogens and medicines. (Irreg.) [III-SS]

**4113 Anthropology Capstone.** Prerequisite: 1113, 2113, 2243, 2303, 2503, and senior standing. Important historical and contemporary ideas and theories in anthropology. Content varies by semester. (Irreg.)

**4143 Economy and Culture: Production, Exchange, Consumption.**

Prerequisite: 1113 or junior standing. This class is an introduction to the issues, methods, and concepts of economic anthropology. Included are issues of production, distribution, and consumption in non-western and western societies. Other topics include the comparison of gifts and commodities, inequality, economy as a moral system, and the evolution of global economies. (Irreg.)

**4163 The Study of Material Culture (Slashlisted with 5163).** Prerequisite: 1113 or junior standing. Focuses on the study of the things people make and the broader social contexts in which objects are used, circulated, made meaningful, and consumed. Methods and theories developed in geography, folklore, cultural anthropology, archeology, and related social sciences will be examined. No student may earn credit for both 4163 and 5163. (F)

**4173 Historical Archaeology (Slashlisted with 5173).** Prerequisite: 1113 or junior standing. Provides a survey of the approaches to the archaeological study of the historic period, which in North America covers the past 500 years. The development of historical archaeology and its current practice and uses will be reviewed using case studies from around the world as examples. No student may earn credit for both 4173 and 5173. (F)

**G4233 Seminar in Advanced Curatorial Practice.** Prerequisite: 4003. Provides opportunities for advanced instruction and practical experience in the curation and utilization of anthropology collections. (F)

**4253 The Anthropology of Communities (Slashlisted with 5253).**

Prerequisite: 1113 or junior standing. Designed to introduce students to the community in applying anthropological field techniques and theory. While gaining training in method and theory in class, students will be given assignments to execute in community settings. Particular emphasis will be placed on ethnicity, gender and seniority as ethnological parameters. No student may earn credit for both 4253 and 5253. (Irreg.)

**4303 Women and Development in Africa (Slashlisted with 5303).**

Prerequisite: 1113 or junior standing. Examines women's involvement in economic development in Africa. Some consideration will be given to family structure and social stratification, as well as women's participation in the social, political and economic spheres. Avenues for viable social change will also be considered. No student may earn credit for both 4303 and 5303. (Irreg.) [IV-NW]

**4313 Introduction to Native American Languages (Slashlisted with 5313).** Prerequisite: 2303. Survey course into the nature and distribution of Native American languages, with a focus on North and Meso America.

Topics include the typology of native languages, language families and real features and cultural domains, and language contact. This course will not

satisfy the foreign language requirements. No student may earn credit for both 4313 and 5313. (Irreg.)

**4330 Topics in Linguistic Anthropology (Slashlisted with 5330).** 1 to 4 hours. Prerequisite: 2303. May be repeated with change of content; maximum credit twelve hours. Intensive examination of new developments in the field of anthropological linguistics. Topics reflect interests of faculty, but may include issues of language revitalization, language shift, multilingualism, language and identity, storytelling traditions, language change, or language contact. No student may earn credit for both 4330 and 5330 on the same topic. (Irreg.)

**4363 Linguistic Field Methods (Crosslisted with Linguistics 4363).**

Prerequisite: 2303, 3053, and 3353. An introduction to all phases of linguistic field techniques including training in the selection of informants, the use of recording devices, and most important, the actual collection and analysis of linguistic materials. (Irreg.)

**4413 Public Archaeology (Slashlisted with 5413).** Prerequisite: 2113.

Focus is on the articulation of academic training in archaeology with current federal rules and regulations; and educational outreach concerning archaeological research and goals. Emphasis is on the preservation and management of archaeological resources. No student may earn credit for both 4413 and 5413. (Irreg.)

**G4433 Social Organization.** Prerequisite: 1113 or junior standing.

Concerned with cross-cultural study of social organization with emphasis on kinship and marriage. Treats an area of traditional concern to social anthropologists and constitutes an introduction to the classic as well as the contemporary methods and theories of this subdiscipline. (Sp)

**4473 Historical Archaeological Analysis (Slashlisted with 5473).**

Prerequisite: 1113, junior standing, and 4173. Students will learn the process of analysis and interpretation of historical archaeological sites. Topics will include the process of identifying a wide range of artifacts and their use in interpreting past lifeways. Lecture will be supplemented with hands-on analysis projects using collections from sites excavated in Oklahoma. No student may earn credit for both 4473 and 5473. (Sp)

**4483 Contemporary Native American Language Studies (Slashlisted with 5483).** Prerequisite: 2303. This course is a study of Native American languages focusing on issues of language contact, multilingualism,

performance, and writing systems. Central themes include the richness of polysynthesis and the relationship between grammatical structures and culture. Course concludes with a discussion of language loss and revitalization. No student may earn credit for both 4483 and 5483. (Irreg.)

**4533 Human Ecology of the Humid Tropics.** Prerequisite: 1113 or junior standing. Using an ecological anthropology focus, discussion of past and present human use of humid tropical areas—biologically and culturally the world's most diverse environments. Using a global perspective, reading, lecture, and audio/visual materials will investigate the cultures and societies of indigenous peoples living in human tropical areas of Africa, southeast Asia, the Pacific Islands, and the Americas. (Irreg.)

**4550 Linguistic Structures of North America (Crosslisted with Linguistics 4550).** 3 to 6 hours. Prerequisite: Anthropology or Linguistics 2303. An examination of the structure of a number of Native American languages which is intended to provide the major in Linguistics or Anthropology with a detailed knowledge of several important Indian tongues.

**4553 Human Evolutionary History (Slashlisted with 5553).** Prerequisite:

1113 and 2503 or permission of instructor. Biological anthropology course focusing on the subfield of paleoanthropology, concerned with the examination of the origins of modern Homo sapiens. Focus on evolutionary theory and processes of evolutionary change; theory and method of paleoanthropological research; primate archaeological/fossil record, emphasizing the evolution of hominoids and hominids; analysis and interpretation of fossil records; and major trends, issues, and debates in paleoanthropology. No student may earn credit for both 4553 and 5553. (Irreg.)

**4623 Approaches to Cross-Cultural Human Problems.** Prerequisite:

1113 or junior standing. Introduces students to the complex problems of contemporary global-scale cultures and helps them better understand their place on this global arena. This course will look at specific international issues or problems, and relate them to processes occurring in many parts of the world. (Irreg.) [IV-NW]

**4633 Cultures of Latin America.** Prerequisite: 1113 or junior standing.

Using ethnographic evidence, we will examine the legacy of the conquest and the development of modern states and identities in parts of Mesoamerica, central America, South America, and the Caribbean. (Irreg.) [IV-WC]

**4653 Ethnology of the Greater Southwest.** A survey of Indian tribes in the southwestern United States and northwestern Mexico, their history, development, differentiation and cultural adjustment to the environment. Each of the important tribal groups is examined in detail to offer illustrations for discussions on the more general level. (Irreg.)

**4663 Native Peoples of the Plains (Slashlisted with 5663).** Prerequisite: 1113 or junior standing. An ethnographic and historical survey of the native peoples of the Plains culture area of North America. No student may earn credit for both 4663 and 5663. (Irreg.)

**G4673 Anthropology of the Caddoan People.** Prerequisite: 1113 or junior standing. Integrates linguistic, ethnographic, historical and archaeological data to study the origin, spread and character of the Caddoan-speaking tribes who occupied the Plains' eastern border at the time of the earliest European contact. (Irreg.)

**G4693 Native Peoples of the Southeastern United States.** Prerequisite: 1113 or junior standing. An in-depth effort will be made to understand the native cultures which originated east of the Mississippi and south of the Ohio. Major consideration will be given to the "civilized" tribes—Cherokees, Choctaws, Creeks and Seminoles. Also covered will be lesser-known tribes such as the Yuchi, Natchez and Catawbas. Aboriginal conditions and social structure will be emphasized rather than recent history. (Irreg.)

**G4713 Statistical Concepts in Anthropology.** Prerequisite: 1113 or junior standing. An introduction to anthropological statistics. Emphasis will be placed on anthropological research design and analysis of anthropological data. (Irreg.)

**G4763 Archaeological Analysis—Methods, Theory and Practice.** Prerequisite: 2113. Devoted to the laboratory phase of analyzing archaeological data derived from survey or excavation. The procedures and methods used for classifying and studying the raw data provided by the fieldwork. **Laboratory** (Irreg.)

**4793 Computing in Anthropology.** Prerequisite: 1113 or junior standing, anthropology major. Designed for anthropology students who wish to master a selection of computer programs used in the collection, analysis, and dissemination of anthropological data. Significant anthropological resources available through the Internet, and basic quantitative and qualitative analysis techniques will be discussed. Students will design and complete a research project to be published on the Internet. (Sp)

**4813 Archaeology of North America (Slashlisted with 5813).** Prerequisite: 1113 or junior standing. A course in the prehistory of the American Indian. Study of the prehistory of North America north of Mexico. Consideration of the various archeological areas of the continent in terms of the prehistoric sequence of events from the earliest times up to European contact. No student may earn credit for both 4813 and 5813. (Irreg.) [IV-NW]

**G4833 Archaeology of the Great Plains.** Prerequisite: 1113 or junior standing. A detailed survey of the archaeological remains from the Great Plains from the earliest occupation of the area until the reservation period. (Irreg.)

**4843 Cross-Cultural Study of Sex, Gender and Sexuality (Slashlisted with 5843).** Prerequisite: 1113 or junior standing. A consideration of ethnographic material that challenge anthropological understandings of the relationship among sex, gender, and sexuality. Materials will include "third gender" ethnographic material that has emerged in recent years; community and other studies that suggest gender diversity and complexity in communities that we might label "homosexual"; and anthropological studies of transsexual and transgender phenomena. No student may earn credit for both 4843 and 5843. (Irreg.)

**G4853 Archaeology of the Greater Southwest.** Prerequisite: 1113 or junior standing. A detailed survey of the prehistoric sequence in the American Southwest and northwestern Mexico from earliest times up to the time of European contact. (Irreg.)

**4863 Archaeology of the Southeast (Slashlisted with 5863).** Prerequisite: 1113 or junior standing. A study of the prehistoric and early historic Native American culture histories. Some attention will be given to historic African and European cultures in the Southeast. Emphasis will be placed on long-term social change, pan-regional trends and colonial transformations. No student may earn credit for both 4863 and 5863. (Irreg.)

**4873 Desert Cultures of North America.** Prerequisite: 1113 or junior standing. Anthropological study of various cultures, prehistoric and historic, including Indian, Spanish and modern American, as they reflect adaptation to arid environments in western North America; the relationship between aridity and human culture. (Irreg.) [III-SS]

**4903 Race and Ethnicity.** Prerequisite: 1113 or junior standing. This course introduces a broad spectrum of issues, concepts and methods in the anthropology of race and ethnicity. The goal is to teach students to think, read and write critically about race and ethnicity from a cross-cultural perspective, a strategy that encourages better understanding of the various forms of structural oppression that structure everyday lives. (Irreg.)

**4923 Medical Anthropology.** Prerequisite: 1113 or junior standing. Looks at the relationship of culture and biology in an ecological perspective. Reproduction, patterns of death and disease, nutrition and stress are examined. The effects of cultural behavior on the immune, endocrine, metabolic and central nervous systems are studied in detail. (Irreg.)

**G4933 Advanced Biological Anthropology.** Prerequisite: 2503 or permission of instructor. May be repeated with change of content; maximum credit nine hours. Special topics in biological anthropology such as advanced human osteology, human variation, and theory of evolutionary change. (Irreg.)

**G4943 Human Osteology and Paleopathology.** Prerequisite: 2503. Allows the student to develop a basic familiarity with human skeletal remains, standard anatomical terminology, and methods and techniques of data collection. In turn, these osteological skills will provide a means to explore questions of human adaptability, variation, evolution, patterns of health and disease in prehistory, and the applicability of these findings to contemporary problems.

**4953 Special Topics in Anthropology.** Prerequisite: 1113 or junior standing. May be repeated with change of content; maximum credit six hours. Topics will vary and are intended to acquaint the advanced anthropology major with subdisciplines through specialized study involving anthropological theory, methodology, the preparation, development and writing of reports. (Irreg.)

**G4973 Introduction to Faunal Analysis (Slashlisted with 5973).** Prerequisite: 2113. An introductory-level look at animal bone analysis as performed by archaeologists and zooarchaeologists. The bones of birds, fish, reptiles, amphibians, and mammals, as well as mollusk shell are discussed under the topics of taxonomy, taphonomy, age and sex determination, morphometrics, seasonality, and specialized techniques. Identification of bone and discussions relating recent advances in animal bone analysis are typical class activities. No student may earn credit for both 4973 and 5973. (Irreg.)

**4980 Bachelor of Arts Thesis.** 1 to 6 hours. Prerequisite: anthropology major; junior standing. May be repeated; maximum credit six hours. Original research in cultural anthropology, biological anthropology, archaeology, or anthropological linguistics. The research will be done under the auspices of an appropriate faculty member; a written thesis on the research is required. (Irreg.)

**4990 Independent Study.** 1 to 3 hours. Prerequisite: permission of instructor. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (Irreg.)

**Unless otherwise noted, the prerequisite for courses in anthropology numbered 5000 and above is graduate standing.**

**G5013 Phonetics and Phonemics.** Prerequisite: Graduate standing. This class focuses on the phonetic and phonological skills needed for describing world languages. Topics covered under phonetics include articulatory phonetics, ear training, and using acoustic computer programs. Topics in phonology will cover variation and allomorphy in many languages, writing phonological rules, and the analysis of tone and stress. (F)

**G5023 Introduction to Sociocultural Anthropology III.** Prerequisite: 5123, 5223. Recent ethnographies are used to critique current sociocultural theory in anthropology. Students will be required to write analytical essays as a means of understanding the relationship between ethnography and theory. (Irreg.)

**G5043 Folklore, Folklife and Expressive Culture.** Prerequisite: Graduate standing. Introduces the academic study of folklore and folklife. Focus is on theories and methods used to document and interpret expressive culture, including a wide array of verbal, material, performance, and customary genres. Ethnographic, comparative, literary, geographic, historical, and psychological perspectives will be explored. Emphasis will be placed on contextual studies understanding art in community settings. (Irreg.)

**G5053 Morphology (Slashlisted with 4053; Crosslisted with Linguistics 5053).** Prerequisite: 3053 and 3353. Introduces and develops theories and concepts of morphology including word formation, derivation, inflection,

non-concatenative morphs, covert categories, prosodic phenomena, morphosyntactic categories and clitics. Data from non-Western languages will be prominent. No student may earn credit for both 4053 and 5053. (Irreg.)

**G5073 Anthropology of Religion.** Prerequisite: Graduate standing. This graduate seminar embraces an approach to the anthropology of religion that is both interdisciplinary and rooted in particular places and historical contexts. The goal is to provide grounding in traditional approaches to the subject that will serve as a framework for practice-oriented ethnography of contemporary religion in various contexts. (Irreg.)

**G5123 Introduction to Sociocultural Anthropology II.** Prerequisite: 5223. Introduces students to different unit and levels of sociocultural analysis. Students will be required to address a series of research problems as a means of understanding sociocultural analysis. (Irreg.)

**G5153 Ethnography of Communication.** Prerequisite: Graduate standing. This course focuses on language use in larger discourse and cultural contexts and how language is used to conduct the social life and the dynamics of culture. Topics include topic and focus, deixis, reported speech, speaking styles, strategies, and genres, and language and ethnicity. (F)

**G5163 The Study of Material Culture (Slashlisted with 4163).**

Prerequisite: graduate standing. Focuses on the study of the things people make and the broader social contexts in which objects are used, circulated, made meaningful, and consumed. Methods and theories developed in the fields of geography, folklore, cultural anthropology, archaeology, and related social sciences will be examined. No student may earn credit for both 4163 and 5163. (F)

**G5173 Historical Archaeology (Slashlisted with 4173).** Prerequisite: 1113 or junior standing. Provides a survey of the approaches to the archaeological study of the historic period, which in North America covers the past 500 years. The development of historical archaeology and its current practice and uses will be reviewed using case studies from around the world as examples. No student may earn credit for both 4173 and 5173. (F)

**G5213 Ethnographic Methods.** Prerequisite: Graduate standing. Survey of ethnographic methods in anthropological research, with weekly fieldwork assignments and writing exercises. First half of class devoted to current theoretical debates, including the post-modern controversy and literary issues in classic ethnography. Second half of class devoted to hands-on research, including participant-observation, interviews, field notes, databases, and linguistic elicitation. (Irreg.)

**G5223 Theories of Culture.** Prerequisite: graduate standing and Anthropology major or graduate standing and permission of instructor. Survey of anthropological theorists and theories of culture (evolutionary, functional, cognitive, ecological, structural, symbolic, etc.) and their impact on research methods in each of the four fields of anthropology and related disciplines. Emphasis will be given to a discussion of primary texts written by the major theorists. (F)

**G5243 Area Studies.** May be repeated; maximum credit 12 hours. Areas will vary. (F, Sp)

**G5253 The Anthropology of Communities (Slashlisted with 4253).**

Designed to introduce students to the community in applying anthropological field techniques and theory. While gaining training in method and theory in class, students will be given assignments to execute in community settings. Particular emphasis will be placed on ethnicity, gender and seniority as ethnological parameters. No student may earn credit for both 4253 and 5253. (Irreg.)

**G5263 Feminist Anthropology.** Prerequisite: graduate standing. Examines a variety of relevant books and articles on feminist anthropological theory, an area in which the literature has expanded voluminously since the 1970s. Broad topical areas are as follows: Boasian Contributions to Feminist Anthropology; Women in the Field; Women and Work; and, the New Ethnography. (F)

**G5273 Topics in Social Anthropology.** May be repeated; maximum credit 12 hours. Topics vary. (F, Sp)

**G5293 Origins of Complex Society.** Prerequisite: graduate standing.

Examines the origins and development of complex society and the institutionalization of social inequalities. Complexity is examined along a changing scale of sociopolitical organization, from small "egalitarian" societies to middle-range "chiefdoms" to large archaic states, using both archaeological and ethnographic examples. (Sp)

**G5303 Women and Development in Africa (Slashlisted with 4303).**

Prerequisite: graduate-level social science course. Examines women's involvement in economic development in Africa. Some consideration will

be given to family structure and social stratification, as well as women's participation in the social, political and economic spheres. Avenues for viable social change will also be considered. No student may earn credit for both 4303 and 5303.

**G5313 Introduction to Native American Languages (Slashlisted with 4313).** Prerequisite: graduate standing. Survey course into the nature and distribution of Native American languages, with a focus on North and Meso America. Topics include the typology of native languages, language families and real features and cultural domains, and language contact. This course will not satisfy the foreign language requirements. No student may earn credit for both 4313 and 5313. (Irreg.)

**G5330 Topics in Linguistic Anthropology (Slashlisted with 4330).** 1 to 4 hours. Prerequisite: graduate standing. May be repeated with change of content; maximum credit twelve hours. Intensive examination of new developments in the field of anthropological linguistics. Topics reflect interests of faculty, but may include issues of language revitalization, language shift, multilingualism, language and identity, storytelling traditions, language change, or language contact. No student may earn credit for both 4330 and 5330 on the same topic. (Irreg.)

**G5363 Linguistic Anthropology (Crosslisted with Linguistics 5363).**

Prerequisite: Anthropology or Linguistics 4353 or permission of instructor. Linguistic principles and their applications in anthropology. Topics vary and may include cognitive anthropology, the structural analysis of folklore, the ethnography of speech events, sociolinguistics. (F)

**G5413 Public Archaeology (Slashlisted with 4413).** Prerequisite: graduate standing, permission of instructor. Focus is on the articulation of graduate academic training in archaeology with current federal rules and regulations, and educational outreach concerning archaeological research and goals. Emphasis is on advanced training in the preservation and management of archaeological resources. No student may earn credit for both 4413 and 5413.

**G5453 Advanced Faunal Analysis.** Prerequisite: Graduate standing. Designed to provide the experience of discovering the past technologies that apply to the manufacture, use, and discard of objects made from or technologies utilizing animal remains. (Irreg.)

**G5473 Historical Archaeological Analysis (Slashlisted with 4473).**

Prerequisite: 1113, junior standing, and 4173. Students will learn the process of analysis and interpretation of historical archaeological sites. Topics will include the process of identifying a wide range of artifacts and their use in interpreting past lifeways. Lecture will be supplemented with hands-on analysis projects using collections from sites excavated in Oklahoma. No student may earn credit for both 4473 and 5473. (Sp)

**G5483 Contemporary Native American Language Studies (Slashlisted with 4483).** Prerequisite: 2303 and graduate standing. This course is a

study of Native American languages focusing on issues of language contact, multilingualism, performance, and writing systems. Central themes include the richness of polysynthesis and the relationship between grammatical structures and culture. Course concludes with a discussion of language loss and revitalization. No student may earn credit for both 4483 and 5483. (Irreg.)

**G5513 Historical Anthropology.** Prerequisite: 5023 or 5273. An examination of historiography and its relation to selected issues in the anthropological study of historical process. (F)

**G5523 Economic Anthropology.** Prerequisite: 5023 or 5273. Addresses the issues of economics in nonwestern societies, spanning hunter-gatherers through archaic empires. Although classical, neoclassical, and Marxist economics can all be brought to bear on these nonwestern systems, economics in such societies is often embedded in wider social contexts, which will be considered, along with ritual and symbolic uses of production, consumption, and distribution. (Sp)

**G5533 Anthropology of Law.** Prerequisite: graduate standing. Presents the history of the field of legal anthropology, as well as discussing the major approaches developed for the study of law in nonwestern societies, stressing variations by societal complexity, issues of encapsulated societies, and notions of crimes, property, and legal systems. (F)

**G5543 Research Design.** Prerequisite: 5023, 5123 and 5223. Studies ethnographic research methods and design. An overview of current practices and theoretical disputes, followed by group discussion of individual class members' unique research design problem. (Irreg.)

**G5553 Human Evolutionary History (Slashlisted with 4553).**

Prerequisite: graduate standing. Biological anthropology course focusing on the subfield of paleoanthropology, concerned with the examination of the origins of modern Homo sapiens. Focus on evolutionary theory and

processes of evolutionary change; theory and method of paleoanthropological research; primate archaeological/fossil record, emphasizing the evolution of hominoids and hominids; analysis and interpretation of fossil records; and major trends, issues, and debates in paleoanthropology. No student may earn credit for both 4553 and 5553. (Irreg.)

**G5563 Medicine and Society.** Prerequisite: 5023 or 5273. Current theoretical concerns in medical anthropology examined through investigations of six topical areas: representations of sickness, medicine and social control, medical pluralism and ethnomedicine, the politics of reproduction, transcultural psychiatry, and the political economy of health care. Emphasis is on the social construction of the experience of sickness and the health ramifications of sociopolitical processes. (Irreg.)

**G5573 Political Anthropology.** Prerequisite: 5023, 5273, or permission of instructor. Focuses on political systems and actions of nonwestern societies, and considers past and present theoretical approaches to the discipline. Also considers notions of power, authority, and legitimacy in various societies and at different social levels, political actions, the growth and role of bureaucracies, colonies, and encapsulated groups. (F)

**G5583 Mobility and Sedentism.** Prerequisite: graduate standing. Focus on the concepts of mobility and sedentism in the archaeological record. The concepts are defined and discussed in their many forms, and the relationships between the mobility/sedentism continuum and other factors such as the use of agriculture, population size, the natural environment, social organization, skeletal impacts, ritual, and kinds of artifacts are considered. Appropriate ethnographic literature is used extensively. (Irreg.)

**G5613 Morphosyntax.** Prerequisite: 5013. This course will familiarize the student with morphological and syntactic phenomena from a large array of languages. Morphological processes, inflectional and derivation, grammatical categories, and problems in morphemic analysis will be covered. Syntactic phenomena covered includes cliticization, noun incorporation agreement, valence, causation, subordination structures, and head-dependent and word order typologies. (Sp)

**G5623 Descriptive Linguistic Methods I.** Prerequisite: Graduate standing or permission of instructor. May be repeated; maximum credit six hours. This course is an introduction to field methods in linguistic anthropology, with emphasis on the preliminary phases of documenting indigenous languages. Course begins with the elicitation of basic vocabulary before progressing to the analysis of sound patterning, grammatical patterning, and elementary sentence structures. Also covers the development of writing systems for previously unwritten languages. (Irreg.)

**G5633 Descriptive Linguistic Methods II.** Prerequisite: 5623 or permission of instructor. May be repeated; maximum credit six hours. Continued exploration of field methods in linguistic anthropology, with emphasis on developing the materials for a dictionary, grammatical description and morphology and syntax of language introduced in 5623. Also covers computerized databases. (Irreg.)

**G5653 Paleoethnobotany.** Prerequisite: graduate standing. The study of people and plants in the past. Discussion of types of anthropological questions that can be answered, the types of data studied, and the analytic approaches used. Emphasis will be on macroplant remains, mostly seeds and woods, and development of basic laboratory skills. **Laboratory** (Irreg.)

**G5663 Native Peoples of the Plains (Slashlisted with 4663).** Prerequisite: 5023 and permission of instructor. An ethnographic and historical survey of the native peoples of the Plains culture area of North America. No student may earn credit for both 4663 and 5663. (Irreg.)

**G5683 Prehistoric Human Ecology.** Prerequisite: Graduate standing. The interactions between humans and their environments are critical for human survival and have been of anthropological interest for decades. Prehistoric human ecology is studied through a variety of approaches. Along with a discussion of human ecology as a set of theoretical approaches, we will deal with specific case studies. The class is not focused upon paleoenvironmental reconstructions nor is it a lab course dealing with analysis of environmental data. (Irreg.)

**G5703 Gearcheology.** Prerequisite: graduate standing. Addresses systematic ways of describing and recording soils and/or geological deposits in which archeological sites are found. Skills emphasized in class will be applicable to evaluating the taphonomic integrity of buried archeological sites and to preliminarily assessing their age and the environmental conditions during and after their habitation by people. (Sp)

**G5743 Anthropology and American Indians.** Prerequisite: Graduate standing. This course is intended to increase the understanding of

American Indians and their relationship with American anthropology from about 1846 to the present. Through readings and discussion, an attempt will be made to open a dialogue between the field of anthropology and American Indians and bridge the gap of misunderstanding between scholars, non-Indians, and Indians. (Irreg.)

**G5783 Ceramics in Archaeology.** Prerequisite: graduate standing. The theoretical frameworks surrounding the analysis of ceramics in archaeology are discussed. Topics considered may include analytic methods, origins, mobility and sedentism, function, production, gender, specialization, distribution, style, ethnicity, household size, ideology, and social identity. (Irreg.)

**G5803 Theories of Identity.** Prerequisite: 5023 or 5273. Considers the relationship between ethnicity and other social categories on processes such as race, peoplehood, culture, tradition, heritage, nationality, religion, gender, and class. (Sp)

**G5813 Archaeology of North America (Slashlisted with 4813).** Prerequisite: 1113 or junior standing. A course in the prehistory of the American Indian. Study of the prehistory of North America north of Mexico. Consideration of the various archeological areas of the continent in terms of the prehistoric sequence of events from the earliest times up to European contact. No student may earn credit for both 4813 and 5813. (Irreg.)

**G5823 Contemporary Native American Ethnology.** Prerequisite: 5023 or 5233. Examines anthropological approaches to developments in native American communities since the 1930s. Topics to be examined include political reorganization since the Self-Determination Act, fourth world strategies via the nation-state, imposed identities, ritual revitalization, hunter-gatherer adaptations, economic development, and language in cultural context. (F)

**G5833 Theories of Social Organization.** Prerequisite: 5023 or 5273. A survey of current approaches to the description and analysis of social interaction between community members. Emphasis is placed on distinguishing intra-community interaction from inter-community interaction. (Sp)

**G5843 Cross-Cultural Study of Sex, Gender and Sexuality (Slashlisted with 4843).** Prerequisite: junior standing. A consideration of ethnographic material that challenge anthropological understandings of the relationship among sex, gender, and sexuality. Materials will include "third gender" ethnographic material that has emerged in recent years; community and other studies that suggest gender diversity and complexity in communities that we might label "homosexual"; and anthropological studies of transsexual and transgender phenomena. No student may earn credit for both 4843 and 5843. (Irreg.)

**G5863 Archaeology of the Southeast (Slashlisted with 4863).**

Prerequisite: 1113, 2113. A study of the prehistoric and early historic Native American culture histories. Some attention will be given to historic African and European cultures in the Southeast. Emphasis will be placed on long-term social change, pan-regional trends and colonial transformations. Graduate students will be expected to lead discussions, do 75 percent more reading and write a longer research paper. No student may earn credit for both 4863 and 5863. (Sp)

**G5893 Topics in Archaeology.** May be repeated; maximum credit 12 hours. Topics will vary. **Laboratory** (F, Sp)

**G5913 Topics in Biological Anthropology.** Prerequisite: 1113 or permission. May be repeated with change of topic; maximum credit 12 hours. An opportunity for a seminar with research paper for the graduate major with a special interest in biological anthropology. **Laboratory** (F, Sp)

**G5923 Lithic Technology and Analysis.** Prerequisite: 6713. Instructs students in identification of kinds and sources of stone used prehistorically on the Southern Plains and their eastern border and helps students develop skills in flintknapping as an aid to the process of analyzing archaeological materials. (Irreg.)

**G5933 Advanced Lithic Technology and Analysis.** Prerequisite: 5923. Examines the literature on the identification of lithic materials, fracture mechanics, flintknapping, and use wear studies and the application of this knowledge to specific research problems. (Irreg.)

**G5943 Grasslands Adaptations.** Prerequisite: Graduate standing. Evolutionary theory as applied to grassland adaptations. Topics include grassland ecology, bison ecology, climactic changes, and horticultural adaptations. The focus is on the North American plains. (Irreg.)

**G5973 Introduction to Faunal Analysis (Slashlisted with 4973).** Prerequisite: graduate standing. An introductory-level at animal bone analysis as performed by archaeologists and zoo archaeologists. The bones of birds, fish,

reptiles, amphibians, and mammals, as well as mollusk shell are discussed under the topics of taxonomy, age and sex determination, morphometrics, seasonality, and specialized techniques. Identification of bone and discussion relating recent advances in animal bone analysis are typical class activities. No student may earn credit for both 4973 and 5973. (Irreg)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. **Laboratory** (F, Sp, Su)

**G5990 Special Anthropological Problems.** 1 to 3 hours. May be repeated; maximum credit 12 hours. Permits the student to investigate a specific problem in terms of currently available data. It may be within any field of anthropology recommended by the instructor or adviser. (F, Sp, Su)

**G6203 Political Economy.** Prerequisite: 5023 or 5273. Examines the political-economic perspective in anthropology and explore its approach to the construction of knowledge, culture, the nature of social systems, social history, archaeology, ethnography (the remote and recent past), ethnicity, class, and gender. (F)

**G6440 Research in Biological Anthropology.** Prerequisite: Graduate standing. May be repeated; maximum credit six hours. Permits students to undertake independent fieldwork or laboratory research in biological anthropology. Such research is normally limited to original or unpublished work. (Irreg.)

**G6590 Fieldwork in American Indian Languages (Crosslisted with Linguistics 6590).** 3 to 6 hours. Advanced field experience in the recording and analysis of Native American languages, including a discussion of problems in selecting and effectively utilizing informants. (Irreg.)

**G6613 Seminar in Social Anthropology.** May be repeated with change of subject matter; maximum credit 15 hours. Advanced study in various areas of the field. (Sp)

**G6633 Method and Theory in Biological Anthropology.** Prerequisite: graduate standing. The core course in biological anthropology. Historical development of biological (physical) anthropology; the development and application of method and theory in the major subfields of biological anthropology. (Sp)

**G6650 Advanced Fieldwork in Anthropology.** 3 to 8 hours. Prerequisite: permission of chairperson and dean of the Graduate College. Students interested in this summer program should request a Special Announcement from the Department of Anthropology. **Laboratory** (Su)

**G6713 Archaeological Theory.** Prerequisite: graduate standing. This course explores archaeological theory, its evolution and context. As an anthropological core class, it stresses the articulation of archaeological theory within its wider parent discipline, anthropology. (F)

**G6750 Research in Archaeology.** 1 to 4 hours. Permits the student to undertake independent research. Such research is normally limited to original or unpublished work. (Problems to be solved by library research are properly within the scope of 5990.) **Laboratory** (F, Sp)

**G6803 Advanced Archaeological Theory and Research.** Prerequisite: 6713. Advanced class in archaeological theory focusing especially on those theories prominent in the last decade. The course concentrates on theoretical frameworks that might form the students' dissertation research. students will produce a dissertation research design incorporating appropriate archaeological theories. (Sp)

**G6810 Research in Ethnology.** 1 to 4 hours. Permits the student to undertake independent fieldwork to study some problems in ethnology. (F, Sp, Su)

**G6980 Research for Doctor's Dissertation.** 2 to 16 hours. **Laboratory** (F, Sp, Su)

## Arabic (ARAB)

**1115 Beginning Arabic.** Aims at developing mastery of Arabic phonology and script, control of basic vocabulary, grammar, basic communicative situations, and cultural concepts explicitly expressed in the language. Listening and speaking are emphasized from the very beginning. This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics. (F) [I-FL]

**1225 Beginning Arabic Continued.** Prerequisite: 1115. Focuses on all language skills (listening, speaking, reading, and writing), including developing the ability to interact successfully in basic communicative situations. Short texts and topics of general import as well as cultural

concepts embedded in the language will be covered. This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics. (Sp) [I-FL]

**2113 Intermediate Arabic.** Prerequisite: 1225. Aims at developing language skills (listening, speaking, reading and writing) at the intermediate level, with more emphasis on reading and writing. Expands into more complex structures, wider communicative situations and vocabulary relating to practical, social, cultural and media topics. (F)

**2223 Intermediate Arabic Continued.** Prerequisite: 2113. Continues developing language skills (listening, speaking, reading and writing) at the intermediate level, with more emphasis on reading and writing. Continues to expand into more complex structures, wider communicative situations and vocabulary relating to practical, social, cultural and media topics. (Sp)

**3113 Advanced Arabic.** Prerequisite: 2223. Students are expected to read, listen to, and understand the content and intent of a variety of authentic texts; write at the paragraph level; and participate in formal and informal discussion on social and professional topics. (F)

**3223 Advanced Arabic Continued.** Prerequisite: 3113. Students are expected to read, listen to, and understand the content and intent of a variety of authentic texts; write at the paragraph level; and participate in formal and informal discussion on social and professional topics. (Sp)

**3990 Independent Study.** 1 to 3 hours. Prerequisite: one course in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. (F, Sp)

**4990 Independent Study.** 1 to 3 hours. Prerequisite: four courses in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. (F, Sp)

## Architecture (ARCH)

**1012 Computers in Architecture.** An introduction to the application of computers to many facets of architecture and related design disciplines, with emphasis on programming and computer graphics. **Laboratory** (F, Sp)

**1133 Introduction to Building Technology.** Introduction of the historical development and application of basic architectural technology including building service systems, structures and systems of building technology. (Sp)

**1143 Design, Construction and Society.** An introduction to the issues forming and informing the built environment. The history, principles, and practices of architecture, construction, and interior design will be explored. (F)

**1153 Studio I.** Individual and/or team architectural projects at an introductory level focused on the comprehensive integration of social, cultural, theoretical, environmental, and technical influences on architecture. Application of professional techniques of representation and communication required. (F, Su)

**1253 Studio II.** Prerequisite: 1153 or permission. Individual and/or team architectural projects at an introductory level focused on the comprehensive integration of social, cultural, theoretical, environmental, and technical influences on architecture. Application of professional techniques of representation and communication required. (Sp, Su)

**2233 Architectural Structures I.** Prerequisite: Architecture major and completion of 1133, 1143, 1153, 1253, Physics 1114 and Mathematics 1823, or Construction Science major and completion of Physics 2414, 2424 and Mathematics 1823. Concepts, knowledge and methods of statics and strengths of materials for architects and constructors. (F)

**2243 History of the Built Environment I.** Prerequisite: majors only or permission of instructor. A theological investigation of the cultural, historical, political and aesthetic values of diverse Western and non-western cultures that result in significant built environments through the 16th century. Buildings, urbanism, theories, and cultural context will be emphasized. (F) [IV-WC]

**2333 Architecture and the Environment.** Prerequisite: majors only; 1133, 1143, 1153, 1253. Building/site relationships and introduction of selected environmental and site design concepts. Knowledge and methods appropriate for architects. (Sp)

**2343 History of the Built Environment II.** Prerequisite: majors only or permission of instructor. Overview of built artifacts in Europe and the Americas since 1750. Emphasis on the formal, philosophical, social,

technical and economic context of the projects discussed, as well as their later reinterpretations. (Sp)

**2354 Studio III.** Prerequisite: majors only; 1133, 1143, 1153, 1253. Individual and/or team architectural projects of moderate complexity focusing on the comprehensive integration of social, cultural, theoretical, environmental and technical influences on architecture. Application of professional techniques of representation and communication required. **Laboratory** (F)

**2454 Studio IV.** Prerequisite: majors only; 1133, 1143, 1153, 1253. Continuation of 2354. Introduces advanced techniques of representation and communication. Individual and/or team architectural projects of moderate complexity focusing on the comprehensive integration of social, cultural, theoretical, environmental and technical influences on architecture. Application of professional techniques of representation and communication required. **Laboratory** (Sp)

**3013 Architecture for Non-Majors.** Prerequisite: junior standing. An introduction of basic principles of architecture for the non-architect. Understanding of the qualities and characteristics of a well-designed architectural environment. Not open to architecture majors. (F, Sp) [IV-AF]

**3152 Architectural Theory/Design Process.** Prerequisite: 2544 and program admission. Introduction to architectural theory and the design process: brief survey of architectural theory with emphasis on philosophical, ideological and aesthetic concepts as influences on contemporary theory and practice. Exploration of decision making for design as a creative and problem-solving process. (F)

**3162 Architectural Programming.** Prerequisite: 3152, 3555 or 3565. Study of the elements of architectural programming; information gathering, analysis and concept development leading to architectural problem definition. The relationship between programming and the design process is emphasized. (F, Sp)

**3223 Environmental Systems in Architecture.** Prerequisite: Physics 1114 or 2514. Introduction to environmental control, vertical transportation, water supply, waste water drainage, lighting, and electrical power systems for buildings. (F, Sp)

**3232 Architectural Materials.** Prerequisite: EN D 2212 and program admission. The relationship between the technology of building materials and architectural design. The effect of material form, strength, durability and workability on structure, connections, surfaces and edges. (Sp)

**3313 Mechanics for Architects I.** Prerequisite: Mathematics 1812, Physics 1114 or 2514. Principles of architectural structures in tension and compression; resultants and equilibrium force systems; section properties; stress and strain; tension and compression members; trusses and pin connections. (F, Sp, Su)

**3323 Mechanics for Architects II.** Prerequisite: 3313, and Mathematics 1823. Principles of architectural structures in bending; shear and moment diagrams; bending members; columns and walls; selection of simple members in wood and steel. (Sp)

**3433 Environmental Controls I.** Prerequisite: Architecture major and completion of 2233, 2243, 2333, 2343, 2354, 2454; or Construction Science major and completion of 3633. Introduction to psychometrics, heat transmission in buildings, heating, air conditioning and ventilation, solar heat gain, passive solar conditioning, plumbing and fire protection. (F)

**3443 Modern and Contemporary Architecture.** Prerequisite: 2233, 2243, 2333, 2343, 2354, 2454, and full program admission. Survey and discussion of built artifacts of 20th century architectural culture and the last 25 years of American, Japanese, and European architecture. Emphasis on the formal, philosophical, social, technical and economic context of the projects discussed, as well as their later reinterpretations. (F)

**3533 Architectural Materials.** Prerequisite: 2233, 2243, 2333, 2343, 2354, 2454, and full program admission. The nature of building materials with regard to form, strength, durability, workability, structure, connections, surfaces and edges. Analysis of architectural expression in use of building materials. (F)

**3554 Studio V.** Prerequisite: 2233, 2243, 2333, 2343, 2354, 2454, and full program admission. Continuation of 2454. Introduces projects of increasing complexity. Individual and/or team architectural projects of substantial complexity focusing on the comprehensive integration of social, cultural, theoretical, environmental and technical influences on architecture. Application of professional techniques of representation and communication required. **Laboratory** (F)

**3555 Architectural Design/Technological Factors.** Prerequisite: 2544 or 3565. Study of construction materials and technology as design determinants; lectures and individual projects. Emphasis on the design implications of building technology. **Laboratory** (Sp)

**3565 Architectural Design/Environmental Factors.** Prerequisite: 2544 or 3555 and program admission. Study of forces within the natural and built environment as design determinants; lectures and individual projects. Emphasis on the design implications of environmental forces and the built environment. **Laboratory** (F)

**3633 Architectural Structures II.** Prerequisite: Architecture major and completion of 2233, 2243, 2354, 2454, and full program admission, or Construction Science major and completion of 2233. Extension of the study of architectural structures through structural design of simple building frameworks; simple structural systems for gravity, lateral and seismic loads in steel, wood and masonry; basic structural detailing. **Laboratory** (Sp)

**3654 Studio VI.** Prerequisite: 2233, 2243, 2333, 2343, 2354, 2454, and full program admission. Continuation of 3554. Introduces projects of urban issues. Individual and/or team architectural projects of substantial complexity focusing on the comprehensive integration of social, cultural, theoretical, environmental and technical influences on architecture. Application of professional techniques of representation and communication required. **Laboratory** (Sp)

**3734 Interior Design III (Crosslisted with Interior Design 3734).**

Prerequisite: 2333 (or concurrent enrollment), Interior Design 3724 or permission. Focuses on conceptual design, lighting design, and regulatory constraints in commercial interiors. Studio/lecture presentation of design principles in lighting, acoustics and space planning. Emphasis on contract interiors where lighting is of major importance. **Laboratory** (Sp)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. The topics will cover materials not usually presented in the regular courses. (F, Sp, Su)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. The projects covered will vary. The content will deal with concepts not usually presented in regular coursework.

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. Provides an opportunity for the gifted honors candidate to work at a special project in the student's field. (F, Sp)

**G4033 Project Documents (Crosslisted with Landscape Architecture**

**4033).** Prerequisite: 4575 or permission or CNS 4923. An introduction to the building construction industry and architectural project manual with emphasis on owner/contractor relations. (Sp)

**4183 Survey of Middle Eastern Architecture (Slashlisted with 5183).**

Prerequisite: Junior standing or permission of instructor. Survey of Middle Eastern architecture and the impact architects and architecture from this time and region had upon the advancement of environmental/urban design throughout the rest of history. No student may earn credit for both 4183 and 5183. (Irreg.)[IV-NW]

**G4213 Facilities Management.** Prerequisite: junior or graduate standing. The relationship between facilities management, design, engineering, business, and behavioral sciences. The function and structure of the facilities management team and its place in the organizational structures. Program and project related facilities management tasks. Facility planning, programming, design, project and construction management, operation and maintenance. (F)

**4243 Environmental Control for Buildings I.** Prerequisite: 3223 and program admission. Introduction to psychometrics, heat transmission in building materials, building heat losses and cooling loads and passive solar heating. Survey of air conditioning systems, design of systems for control of the thermal environment in buildings and influences of fenestration, shading and orientation. (F)

**4253 Environmental Control for Buildings II.** Prerequisite: 3223 and program admission. Relationship of lighting quality to human performance; principles of illumination and electrical power distribution systems; electrical code requirements and automatic control; introduction to piping design, alarm systems, lift controls, architectural acoustics and noise control. (Sp)

**4333 Architectural Structures I.** Prerequisite: 3323 and program admission. Structural design of simple building frameworks; loads; simple

structural systems for gravity, lateral, and seismic loads in steel, wood, and masonry; connections; structural detailing. (F, Sp, Su)

**4343 Architectural Structures II.** Prerequisite: 3323 and program admission. Structural design of continuous building frameworks; loads; concrete structural systems; foundations; connections; structural detailing. (F, Su)

**4443 History of the American Built Environment.** Prerequisite: EN D 2413 and 2423 or permission. Survey of the American built environment from initial settlement and subsequent European colonization through the middle of the twentieth century. The integral nature of the built environment, the unique characteristics of the American frontier, and the heterogeneous nature of the American culture will be emphasized. Buildings, urban patterns and ideas will be studied, supported by examples ranging from the recognized standards to the commonplace. (F) [IV-WC]

**4575 Architectural Design/Building Systems Integration.** Prerequisite: 3223, 3232, 3555, 3565, and 4333 or 4343. Integration of structures, environmental systems, construction materials and architectural detailing. Emphasis on the use of production and presentation drawings to communicate technical information. **Laboratory** (F, Su) [V]

**4585 Architectural Design/Special Topics.** Prerequisite: 3555 or 4575. Studio-based investigation of special topics in architecture or field study in a placement approved by the instructor. (Sp)

**4733 Architectural Structures III.** Prerequisite: Architecture majors and completion of 3433, 3443, 3533, 3554, 3633, 3654, or Construction Science major and completion of 3633. Extension of the study of architectural structures through structural design of continuous building frameworks; loads, concrete structural systems, foundations, connections and structural detailing. **Laboratory** (F)

**4754 Studio VII.** Prerequisite: 3433, 3443, 3533, 3554, 3633, 3654. Continuation of 3654. Introduces issues of building systems. Individual and/or team architectural projects at an advanced level focusing on the comprehensive integration of social, cultural, theoretical, environmental and technical influences on architecture. Application of professional techniques of representation and communication required. **Laboratory** (F) [V]

**4833 Environmental Controls II.** Prerequisite: Architecture major and completion of 3433, 3443, 3533, 3554, 3633, 3654, or Construction Science major and completion of 3433 and 3633. Introduction to acoustics, electrical design, lighting design, alarm and life safety systems. (Sp)

**4854 Studio VIII.** Prerequisite: 3433, 3443, 3533, 3554, 3633, 3654. Continuation of 4754. Introduces issues of environmental sustainability. Individual and/or team architectural projects at an advanced level focusing on the comprehensive integration of social, cultural, theoretical, environmental and technical influences on architecture. Application of professional techniques of representation and communication required. **Laboratory** (Sp)

**G4940 Field Work.** 1 to 4 hours. Prerequisite: senior standing and permission of instructor. Field study related to the student's area of interest in a position approved by the instructor. One hour credit per 120 hours of field work or equivalent. Documentation and evaluation is required. (F, Sp, Su)

**4960 Directed Readings.** 1 to 4 hours. Prerequisite: senior standing and permission of instructor. May be repeated with change of subject; maximum credit 12 hours. (F, Sp, Su)

**G4970 General Departmental Seminar.** 1 to 6 hours. Prerequisite: senior or graduate standing, or permission of instructor. May be repeated with change of content; maximum credit twelve hours. Special topics in architecture. (F, Sp, Su)

**G5013 Building Types Analysis.** Prerequisite: graduate standing and permission of instructor. May be repeated with change of content; maximum credit six hours. Analysis of functional, technical, and aesthetic requirements of selected building types; topics may vary. (Irreg.)

**G5023 Architectural Seminar.** Prerequisite: graduate standing or permission of instructor. May be repeated with change of subject matter; maximum credit 12 hours. Investigation and discussion based upon the following topics: design methods, architectural research, history and theory, environmental processes, structural theory, visual perception, urban design and other related topics. (F, Sp)

**G5033 Design Theory and Criticism (Crosslisted with Landscape Architecture 5033).** Prerequisite: graduate standing or permission of instructor. Historical and contemporary topics in design goals, concepts, theories and philosophies. (Sp)

**G5043 Project Management.** Prerequisite: 4033 or permission. Continuation of 4033. Management of the various phases within a project

sequence: schematic design, design development, construction documents, bid/negotiation, construction administration. Emphasis on owner/architect relationships. (F)

**G5052 Professional Practice (Crosslisted with Landscape Architecture 5052).** Prerequisite: 5043 or permission of instructor. Survey of career options, internship, registration, firm organization, office management, professional conduct and ethics within the practice of architecture. (F, Sp)

**G5055 Studio X.** Prerequisite: 4733, 4754, 4833, 4854, and 5955. A continuation of 5955; capstone course, the third of three required. Comprehensive architectural project at a professional level. Project development from schematic design through design development and partial construction documents. Application of professional techniques of representation and communication required. Final project demonstrates professional skills and comprehension of complete environmental, urban, and systems issues in architecture. **Laboratory** (Sp)

**G5063 Advanced Professional Practice.** Prerequisite: 5052. Advanced topics in managing professional design practices, including financial planning, cost control, critical path method, office and personnel management, project management and construction administration. (F, Sp)

**G5083 Advanced Architectural Computer Applications.** Prerequisite: permission of instructor. The advanced use of computers in three-dimensional modeling, rendering and animation. (F, Sp)

**G5162 Professional Practice I.** Prerequisite: 4733, 4754, 4833, and 4854 or graduate standing and permission. Principles and procedures for practice of architecture and related professions. Exploration of professional ethics and services, project documents and management, project delivery methods and contractual relationships. (F)

**G5183 Survey of Middle Eastern Architecture (Slashlisted with 4183).** Prerequisite: Graduate standing or permission of instructor. Survey of Middle Eastern architecture and the impact architects and architecture from this time and region had upon the advancement of environmental/urban design throughout the rest of history. No student may earn credit for both 4183 and 5183. (Irreg.)

**G5213 Advanced Architectural Materials.** Prerequisite: 3232 (or CNS 3713), 4243, 4575 (or CNS 4923). Assembly of building materials and components with regard to safety, weather resistance, weathering, wear, maintenance, material compatibility, differential movement, construction failures, quality assurance and other subjects concerning resistance to deterioration. (Irreg.)

**G5262 Professional Practice II.** Prerequisite: 4733, 4754, 4833, 4854, and 5162 or graduate standing and permission. A continuation of 5162. Principles and procedures for practice of architecture and related professions. Exploration of professional ethics and services, project documents and management, project delivery methods and contractual relationships. (Sp)

**G5343 Urban Facilities Planning (Crosslisted with Regional and City Planning 5343).** Prerequisite: upper-division or graduate standing. Long- and short-term considerations in urban facilities planning. Tactical facility planning and management in organizational environment; site, layout, economic criteria, human factors, facility planning-programming standards.

**G5413 Regional History.** Prerequisite: senior standing. Social, political, economic and religious influences contributing to the development of an architectural expression in the southwest United States, from Spanish missions to the Depression of the 1930's. (F)

**G5423 Principles and Practice of Historic Preservation.** Prerequisite: graduate standing and permission of instructor. Social and economic aspects of preservation: local, state and federal guidelines for delineation and regulation of historic districts and buildings; case studies in economic feasibility and adaptive reuse, reconstruction and rehabilitation. (F)

**G5453 History of Modern Architecture.** Prerequisite: 3152, 4443. A survey of architecture in relation to modern ideas, hopes and technologies—traces the European and American roots of the contemporary built environment. The integral nature of architecture and the cultural environment will be explored. Buildings, urban patterns and ideas will be emphasized. Examples will range from recognized standards to the commonplace. (Sp, Su)

**G5505 Architectural Design/Comprehensive Project.** Prerequisite: 4243, 4253, 4333, 4343, 5595. Major individual design Project. Emphasis on comprehensive, integrated design solution to the human, environmental and technological concerns encountered in a complex architectural problem. **Laboratory** (Sp)

**G5516 Graduate Architectural Design I.** Prerequisite: acceptance to the M. Arch. program or permission of graduate committee. Introduction to basic design principles. Abstract and small scale projects with minimum complexity. (F)

**G5526 Graduate Architectural Design II.** Prerequisite: 5516 or permission of graduate committee. Intermediate graduate design studio. Intermediate-scale projects with some complexity. (F)

**G5536 Graduate Architectural Design III.** Prerequisite: 3232, 3323, 4253, 5526, concurrent enrollment in 4333, or permission of graduate committee. Advanced graduate design. Large-scale projects with considerable complexity. (F)

**G5546 Graduate Architectural Design IV.** Prerequisite: 4253, 4333, 5536, concurrent enrollment in 4343, or permission of graduate committee. Comprehensive graduate design. Intermediate-scale projects taken to comprehensive breadth and depth. (F)

**G5595 Architectural Design/Urban Design.** Prerequisite: 4585, 4243 or 4253, 4333 or 4343. Studio-based investigation of interbuilding relationships; team and individual projects. Emphasis on the relationship of architecture to urban design, landscape architecture and regional/city planning. **Laboratory**

**G5643 Urban Design Analytics (Crosslisted with Regional and City Planning 5643).** Prerequisite: graduate standing in architecture or regional and city planning. A survey of analysis techniques applicable to the field of urban design, including the interpretation of basic demographic statistics, an introduction to survey and observation research techniques, visual survey methodologies, environmental assessment strategies, forecasting, gaming and decision analysis. (Sp)

**G5653 Urban Design Seminar (Crosslisted with Regional and City Planning 5653).** Prerequisite: permission of instructor. May be repeated with change of content; maximum credit six hours. Advanced seminar in urban design problems and issues through an in-depth and on-site investigation and evaluation of significant national and international urban development projects. Topics covered will be announced by instructor in the term prior to course offerings. (F, Sp)

**G5713 Real Estate I.** Prerequisite: graduate standing or permission of instructor. An introductory course which surveys the real estate development process. (F)

**G5723 Real Estate II.** Prerequisite: 5613. Based on the knowledge of the real estate process gained in **Real Estate I**, the student will complete a major related individual project. (Sp)

**G5733 Marketing.** Prerequisite: graduate standing or permission of instructor. Introduction to the principles, and their application required for the marketing of professional services. (Sp)

**G5743 Legal Framework for Design.** Prerequisite: graduate standing or permission of instructor. Introduction to the legal principles relevant to real estate planning, financing, development, operation, and disposal of real property and real estate projects. (F)

**G5753 Value Analysis.** Prerequisite: graduate standing or permission of instructor. The concept and application of value engineering is explained along with its specialized techniques. (Sp)

**G5763 Landscape Architecture for Architects.** Prerequisite: graduate standing or permission of instructor. Analysis and organization of the site together with the use of plant materials in landscape design. (Sp)

**G5930 Independent Study with Computer Applications.** Prerequisite: END 1012 and permission of instructor. Contracted independent study with emphasis on computer applications in architecture. Documentation and presentation varies with nature of the problem or project.

**G5955 Studio IX.** Prerequisite: 4733, 4754, 4833, 4854. Capstone course, the second of three required. Comprehensive architectural project at a professional level. Project development from urban context through schematic design. Application of professional techniques of representation and communication required. **Laboratory** (F)

**G5960 Directed Readings.** 1 to 4 hours. Prerequisite: fifth year or graduate standing in architecture and permission of instructor. May be repeated with change of subject; maximum credit nine hours. Studies in major field as approved by instructor. (F, Sp, Su)

**G5970 General Departmental Seminar.** 1 to 4 hours. Prerequisite: graduate standing or permission of instructor. May be repeated; maximum credit 12 hours. Advanced professional topics in architecture, construction science, urban design or environmental design. Lectures, team and individual assignments. (F)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. **Laboratory** (F, Sp, Su)

**G5990 Special Studies in Architecture.** 1 to 6 hours. Prerequisite: fifth year or graduate standing and permission of instructor. May be repeated; maximum credit nine hours. Subject as assigned by instructor will be explored in depth. Documentation and presentation varies with nature of problem. **Laboratory** (Sp, Su)

**G6133 Sustainable Design Analytics.** Prerequisite: Program admission or permission of instructor. Advanced level survey course investigating the wide variety of computer-based applications available for making sustainable design decisions. Case studies are used to clarify information presented. (F)

**G6143 Theory of Sustainability.** Prerequisite: Program admission or permission of instructor. Historical and contemporary topics in sustainable design goals, concepts, theories, and philosophies. (F)

**G6156 Graduate Studio I.** Prerequisite: Program admission or permission of instructor. Introduction to the study of sustainability and regional response: A survey of readings and precedents, studio projects, and field trips. Focus is on the "3 R's" - renew, reuse, and recycle; the "4 pillars" - conservation, harmony, cooperation, and balance; and various strategies for conserving energy, water, materials, and land to promote environmental quality. (F)

**G6233 Sustainable Technology.** Prerequisite: Program admission and 6133. In depth exploration of special topics in sustainable architecture. Subjects may be drawn from criteria for sustainable sites, water and energy efficiency, resources management, materials manufacture, and environmental quality. Documentation and presentation varies with nature of topic. (Sp)

**G6243 Research Methods and Programming.** Prerequisite: Program admission and 6133 and 6143. Research methodology applied to relevant topics resulting in the development of a design program for the professional project in sustainable architecture. (Sp)

**G6256 Graduate Studio II.** Prerequisite: Program admission and 6133 and 6143, and 6156. Intermediate study of sustainability and regional response: Continuation at a more informed level of readings and precedents, studio projects and field trips. Focus is on sustainable architecture that is responsive to regional conditions of custom, culture, materiality, and place. (Sp)

**G6356 Graduate Studio III.** Prerequisite: Program admission and 6233 and 6243, and 6256. Advanced study of sustainability and regional response: Application of theory and practices to a professional project of the individual student's choosing. A faculty committee guides the student's progress to completion of a schematic design. Emphasis is on demonstrating a comprehensive understanding and integrative capability in creating architecture that is contextually responsive and environmentally responsible in promoting a sustainable future. (F)

**G6456 Graduate Studio IV.** Prerequisite: Program admission and 6356. Continues project development of the schematic design. Previously gained awareness, understanding and ability are applied to bring the project to the level of design development. Emphasis is on improving the ability to make value judgments and critically review, test and refine architectural concepts in relation to regional distinctions and sustainable imperatives that reflect current social, economic and cultural demands. (Sp)

**G6590 Professional Project Research.** 1 to 4 hours. Prerequisite: permission of instructor. Research and development on subjects related to the professional project in architectural studies, architectural technology, historic preservation, urban design or other approved topics. (F, Sp, Su)

**G6643 Urban Design Theory (Crosslisted with Landscape Architecture and Regional and City Planning 6643).** Prerequisite: graduate standing. A survey of theory relevant to the urban design process, including social and behavioral concepts, visual and aesthetic theory, spatial and geographic factors of urban form. (Sp)

**G6680 Advanced Architectural Design III.** 1 to 6 hours. Prerequisite: 5505 or 5546. May be repeated; maximum credit six hours. Advanced design projects with an emphasis in architectural studies, architectural technology, historic preservation, urban design or other approved topics. **Laboratory** (F, Su)

**G6690 Professional Project.** 1 to 6 hours. Prerequisite: 5595 or 6680. May be repeated; maximum credit six hours. A terminal professional project demonstrating comprehensive understanding and integrative capabilities in architectural studies, architectural technology, historic preservation, urban design or other approved topics. **Laboratory** (F, Sp, Su)

**G6930 Independent Study with Computer Applications.** Prerequisite: END 1012 and permission of instructor. Contracted independent study with emphasis on computer applications in architecture. Documentation and presentation varies with nature of the problem or project.

**G6990 Special Studies in Architecture.** 1 to 6 hours. Prerequisite: graduate standing. May be repeated; maximum credit 12 hours. The candidate will thoroughly explore the particular phase of architecture selected for advanced study by the student and the graduate committee; presentation of the work will be determined by the nature of the contribution. **Laboratory** (F, Sp, Su)

## Art (ART)

**1013 Foundation Studio: Two-Dimensional.** Corequisite: ARTC 1003, 1023. Focuses on the formal elements and principles of two-dimensional spatial organization. Exploration in the basic language of art and design. Emphasis is placed on developing an understanding of the visual arts, the ingredients of which include inquiry, analysis, comparison, evaluation and language. Introduction to tools, methods and materials. (F)

**1023 Foundation Drawing.** Corequisite: 1013 and ARTC 1003. Introduction of basic techniques and skills needed to draw and interpret a three-dimensional world two-dimensionally. Exercises in observation, line, value, proportion, and perspective will be explored through a variety of materials. (F, Sp)

**1113 Foundation Studio: Three-Dimensional.** Prerequisite: 1013, 1023, and ARTC 1003; Corequisite: ARTC 1103. Focuses on the formal element, principles and concepts of three-dimensional form. Emphasis is placed on developing an understanding of the visual arts, the ingredients of which include inquiry, analysis, comparison, evaluation and language. Introduction to tools, methods and materials which include development of basic technical ability. (Sp)

**2253 Beginning Ceramics.** Prerequisite: 15 hours of foundation courses or permission of instructor on a space available basis. Introduction to various hand-building, glazing and firing techniques. Emphasis placed on developing an understanding of working in three dimensions (with clay as the medium), and on interpreting shape by combining surface color and three-dimensional form. Conceptual and critical issues introduced. (F, Sp)

**2263 Introduction to Ceramic Processes.** Prerequisite: 15 hours of foundation courses or permission of instructor on a space available basis. Introduction to various hand-building, glazing and firing techniques. Functional and sculptural projects will be defined on a term-to-term basis. (Irreg.)

**2313 Beginning Drawing.** Prerequisite: 1013, 1023, and ARTC 1003; or permission of instructor. Uses representational drawing to increase observational abilities. Perspective, value, form, texture, proportion and scale are studied using still life, the figure and outside drawing assignments. (Irreg.)

**2323 Introduction to Drawing.** Prerequisite: 2313 or permission of instructor. Introduction to drawing utilizing processes and concepts of line, color, composition and media. Students will explore abstraction using still life as well as the human figure. (Irreg.)

**2413 Beginning Painting.** Prerequisite: 15 hours of foundation courses, or permission of instructor. The aqueous media used in various approaches to painting problems (processes and concepts); lectures, group criticism and individual instruction assist the student in studying the fundamentals of painting. (F, Sp)

**2423 Introduction to Painting Processes.** Prerequisite: 2413 or permission of instructor. Continued instruction of the aqueous media as begun in ART 2413. (Irreg.)

**2513 Beginning Sculpture: Contemporary.** Prerequisite: 15 hours of foundation courses. Introduction of basic sculpture processes and concepts. Emphasis on formal visual properties and production techniques as they pertain to additive, subtractive and constructive modes of contemporary sculpture. A wide range of materials, tools and methods will be introduced. (Irreg.)

**2523 Beginning Sculpture: Figurative.** Prerequisite: 15 hours of foundation courses. Creating in oil base clay the human skull and a life-size portrait; creating a waste mold and making a plaster cast from it. (Irreg.)

**2633 Visual Communications I.** Prerequisite: 15 hours of foundation courses; corequisite: 2643. Introductory course in visual communication which focuses on nonverbal communication. Students are introduced to

design research, theory and methods. This course explores the importance design plays in shaping meaning and interpretation through basic visual interaction. (F)

**2643 Design Technology.** Prerequisite: 15 hours of foundation courses; corequisite: 2633. Introduction to electronic tools, processes and techniques as they relate to visual communications. (F)

**2653 Visual Communications II.** Prerequisite: 2633, 2643; corequisite: 2663. Course is structured to help students apply various strategies, concepts, and form/content relationships to their work. Projects stress theory, application and an introduction to the computer as a design process tool. (Sp)

**2663 Typography I.** Prerequisite: 2633, 2643; corequisite: 2653. Introduction to the basic concepts of typographic design through studio projects, critiques and lectures. (F, Sp)

**2673 Beginning Metal Design.** Prerequisite: 15 hours of foundation courses. Introduction to material and construction of simple object in non-ferrous metals. Cutting, forming, soldering, etc. (Irreg.)

**2683 Beginning Metal Design Processes.** Prerequisite: 2673. Introduction to lost wax casting techniques and more advanced construction methods. (Irreg.)

**2713 Beginning Etching.** Prerequisite: 15 hours of foundation courses. An introduction to the basic techniques and concepts of intaglio printing will be explored. Each student will create a body of work utilizing a variety of etching methods. (Irreg.)

**2723 Beginning Lithography.** Prerequisite: 15 hours of foundation courses. Designed to introduce the student to a variety of lithographic hand and photo techniques in the production of multiple images. Each student will produce a body of work with strong emphasis on drawing skills, design and personal creativity. (Irreg.)

**2733 Beginning Serigraphy.** Prerequisite: 15 hours of foundation courses. This course will involve the implementation of both hand and photo stencil methods. During the semester each student will produce a body of work exploring the image-making potential of screen printing techniques. Strong emphasis will be placed on exploring color, design and personal creativity. (Irreg.)

**2803 Media Arts Fundamentals.** Prerequisite: permission of department. Art majors only. Introduction to concepts and practices in media arts with exposure to a variety of media including film, video, photography, and new media. (Irreg.)

**2813 Filmmaking I.** Prerequisite: 2803 or ARTC 2010, or permission of instructor on a space-available basis. Beginning 16mm filmmaking covering basic technical and aesthetic properties of film. Students work in b/w 16mm film and non-synchronous sound. The course is taught through a combination of lecture, hands-on lab, and film screening. (Irreg.)

**2843 Photography for Artist I.** This is a non-darkroom introduction to photographic study. The main components of this course include camera and lens operations and techniques and exposure control; to develop an informed approach to discussing art through selective readings and viewing of slides and/or videos; and to establish a foundation to the critical process. **Laboratory** (F, Sp)

**2853 Introduction to Photography.** Prerequisite: 15 hours of foundation coursework or permission of instructor. This course introduces the student to current photographic concepts, theory and practice, both traditional and digital. The course has a lecture section and a separate lab component. It is divided into components that introduce the camera and exposure controls, explores darkroom procedures including black and white film processing and printing and includes presentation and criticism, and covers digital photo practices including an introduction to Photoshop. Lab will combine working familiarization with critical assessment to enhance the visual impact at well as historical and contemporary context of photography. (Irreg.)

**2873 Video for the Artist I.** Prerequisite: 2803 or ARTC 2010, or permission of instructor on a space-available basis. Emphasis on developing video production and post-production skills. Training exercises in studio and field production, camera work, lighting and sound. Instruction and practice in analog and digital editing. Exploration of digital media. Students will produce a number of short projects. (Irreg.)

**3253 Intermediate Ceramic Design.** Prerequisite: 2253. Continued exploration of various hand-building, glazing and firing techniques. Primarily low fire processes. Formal issues such as sculptural composition, form and surface development, and the interpretation of function addressed. Emphasis placed on developing a personal language of

materials and ideas. Progression through the range of ceramic-making skill sets. Conceptual and critical issues expanded. (F, Sp)

**3263 Intermediate Ceramic Processes.** Prerequisite: 2253. Continued exploration of various hand-building, glazing and firing techniques. Primarily high fire processes. Utilitarian and sculptural concerns, creative problem solving, art making strategies addressed. Emphasis placed on developing a personal language of materials and ideas. Progression through the range of ceramic-making skill sets. Conceptual and critical issues expanded. (F, Sp)

**3313 Intermediate Drawing Processes.** Prerequisite: 2313 or permission of instructor. Intermediate life drawing in various media with use of the human figure as the primary subject. The development of drawing processes and proficiency is stressed. (Irreg.)

**3323 Intermediate Drawing Concepts.** Prerequisite: 2313 or permission of instructor. Continuation of 3313. Intermediate life drawing in various media, using the human figure as the primary subject. The development of mature and personal drawing concepts and proficiency is stressed. (Irreg.)

**3413 Intermediate Painting Processes.** Prerequisite: 2423 or permission of instructor. Individual painting issues are pursued by the artist choosing their own media. These works are to be created with personal expression, artistic style, and canvas scale as important themes. (Irreg.)

**3423 Intermediate Painting Concepts.** Prerequisite: 2313 or permission of instructor. Personal painting issues are developed further with concepts and techniques attuned with working toward an exhibition practice. (Irreg.)

**3513 Intermediate Sculpture: Contemporary Process.** Prerequisite: 2513, 2523 or permission of instructor. Examination of metal fabrication, welding, woodworking (construction and carving), and advanced assembly with nontraditional materials. Concerns in the development of formal visual issues, presentation, concept and theory of contemporary sculpture will be emphasized. (Irreg.)

**3523 Intermediate Sculpture: Figurative Processes.** Prerequisite: 2513, 2523 or permission of instructor on a space available basis. Creating a bas-relief and sculpting the human hand and foot in oil based clay; creating a slip cast mold of the bas-relief for water base clay castings. (Irreg.)

**3533 Intermediate Sculpture: Contemporary Concepts.** Prerequisite: 2513, 2523 or permission of the instructor on a space available basis. Emphasis placed on the relationship of craft, subject, scale and material. Experimental sculptural avenues including nontraditional methods, installation and other 3-D driven media encouraged. Issues relating to professional exhibition, documentation, writing and critical theory will be presented. (Irreg.)

**3543 Intermediate Sculpture: Figurative Small Projects.** Prerequisite: 2513, 2523 or permission of the instructor. Creating a plaster sculpture(s) with a foam core; students will sculpt several small figurative sculptures from oil based clay. Armatures for smaller sculptures are designed and developed for more complex compositions. (Irreg.)

**3553 Intermediate Sculpture: Figurative Large Projects.** Prerequisite: 2523. Larger sculptures will be created in oil based clay and plaster; larger armatures are designed and developed for the larger compositions. (Irreg.)

**3633 Visual Communications III.** Prerequisite: 2653, 2663; corequisite: 3663. Exploration and application of information systems as they apply to visual communications. (F)

**3643 Digital Design.** Prerequisite: 3633, 3663; corequisite: 3653. Emphasis will be on exploring new directions in design communication, moving from the printed page to electronic media. Development of new strategies for interface, internet, and interactive design integrating words, images, animation, and sound. (F)

**3653 Visual Communications IV.** Prerequisite: 3633 and 3663; corequisite: 3643. Concentration is on design problem solving in visual communication at an intermediate level. (Sp)

**3663 Typography II.** Prerequisite: 2653, 2663; corequisite: 3633. Concentrated exploration of issues within typography using word and image. Projects explore visual and verbal context and meaning through expressive and utilitarian aspects of typography. (F)

**3673 Intermediate Metal Design.** Prerequisite: 2673, 2683. Design studies and a continuation of metal objects, as well as casting and introduction to coloring metals, stone setting, plating, etc. (Irreg.)

**3683 Intermediate Metal Design Processes.** Prerequisite: 2673, 2683. Emphasis on design in terms of quality, execution and methods of construction. (Irreg.)

**3713 Intermediate Etching.** Prerequisite: 2713. May be repeated; maximum credit six hours. Involves intermediate studies, utilizing the intaglio process in the exploration of image, design and personal creativity. (Irreg.)

**3723 Intermediate Lithography.** Prerequisite: 2723. May be repeated; maximum credit six hours. Involves intermediate studies, utilizing the lithography method in the exploration of color, design and personal creativity. (Irreg.)

**3733 Intermediate Serigraphy.** Prerequisite: 2733. May be repeated, maximum credit six hours. Involves intermediate studies utilizing screenprinting techniques in the exploration of color, design and personal creativity. (Irreg.)

**3813 Filmmaking II.** Prerequisite: 2813. Continuation of Filmmaking I with an introduction to use of color film stock and an emphasis on the use of lighting and sound. Raw footage will be transferred to a digital video format for editing on nonlinear edit systems. The course will be taught through a combination of lecture, hands-on lab, film screenings and project critiques. (Irreg.)

**3853 Intermediate Traditional Photography.** Prerequisite: 2853 or permission of instructor. May be repeated once with change of content; maximum credit six hours. This course will explore traditional photographic practices. It focuses on the development of concepts in the imagemaking process and explores various means for producing a cohesive body of work. Instructor will determine the content and methodology, but all courses will include refinement of ideas and informed discussion with referential context. Readings and writings will supplement class discussion. **Laboratory** (Irreg.)

**3863 Intermediate Digital Photography.** Prerequisite: 2853 or permission of the instructor. This course will explore digital photographic practices. It focuses on the development of concepts in the image making process and explores various means for producing a cohesive body of work. The instructor will determine the content and methodology, but all courses will include refinement of ideas and informed discussion with referential context. Readings and writings will supplement class discussion. **Laboratory** (Irreg.)

**3873 Video for the Artist II.** Prerequisite: 2873. Continuation of 2873. Introduction to advanced imaging and editing techniques. (Sp)

**3943 Seminar: Experimental Video/Film Art.** Involves study and critical analysis of experimental video/film produced by independent video/film artists from the 1950s to the present. Emphasis on montage, structural, experimental narrative, computer generated, and multi-channel genres.

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated with change of subject matter; maximum credit six hours. Consists of either reading topics or independent study designated by the instructor in keeping with the student's major program. The topics of study will cover materials not usually presented in the regular courses. (F, Sp)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program, junior or senior standing. May be repeated with change of subject matter; maximum credit six hours. The projects covered will vary. The content will deal with concepts not usually presented in regular coursework.

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated with change of subject; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work at a special project in the student's field. (F, Sp)

**4253 Advanced Ceramics.** Prerequisite: 3253, 3263. May be repeated, maximum credit 12 hours. Emphasis on articulating and developing individual projects in ceramics. Students are expected to research materials and techniques pertinent to development and exploration of personal direction of form and ideas. Each student is expected to create a body of work building on prior exploration of color and form in clay and glazes, traditional and/or non-traditional techniques. Emphasis is on students' individual area of interest. (F, Sp)

**4313 Advanced Drawing Processes.** Prerequisite: 3313, 3323. Students are directed in the development of a personal portfolio of works representing drawing proficiency and professional maturity. (Irreg.)

**4323 Advanced Drawing Concepts.** Prerequisite: 2313, 2323, 3313, or 3323, 4313. Students are encouraged to refine their portfolio of work representing drawing proficiency and professional maturity. (Irreg.)

**4413 Advanced Painting Processes.** Prerequisite: 3413, 3423. A mature and distinctive painting language is developed utilizing various media. The creation of painted work with relationships to an artistic series are explored. (Irreg.)

**4423 Advanced Painting Concepts.** Prerequisite: 4413. A series of paintings are created representing a body of work of a professional nature. (Irreg.)

**4513 Advanced Sculpture: Contemporary.** Prerequisite: 3513, 3533. Self-directed research objectives in terms of sculpture technique, process and concept. Progress relating to personal artistic growth and professional discipline will be expected. Emphasis will be placed on producing a unique body of work for portfolio development and exhibition. (Irreg.)

**4533 Advanced Sculpture: Figurative I.** Prerequisite: 2513, 3513, 3523. Develop the student's awareness of form through the modeling of the human figure. The students will study the fundamentals of sculpture such as armature, design, materials, tools and techniques. (Irreg.)

**4543 Advanced Sculpture: Figurative II.** Prerequisite: 4533. Continuation of the techniques developed in 4533. Students will explore more complex compositions and armature designs while modeling the human form. There will be more emphasis on human and animal anatomy. Will expand into the study and application of bas-reliefs. (Irreg.)

**4573 Monumental Sculpture.** Prerequisite: 4543. Students will be introduced to various enlarging techniques, taking a sculpture from the maquette (small version) to life-size or monumental scale. Focus on enlarging with the grid method. Use of a pantograph and the wafer method will also be discussed. Emphasis will be placed on the professional aspects of working with foundries, installations, and clientele. (F)

**4583 Mold Making.** Prerequisite: 4543. Expose the student to the fundamentals of mold making pertaining to sculpture. Focus on the creation of a silicone rubber mold. Other mold making techniques will be explored such as alginate and waste molds. (Sp)

**4643 Visual Communications V.** Prerequisite: 3653, 3663; corequisite: 4633. Students explore contemporary and critical issues in visual communications. This course deals with the planning, design and implementation of multi-faceted design problems directed towards an understanding and integration of people and visual communication. (F)

**4653 Typography III.** Prerequisite: 3643, 3653; corequisite: 4643. Typographic problem solving, exploration, and experimentation. Emphasis is on the development of syntactic typographic relations in visual communication. (F)

**4663 Visual Communications VI.** Prerequisite: 4643. An advanced course in visual communication exploring multi-component graphic design problems that convey complex information. (Sp)

**4713 Advanced Etching.** Prerequisite: 3713. May be repeated, maximum credit 12 hours. This course involves further advanced studies in the area of intaglio. Although color, design and personal creativity will be of importance, the development of ideas will be paramount. (Irreg.)

**4723 Advanced Lithography.** Prerequisite: 3723. May be repeated, maximum credit nine hours. This course involves further advanced study in the area of lithography. Although drawing skill, design and creativity will be important, the development of ideas will be paramount. (Irreg.)

**4733 Advanced Serigraphy.** Prerequisite: 3733. May be repeated, maximum credit nine hours. This course involves further advanced studies in screen printmaking. Although the exploration of color, design and creativity will still be of major importance, the development of ideas will be of greatest importance. (Irreg.)

**4813 Media Arts Special Topics.** Prerequisite: 3810 or 3873. May be repeated with change of topic; maximum credit 12 hours. Explores various advanced-level topics in production, style and technique. Topics to be determined by department. Individual topics may include but are not limited to animation concepts, documentary, experimental, narrative, digital media, as well as editing, lighting, sound, and other production-related concerns. (F, Sp)

**4843 Applied Photo Practice.** Prerequisite: 2853 and 3853. May be repeated; maximum credit 15 hours. Explores various applied and practical topics of photography to be determined by department. Topics may include view camera technique, zone system, photo illustration, studio experience and extended research and presentation of related topics. Each option will permit concentration and encourage realization of conceptual goals. (Irreg.)

**4853 Advanced Photo Practices.** Prerequisite: 2853 and 3853. May be repeated with change of content; maximum credit 15 hours. Advanced-level topics to be determined by department and which may include advanced B&W; color; books and portfolios. Extended research and presentation of related topics. Each option will permit concentration and encourage realization of conceptual goals. (Irreg.)

**4863 Alternative Photo Practices.** Prerequisite: 2853 and 3853. May be repeated; maximum credit 15 hours. Topics of historical processes,

contemporary explorations, and alternatives to traditional photo methods to be determined by department (nonsilver I and II; process imagery, alternative color, digital imaging, extended research and presentation, etc.). Each option will permit concentration and encourage realization of conceptual goals. (Irreg.)

**4873 Advanced Media Arts.** Prerequisite: 4810 and permission of instructor. May be repeated; maximum credit six hours. Students create advanced-level work in media arts within a group-critique setting. (F, Sp)

**4913 Ceramic Studio Projects.** Prerequisite: sophomore standing. May be repeated with change of subject matter; maximum credit nine hours. Individual problems in ceramics. (Irreg.)

**4923 Studio Projects.** Prerequisite: sophomore standing or higher. May be repeated with change of subject matter; maximum credit six hours. Individual problems in studio. (Irreg.)

**4930 Internship.** 1 to 6 hours. Prerequisite: permission of instructor. May be repeated; maximum credit nine hours. Students arrange and participate in a professional work experience with an approved internship site. (Irreg.)

**4933 Painting Studio Projects.** Prerequisite: Sophomore standing. May be repeated with change of subject matter; maximum credit nine hours. Individual problems in painting. (Irreg.)

**4943 Printmaking Studio Projects.** Prerequisite: Sophomore standing. May be repeated with change of subject matter; maximum credit nine hours. Individual problems in printmaking. (Irreg.)

**4953 Sculpture Studio Projects.** Prerequisite: Sophomore standing. May be repeated with change of subject matter; maximum credit nine hours. Individual problems in sculpture. (Irreg.)

**4963 Photography Studio Projects.** Prerequisite: Sophomore standing. May be repeated with change of subject matter; maximum credit nine hours. Individual problems in photography. (Irreg.)

**4973 Film and Video Studio Projects.** Prerequisite: Sophomore standing. May be repeated with change of subject matter; maximum credit nine hours. Individual problems in film and video. (Irreg.)

**4983 Senior Capstone Experience.** Prerequisite: senior classification. May not be repeated for credit. Primary objective is to provide a culminating experience for the senior-year student. Satisfies the University-wide General Education Requirement for a capstone course for art majors. [V]

**4993 Visual Communication Studio Projects.** Prerequisite: Sophomore standing. May be repeated with change of subject matter; maximum credit nine hours. Individual problems in visual communication. (Irreg.)

**G5010 Graduate Studio.** 1 to 9 hours. Prerequisite: graduate standing in art. May be repeated with change of subject; maximum credit 12 hours. Individual problems in major studio area, with a choice of medium. (F, Sp, Su)

**G5013 Graduate Studio Ceramics I.** Prerequisite: graduate standing in Art. Individual problems in the ceramics studio area. (Irreg.)

**G5020 Graduate Studio.** 1 to 9 hours. Prerequisite: graduate standing in art. May be repeated with change of subject; maximum credit 12 hours. Individual problems in major studio area, with a choice of medium. (F, Sp, Su)

**G5030 Graduate Studio.** 1 to 9 hours. Prerequisite: graduate standing. May be repeated with change of subject; maximum credit 12 hours. Individual problems in major studio area, with a choice of medium. (F, Sp)

**G5033 Graduate Studio Painting I.** Prerequisite: graduate standing in Art. Individual problems in the painting studio area. (Irreg.)

**G5040 Graduate Studio.** 1 to 9 hours. Prerequisite: graduate standing. May be repeated with change of subject; maximum credit 12 hours. Individual problems in major studio area, with a choice of medium. (F, Sp)

**G5043 Graduate Studio Printmaking I.** Prerequisite: graduate standing in Art. Individual problems in the printmaking studio area. (Irreg.)

**G5053 Graduate Studio Sculpture I.** Prerequisite: graduate standing in Art. Individual problems in the sculpture studio area. (Irreg.)

**G5063 Graduate Studio Photography I.** Prerequisite: graduate standing in Art. Individual problems in the photography studio area. (Irreg.)

**G5073 Graduate Studio Film/Video I.** Prerequisite: graduate standing in Art. Individual problems in the film/video studio area. (Irreg.)

**G5093 Graduate Studio Visual Communications I.** Prerequisite: graduate standing in Art. Individual problems in visual communications area. (Irreg.)

**G5113 Graduate Studio Ceramics II.** Prerequisite: graduate standing in Art. Individual problems in the ceramics studio area. (Irreg.)

**G5133 Graduate Studio Painting II.** Prerequisite: graduate standing in Art. Individual problems in the painting studio area. (Irreg.)



- G6010 Graduate Studio.** 1 to 6 hours. Prerequisite: graduate standing; 30 hours. May be repeated with change of subject; maximum credit 12 hours. Individual problems in major studio area, with a choice of medium. (F, Sp, Su)
- G6013 Graduate Studio Ceramics XI.** Prerequisite: graduate standing in Art. Individual problems in the ceramics studio area. (Irreg.)
- G6020 Graduate Studio.** 1 to 6 hours. Prerequisite: graduate standing; 30 hours. May be repeated with change of subject; maximum credit 12 hours. Individual problems in major studio area, with a choice of medium. (F, Sp)
- G6030 Graduate Studio.** 1 to 6 hours. Prerequisite: graduate standing; 30 hours. May be repeated with change of subject; maximum credit 12 hours. Individual problems in major studio area, with a choice of medium. (F, Sp, Su)
- G6033 Graduate Studio Painting XI.** Prerequisite: graduate standing in Art. Individual problems in the painting studio area. (Irreg.)
- G6040 Graduate Studio.** 1 to 6 hours. Prerequisite: graduate standing; 30 hours. May be repeated with change of subject; maximum credit 12 hours. Individual problems in major studio area, with a choice of medium. (F, Sp, Su)
- G6043 Graduate Studio Printmaking XI.** Prerequisite: graduate standing in Art. Individual problems in the printmaking studio area. (Irreg.)
- G6053 Graduate Studio Sculpture XI.** Prerequisite: graduate standing in Art. Individual problems in the sculpture studio area. (Irreg.)
- G6063 Graduate Studio Photography XI.** Prerequisite: graduate standing in Art. Individual problems in the photography studio area. (Irreg.)
- G6073 Graduate Studio Film/Video XI.** Prerequisite: graduate standing in Art. Individual problems in the film/video studio area. (Irreg.)
- G6093 Graduate Studio Visual Communications XI.** Prerequisite: graduate standing in Art. Individual problems in visual communications area. (Irreg.)
- G6113 Graduate Studio Ceramics XII.** Prerequisite: graduate standing in Art. Individual problems in the ceramics studio area. (Irreg.)
- G6133 Graduate Studio Painting XII.** Prerequisite: graduate standing in Art. Individual problems in the painting studio area. (Irreg.)
- G6143 Graduate Studio Printmaking XII.** Prerequisite: graduate standing in Art. Individual problems in the printmaking studio area. (Irreg.)
- G6153 Graduate Studio Sculpture XII.** Prerequisite: graduate standing in Art. Individual problems in the sculpture studio area. (Irreg.)
- G6163 Graduate Studio Photography XII.** Prerequisite: graduate standing in Art. Individual problems in the photography studio area. (Irreg.)
- G6173 Graduate Studio Film/Video XII.** Prerequisite: graduate standing in Art. Individual problems in the film/video studio area. (Irreg.)
- G6193 Graduate Studio Visual Communications XII.** Prerequisite: graduate standing in Art. Individual problems in visual communications area. (Irreg.)
- G6213 Graduate Studio Ceramics XIII.** Prerequisite: graduate standing in Art. Individual problems in the ceramics studio area. (Irreg.)
- G6233 Graduate Studio Painting XIII.** Prerequisite: graduate standing in Art. Individual problems in the painting studio area. (Irreg.)
- G6243 Graduate Studio Printmaking XIII.** Prerequisite: graduate standing in Art. Individual problems in the printmaking studio area. (Irreg.)
- G6253 Graduate Studio Sculpture XIII.** Prerequisite: graduate standing in Art. Individual problems in the sculpture studio area. (Irreg.)
- G6263 Graduate Studio Photography XIII.** Prerequisite: graduate standing in Art. Individual problems in the photography studio area. (Irreg.)
- G6273 Graduate Studio Film/Video XIII.** Prerequisite: graduate standing in Art. Individual problems in the film/video studio area. (Irreg.)
- G6293 Graduate Studio Visual Communications XIII.** Prerequisite: graduate standing in Art. Individual problems in the visual communications area. (Irreg.)
- G6313 Graduate Studio Ceramics XIV.** Prerequisite: graduate standing in Art. Individual problems in the ceramics studio area. (Irreg.)
- G6333 Graduate Studio Painting XIV.** Prerequisite: graduate standing in Art. Individual problems in the painting studio area. (Irreg.)
- G6343 Graduate Studio Printmaking XIV.** Prerequisite: graduate standing in Art. Individual problems in the printmaking studio area. (Irreg.)
- G6353 Graduate Studio Sculpture XIV.** Prerequisite: graduate standing in Art. Individual problems in the sculpture studio area. (Irreg.)
- G6363 Graduate Studio Photography XIV.** Prerequisite: graduate standing in Art. Individual problems in the photography studio area. (Irreg.)
- G6373 Graduate Studio Film/Video XIV.** Prerequisite: graduate standing in Art. Individual problems in the film/video studio area. (Irreg.)

- G6393 Graduate Studio Visual Communications XIV.** Prerequisite: graduate standing in Art. Individual problems in the visual communications area. (Irreg.)
- G6413 Graduate Studio Ceramics XV.** Prerequisite: graduate standing in Art. Individual problems in the ceramics studio area. (Irreg.)
- G6433 Graduate Studio Painting XV.** Prerequisite: graduate standing in Art. Individual problems in the painting studio area. (Irreg.)
- G6443 Graduate Studio Printmaking XV.** Prerequisite: graduate standing in Art. Individual problems in the printmaking studio area. (Irreg.)
- G6453 Graduate Studio Sculpture XV.** Prerequisite: graduate standing in Art. Individual problems in the sculpture studio area. (Irreg.)
- G6463 Graduate Studio Photography XV.** Prerequisite: graduate standing in Art. Individual problems in the photography studio area. (Irreg.)
- G6473 Graduate Studio Film/Video XV.** Prerequisite: graduate standing in Art. Individual problems in the film/video studio area. (Irreg.)
- G6493 Graduate Studio Visual Communications XV.** Prerequisite: graduate standing in Art. Individual problems in the visual communications area. (Irreg.)
- G6513 Graduate Studio Ceramics XVI.** Prerequisite: graduate standing in Art. Individual problems in the ceramics studio area. (Irreg.)
- G6533 Graduate Studio Painting XVI.** Prerequisite: graduate standing in Art. Individual problems in the painting studio area. (Irreg.)
- G6543 Graduate Studio Printmaking XVI.** Prerequisite: graduate standing in Art. Individual problems in the printmaking studio area. (Irreg.)
- G6553 Graduate Studio Sculpture XVI.** Prerequisite: graduate standing in Art. Individual problems in the sculpture studio area. (Irreg.)
- G6563 Graduate Studio Photography XVI.** Prerequisite: graduate standing in Art. Individual problems in the photography studio area. (Irreg.)
- G6573 Graduate Studio Film/Video XVI.** Prerequisite: graduate standing in Art. Individual problems in the film/video studio area. (Irreg.)
- G6593 Graduate Studio Visual Communications XVI.** Prerequisite: graduate standing in Art. Individual problems in the visual communications area. (Irreg.)
- G6880 Graduate Exhibition.** 1 to 4 hours. Prerequisite: at least 30 hours of graduate credit successfully completed. May be repeated; maximum credit four hours. A special project course culminating in a graduate exhibition presented by the candidate for the Master of Fine Arts degree. Students enrolled will be following the "no thesis" plan. (F, Sp, Su)

## *Art for Non-Majors (ARNM)*

- 1003 Art for Non-Majors: Two-Dimensional.** May be repeated; maximum credit six hours. Provides students who are not art majors with an introduction to the basic studio processes of painting and drawing. (Irreg.)
- 2003 Art for Non-Majors: Three-Dimensional.** Prerequisite: 1003. May be repeated; maximum credit six hours. Provides students who are not art majors with an introduction to the basic studio processes of three-dimensional design and construction. (Irreg.)
- 2843 Photography for Non Art Majors.** This course will introduce the non art major to camera controls and traditional darkroom operations including film processing, contact printing, enlarging and processing of black and white material, matting and presentation. Students enrolling in this course do not need to have any previous photographic or art skills. This course will complete a portfolio of images to complete the course. Textbook required. (Irreg.)
- 3003 Three-Dimensional Art for Non-Majors.** Prerequisite: 2003 or permission of instructor. This studio course offers continued study of more advanced tools and techniques in order to learn basic formal elements of line, mass, composition and surface relationships in the context of three-dimensional space. (Irreg.)
- 3013 Two-Dimensional Art for Non-Majors.** Prerequisite: 1003 or permission of instructor. This studio course offers continued study of more advanced tools and techniques in drawing, painting and print in order to gain experience in the creative process and better appreciate various forms of art. (Irreg.)

## Art History (A HI)

**The department offers courses which are slashlisted so undergraduate students may take an undergraduate 4000-level course while graduate students may take a graduate 5000-level course. The lectures in a slashlisted course are the same. However, students in the 5000-level course have substantial additional requirements beyond those for students in the 4000-level course. These additional requirements are listed in the slashlisted course syllabus.**

**1113 The Understanding of Art.** Explanation and analysis of the principles underlying the visual arts. Consideration of formal, historical and other factors in the valuation and enjoyment of painting, sculpture, architecture and utilitarian objects. (F, Sp, Su) [IV-AF]

**2213 General Survey I.** The visual arts from the prehistoric through the Renaissance. (F) [IV-AF]

**2223 General Survey II.** From the Renaissance to the present. (F, Sp, Su) [IV-AF]

**2930 Special Topics.** 2-6 hours.; Prerequisite: Permission of instructor. May be repeated with change of topic; maximum credit 12 hours. Courses in special topics not offered in the established curriculum. (Irreg.)

**The prerequisite for courses in Art History numbered 3000 to 4000 is 1113 or 2213 or 2223 unless otherwise indicated.**

**3133 Survey of Aegean Art and Architecture.** Prerequisite: junior standing. Understanding of art and architecture of the Aegean civilization. The focus of the course will be on artistic production of the island of Crete and to a lesser extent Cycladic and Mycenaean achievements in the Bronze Age Greece. (Alt. Sp)

**3213 Classical Art and Archaeology: Greek Art to the Death of Alexander (Crosslisted with Classical Culture 3213).** Prerequisite: sophomore standing. Lectures, occasionally illustrated, and assigned readings. Survey of the architecture, sculpture, painting and minor arts in the Greek regions of the eastern Mediterranean in the successive stages of their development, with analyses of dominant styles and detailed study of select masterpieces and monuments. (F) [IV-AF]

**3223 Classical Art and Archaeology: Hellenistic Greek Art; Roman Art (Crosslisted with Classical Culture 3223).** Prerequisite: sophomore standing. Continuation of 3213. Survey of Hellenistic art, with particular attention to the individuality of style and diversity of matter. Early Etruscan and Roman art. The development of Roman art in native and assimilated forms; studies in domestic and national monuments. (Sp) [IV-AF]

**3673 History of Visual Communications.** Prerequisite: junior standing. The history of visual communications and design from prehistoric times to the twentieth century. (Sp)

**3753 History of Interior Design, Early Civilization to 1800.** Prerequisite: 1113 or 2213 or 2223. Historical survey of architectural interiors and of the decorative arts from prehistory to 1800. Readings, lectures and discussion about the art, composition, and the aesthetic theories that give value to historical interiors. (F) [IV-WC]

**3763 History of Interior Design, 19th and 20th Centuries.** Prerequisite: 1113 or 2213 or 2223, 3753 or permission. History of interior with emphasis on cultural and socio-economic factors which led to their development. Emphasis on designers and patrons and on the major furnishings styles and design ideas of the nineteenth and twentieth centuries. (Sp)

**3803 Pre-Columbian Art and Architecture of Meso- and South America.** Prerequisite: 2213 or 2223. An overview of Pre-Columbian art and architecture in Meso-America and South America from Prehistoric times until the Spanish intervention in the early 1500s. (F-alternate) [IV-NW]

**3853 Survey of Asian Art.** Prerequisite: junior standing. A survey of the art of India, China, and Japan. (Irreg.)

**4113 Cycladic Art (Slashlisted with 5113).** Prerequisite: junior standing. The Bronze Age culture of the Aegean Islands with special emphasis on Cycladic idols and monumental paintings on the island of Thera (Santorini). No student may earn credit for both 4113 and 5113. (Sp-alternate)

**4123 Minoan Art and Architecture (Slashlisted with 5123).** Prerequisite: junior standing. Examination and interpretation of Minoan palatial architecture and related art production on the island of Crete. No student may earn credit for both 4123 and 5123. (Sp-alternate)

**4143 Mycenaean Art and Architecture (Slashlisted with 5143).**

Prerequisite: junior standing. Art of mainland Greece with particular attention to Mycenaean settlements and funeral practices. No student may earn credit for both 4143 and 5143. (Sp-alternate)

**4163 Etruscan Art (Slashlisted with 5163).** Prerequisite: junior standing or permission of instructor. Examine and interpret selected works of Etruscan art in reference to the possible influences from the social, political, economic, literary, and religious "climate" of the time. No student may earn credit for both 4163 and 5163. (F) [IV-WC]

**4233 Medieval Art I: Early Christian to c. 1100 (Slashlisted with 5233).** Prerequisite: junior standing. A study of Western art and architecture from the early Christian period (fourth century) through the Early Romanesque period (about 1100). Studies of Byzantine, Migratory, Insular, Hispano-Islamic, Carolingian and Ottonian art included. No student may earn credit for both 4233 and 5233. (Alt. F) [IV-WC]

**4243 Medieval Art II: Romanesque (Slashlisted with 5243).** Prerequisite: junior standing. European medieval art of 11th and 12th centuries. Romanesque, the first pan-European art style, is formulated during a period of urban growth and the beginning of the university system. One of the most significant achievements during the Romanesque is the sculpted iconographical portal. No student may earn credit for both 4243 and 5243. (Alt. Sp) [IV-WC]

**4253 Medieval Art III: Gothic (Slashlisted with 5253).** Prerequisite: junior standing. European late Medieval art from mid-12th century to mid-15th century. Beginning with Gothic and continuing into early Renaissance, when two distinct styles come about simultaneously: Flemish and early Renaissance. No student may earn credit for both 4253 and 5253. (Alt. F) [IV-WC]

**4273 Byzantine Icons (Slashlisted with 5273).** Prerequisite: junior standing. Byzantine images occupy a principal position at the heart of the Eastern Church and they are an organic part of daily services. The icon represents a vision of the invisible, and therefore a vision founded on divine knowledge which transforms the created work into the miracle working image. This Class will examine the challenging process of producing holiness and divinity through painting panels. No student may earn credit for both 4273 and 5273. (Irreg.)

**4303 Early Renaissance Art in Italy (Slashlisted with 5303).** Prerequisite: junior standing. Italian painting, sculpture, and architecture between 1250-1500, emphasizing the birth of the Renaissance from a social and cultural framework. No student may earn credit for both 4303 and 5303. (Irreg.) [IV-WC]

**4333 High Renaissance and Mannerist Art in Italy (Slashlisted with 5333).** Prerequisite: junior standing. Italian High Renaissance and Mannerist painting, sculpture, and architecture between 1500-1600. No student may earn credit for both 4333 and 5333. (Alt. F) [IV-WC]

**4353 Northern Renaissance Art (Slashlisted with 5353).** Prerequisite: junior standing. Painting, sculpture and architecture in Northern Europe from 1400-1600. The course will emphasize painting in Flanders, Germany and the Netherlands. No student may earn credit for both 4353 and 5353. (Alt. F) [IV-WC]

**4373 The Italian City: Renaissance and Baroque Architecture (Slashlisted with 5373).** Prerequisite: junior standing. Architecture and urban planning of Italy from about 1300-1700. Emphasis on the growth of the city and how new forms of social interaction affected the development of architecture and the urban setting. No student may earn credit for both 4373 and 5373. (Alt. F) [IV-WC]

**4403 Southern Baroque Art (Slashlisted with 5403).** Italian painting, sculpture, architecture from 1600-1700. This course will emphasize the effects of the Counter-Reformation on art and artists in Rome. No student may earn credit for both 4403 and 5403. (F-alternate) [IV-WC]

**4503 Art of the 18th Century: The Age of Enlightenment (Slashlisted with 5503).** Prerequisite: junior standing. Emphasizes the interaction of art with scientific, literary, historic and philosophical innovations of the eighteenth century. Content includes painting, sculpture and architecture of Northern Europe. No student may earn credit for both 4503 and 5503. (Alt. Sp) [IV-WC]

**4553 Nineteenth-Century Art (Slashlisted with 5553).** Prerequisite: junior standing. European art from the French Revolution to 1900, with particular emphasis on developments in French painting. Brief consideration of parallel trends in American art. No student may earn credit for both 4553 and 5553. (Irreg.) [IV-WC]

**4603 American Art (Slashlisted with 5603).** Prerequisite: junior standing. American art from the colonial period to 1950. No student may earn credit for both 4603 and 5603. (Irreg.) [IV-WC]

**4613 Readings in Twentieth-Century Art (Slashlisted with 5613).**

Prerequisite: permission of instructor. Explores the cultural/intellectual context of the Fauves, German Expressionists, Cubists, Constructivists, Futurists, Dadas, Surrealists, Etc., through artists' and critics' writings and manifestoes as well as other arts such as poetry, drama and dance. Readings, presentations, and critical writings will be assigned. No student may earn credit for both 4613 and 5613. (Irreg.) [IV-WC]

**4633 Modern Art: Cezanne to 1950 (Slashlisted with 5633).**

Prerequisite: junior standing. European art from Post-Impressionism to 1950, including some American developments. Emphasis on painting and sculpture, with some consideration of architecture. No student may earn credit for both 4633 and 5633. (Irreg.) [IV-WC]

**4653 Art Since World War II (Slashlisted with 5653).** Prerequisite: 1113 or 2213 or 2223. Recent developments in art, both in the United States and abroad. No student may earn credit for both 4653 and 5653. (Irreg.) [IV-WC]

**4663 Women in Contemporary Art (Slashlisted with 5663).** Prerequisite: permission of instructor. Discussions concerning women's issues in contemporary art, current women artists and their art works. The notion of a "female sensibility" will be examined. Students will engage in individual and group presentations, both of artists and critical issues. Essay writing and preparation of bibliographies. No student may earn credit for both 4663 and 5663. (Irreg.) [IV-WC]

**4673 Modern Sculpture (Slashlisted with 5673).** Prerequisite: junior standing. A study of changing concepts in sculpture from neo-classicism to the present day. No student may earn credit for both 4673 and 5673. (Irreg.) [IV-WC]

**4703 History of Photography 1839-1945 (Slashlisted with 5703).**

Prerequisite: junior standing. A survey of the history of photography from 1839 to 1945. Topics include photography as art; social, technical, mechanical, scientific and aesthetic factors in the development of the medium. No student may earn credit for both 4703 and 5703. (Irreg.) [IV-AF]

**4713 History of Photography: 1945-Present (Slashlisted with 5713).**

Prerequisite: junior standing. A survey of the principal movements, ideas and motifs of photography from post-World War II until the 1990's. No student may earn credit for both 4713 and 5713. (Irreg.) [IV-AF]

**4743 The American West in Art, Photography, and Popular Culture (Slashlisted with 5743).** Prerequisite: junior standing or permission of instructor. Focuses on the study of the Trans-Mississippi West, as seen through the eyes of artists and photographers from the early 19th century until today. A variety of media will be discussed, including paintings, prints, photography, and sculpture. The purpose of the course will be primarily to study Euro-American artistic conventions/tradition and how they have been employed in defining western history, culture, and native peoples as fact, fiction, and myth. No student may earn credit for both 4743 and 5743. (Irreg.) [IV-AF]

**4753 The American West in Photography (Slashlisted with 5753).**

Prerequisite: Junior standing or permission of the instructor. This course focuses on the study of the trans-Mississippi west as seen through the eyes of photographers from the early 19th century up to the present. The purpose of this course will primarily be to study Euro-American photographic conventions, traditions, and styles and how they have been employed in defining American western history, culture and native peoples as fact, artistic motif and myth. No student may earn credit for both 4753 and 5753. (Irreg.)

**4803 Survey I: North American Indian Prehistoric Art (Slashlisted with 5803).** Prerequisite: junior standing. Ancient arts of the Arctic, Alaska, Canada, California, Great Basin and North American desert Southwest.

Interdisciplinary methodology used to provide a broad view of cultures, artistic development and resultant art forms. Non-Western philosophical basis of the arts discussed in relationship to varied belief systems and social customs. No student may earn credit for both 4803 and 5803. (Sp) [IV-NW]

**4813 Nineteenth Century North American Indian Art History (Slashlisted with 5813).** Prerequisite: junior standing. Arts of North American Indians during the 19th century. Interdisciplinary methodology delineates major cultural areas and contexts within which arts were created. Issues of Euro-American influences and adaptation of new materials and styles. Maintenance of traditional conventions by native artists addressed. No student may earn credit for both 4813 and 5813. (Alt. Sp) [IV-NW]

**4823 20th-Century American Indian Art History (Slashlisted with 5823).**

Prerequisite: junior standing. Examination and study of the arts of North American Indians. Included in the survey will be the examination of new

materials, styles, and the shifts of gender roles in the creative arts. No student may earn credit for both 4823 and 5823. (F) [IV-NW]

**4833 Survey II: North American Indian Prehistoric Art (Slashlisted with 5833).** Prerequisite: junior standing. Prehistory of North American Indian arts of northern and southeastern United States. Includes the Adena and Hopewell people, the early cultures of Florida, later Mississippian and Caddoan people. Includes fiber arts, pottery, painting, sculpture and architecture, as well as a non-Western philosophical view of iconography and underlying meanings. No student may earn credit for both 4833 and 5833. (F) [IV-NW]

**4843 20th Century Hispanic and Latin American Art History (Slashlisted with 5843).** Prerequisite: junior standing. Visual arts of Mexico, Central and South America. Interdisciplinary methodology includes painting, sculpture, photography, video, installations, pottery, and weaving. No student may earn credit for both 4843 and 5843. (F) [IV-WC]

**4853 American Indian Women Artists (Slashlisted with 5853).**

Prerequisite: Junior standing or permission of the instructor. Investigates the arts of indigenous women throughout the Americas. Students will participate in research, discussion of selected readings, written assignments and individual presentations concerning the non-western aesthetics and ideals that are found in arts of Indian women from the 20th century forward. No student may earn credit for both 4853 and 5853. (Irreg.)

**4873 Japanese Art (Slashlisted with 5873).** Prerequisite: junior standing or permission of instructor. Examines and interprets selected works of Japanese art from prehistory to the present in reference to the possible influences from the social, political, economic, literary, and religious "climate" of the time. No student may earn credit for both 4873 and 5873. (Irreg.) [IV-NW]

**4883 Chinese Art (Slashlisted with 5883).** Prerequisite: 3853 or permission of instructor. A general survey of the art of China from the Neolithic period through the 20th century. No student may earn credit for both 4883 and 5883. (Irreg.)

**4913 Seminar (Slashlisted with 5913).** Prerequisite: permission of instructor. May be repeated with change of content; maximum credit 12 hours. Advanced topics in art history. No student may earn credit for both 4913 and 5913. (Irreg.)

**G4930 Special Topics.** 2 to 6 hours. Prerequisite: permission of instructor. May be repeated with change of topic; maximum credit 12 hours. Courses in special topics not included in the established curriculum. (Irreg.)

**4953 Museum Studies (Slashlisted with 5953).** Prerequisite: junior standing. Analysis of problems in collecting, authenticating, exhibiting and conserving works of art. Attention is also given to museum architecture and administration, as well as to the cultural and educational role of the museum in the community. Field trips, projects and papers are required. No student may earn credit for both 4953 and 5953. (Irreg.)

**4960 Directed Readings.** Prerequisite: six hours of upper-division art history and permission of instructor. May be repeated; maximum credit six hours. Research culminating in the preparation of papers using technical and critical literature in the history of art. (Irreg.)

**4993 Senior Capstone Experience.** Prerequisite: senior classification. May not be repeated for credit. Primary objective is to provide a culminating experience for the senior-year student. Satisfies the University-Wide General Education Requirement for a capstone course for art history majors. (F, Sp) [V]

**G5113 Cycladic Art (Slashlisted with 4113).** Prerequisite: graduate standing. The Bronze Age culture of the Aegean Islands with special emphasis on Cycladic idols and monumental paintings on the island of Thera (Santorini). No student may earn credit for both 4113 and 5113. (Sp-alternate)

**G5123 Minoan Art and Architecture (Slashlisted with 4123).** Prerequisite: graduate standing. Examination and interpretation of Minoan palatial architecture and related art production on the island of Crete. No student may earn credit for both 4123 and 5123. (Sp-alternate)

**G5143 Mycenaean Art and Architecture (Slashlisted with 4143).** Prerequisite: graduate standing. Art of mainland Greece with particular attention to Mycenaean settlements and funeral practices. No student may earn credit for both 4143 and 5143. (Sp-alternate)

**G5163 Etruscan Art (Slashlisted with 4163).** Prerequisite: junior standing or permission of instructor. Examine and interpret selected works of Etruscan art in reference to the possible influences from the social, political, economic, literary, and religious "climate" of the time. No student may earn credit for both 4163 and 5163. (F)

**G5203 Reflections on Western Art.** Prerequisite: 4743 or 5743 and graduate standing. Focus on topics in western American art, contrasting contemporary with traditional interpretations, as well as formal with social implications of the subject. Issues to be considered will include gender and ethnicity; historiography and the impact of changing perceptions; western art as historical analogue vs. art as creative expression; and art of frontier America as a form of national identity, as commercial and social exploitation and as aesthetic tradition. Content will concentrate on the 19th and early 20th century painters, sculptors, and print makers who derived artistic themes from the Trans-Mississippi West. (Sp)

**G5210 Graduate Readings.** 1 to 6 hours. Prerequisite: graduate standing. May be repeated with change of subject; maximum credit nine hours. Selected readings in art history. (F, Sp)

**G5213 Ancient Portraits.** Prerequisite: Graduate standing or senior with permission of instructor. This course examines works from different western and non-western ancient cultures to establish a working definition of the art of portraiture. (Irreg.)

**G5220 Graduate Projects.** 1 to 6 hours. Prerequisite: graduate standing. May be repeated with change of subject; maximum credit nine hours. Individual problems on selected topics. (F, Sp)

**G5233 Medieval Art I: Early Christian to c. 1100 (Slashlisted with 4233).** Prerequisite: graduate standing. A study of Western art and architecture from the early Christian period (fourth century) through the Early Romanesque period (about 1100). Studies of Byzantine, Migratory, Insular, Hispano-Islamic, Carolingian and Ottonian art included. No student may earn credit for both 4233 and 5233. (Alt. F)

**G5243 Medieval Art II: Romanesque (Slashlisted with 4243).** Prerequisite: 1113 or 2213 or 2223 or permission of instructor. European medieval art of 11th and 12th centuries. Romanesque, the first pan-European art style, is formulated during a period of urban growth and the beginning of the university system. One of the most significant achievements during the Romanesque is the iconographical portal. No student may earn credit for both 4243 and 5243. (Alt. Sp)

**G5253 Medieval Art III: Gothic (Slashlisted with 4253).** Prerequisite: 4243 or 5243 or permission of instructor. European late Medieval art from mid-12th century to mid-15th century. Beginning with Gothic and continuing into early Renaissance, when two distinct styles come about simultaneously: Flemish and early Renaissance. No student may earn credit for both 4253 and 5253. (Alt. F)

**G5273 Byzantine Icons (Slashlisted with 4273).** Prerequisite: graduate standing. Byzantine images occupy a principal position at the heart of the Eastern Church and they are an organic part of daily services. The icon represents a vision of the invisible, and therefore a vision founded on divine knowledge which transforms the created work into the miracle working image. This Class will examine the challenging process of producing holiness and divinity through painting panels. No student may earn credit for both 4273 and 5273. (Irreg.)

**G5303 Early Renaissance Art in Italy (Slashlisted with 4303).** Italian painting, sculpture, and architecture between 1250-1500, emphasizing the birth of the Renaissance from a social and cultural framework. No student may earn credit for both 4303 and 5303. (Sp-alternate)

**G5333 High Renaissance and Mannerist Art in Italy (Slashlisted with 4333).** Italian High Renaissance and Mannerist painting, sculpture, and architecture between 1500-1600. No student may earn credit for both 4333 and 5333. (F-alternate)

**G5353 Northern Renaissance Art (Slashlisted with 4353).** Painting, sculpture and architecture in Northern Europe from 1400-1600. The course will emphasize painting in Flanders, Germany and the Netherlands. No student may earn credit for both 4353 and 5353. (F-alternate)

**G5373 The Italian City: Renaissance and Baroque Architecture (Slashlisted with 4373).** Architecture and urban planning of Italy from about 1300-1700. Emphasis on the growth of the city and how new forms of social interaction affected the development of architecture and the urban setting. No student may earn credit for both 4373 and 5373. (F-alternate)

**G5403 Southern Baroque Art (Slashlisted with 4403).** Italian painting, sculpture, architecture from 1600-1700. This course will emphasize the effects of the Counter-Reformation on art and artists in Rome. No student may earn credit for both 4403 and 5403. (F-alternate)

**G5463 Issues in Northern Baroque Art.** Prerequisite: Graduate standing. This class will look at northern baroque art as a case study for the

examination of a variety of art historical problems such as attribution, function, interpretation, and symbolism. (Irreg.)

**G5503 Art of the 18th Century: The Age of Enlightenment (Slashlisted with 4503).** Emphasizes the interaction of art with scientific, literary, historic and philosophical innovations of the eighteenth century. Content includes painting, sculpture and architecture of Northern Europe. No student may earn credit for both 4503 and 5503. (Sp-every other year)

**G5553 Nineteenth-Century Art (Slashlisted with 4553).** European art from the French Revolution to 1900, with particular emphasis on developments in French painting. Brief consideration of parallel trends in American art. No student may earn credit for both 4553 and 5553. (Irreg.)

**G5603 American Art (Slashlisted with 4603).** American art from the colonial period to 1950. No student may earn credit for both 4603 and 5603. (Irreg.)

**G5613 Readings in Twentieth-Century Art (Slashlisted with 4613).**

Prerequisite: permission of instructor. Explores the cultural/intellectual context of the Fauves, German Expressionists, Cubists, Constructivists, Futurists, Dadas, Surrealists, Etc., through artists' and critics' writings and manifestoes as well as other arts such as poetry, drama and dance. Readings, presentations, and critical writings will be assigned. No student may earn credit for both 4613 and 5613. (Irreg.)

**G5633 Modern Art: Cezanne to 1950 (Slashlisted with 4633).** European art from Postimpressionism to 1950, including some American developments. Emphasis on painting and sculpture, with some consideration of architecture. No student may earn credit for both 4633 and 5633. (Irreg.)

**G5653 Art Since World War II (Slashlisted with 4653).** Prerequisite: graduate standing. Recent developments in art, both in the United States and abroad. No student may earn credit for both 4653 and 5653. (Irreg.)

**G5663 Women in Contemporary Art (Slashlisted with 4663).**

Prerequisite: permission of instructor. Discussions concerning women's issues in contemporary art, current women artists and their art works. The notion of a "female sensibility" will be examined. Students will engage in individual and group presentations, both of artists and critical issues. Essay writing and preparation of bibliographies. No student may earn credit for both 4663 and 5663. (Irreg.)

**G5673 Modern Sculpture (Slashlisted with 4673).** A study of changing concepts in sculpture from neo-classicism to the present day. No student may earn credit for both 4673 and 5673. (Irreg.)

**G5703 History of Photography 1839-1945 (Slashlisted with 4703).** A survey of the history of photography from 1839 to 1945. Topics include photography as art; social, technical, mechanical, scientific and aesthetic factors in the development of the medium. No student may earn credit for both 4703 and 5703. (Irreg.)

**G5713 History of Photography: 1945-Present (Slashlisted with 4713).**

Prerequisite: graduate standing or permission of instructor. A survey of the principal movements, ideas and motifs of photography from post-World War II until the 1990's. No student may earn credit for both 4713 and 5713. (Irreg.)

**G5743 The American West in Art, Photography, and Popular Culture (Slashlisted with 4743).** Prerequisite: graduate standing. Focuses on the

study of the Trans-Mississippi West, as seen through the eyes of artists and photographers from the early 19th century until today. A variety of media will be discussed, including paintings, prints, photography, and sculpture. The purpose of the course will be primarily to study Euro-American artistic conventions/tradition and how they have been employed in defining western history, culture, and native peoples as fact, fiction, and myth. No student may earn credit for both 4743 and 5743. (Irreg.)

**G5753 The American West in Photography (Slashlisted with 4753).**

Prerequisite: junior standing or permission of the instructor. This course focuses on the study of the trans-Mississippi west as seen through the eyes of photographers from the early 19th century up to the present. The purpose of this course will primarily be to study Euro-American photographic conventions, traditions, and styles and how they have been employed in defining American western history, culture and native peoples as fact, artistic motif and myth. No student may earn credit for both 4753 and 5753. (Irreg.)

**G5803 Survey I: North American Indian Prehistoric Art (Slashlisted with 4803).** Prerequisite: graduate standing. Ancient arts of the Arctic, Alaska, Canada, California, Great Basin and North American desert Southwest. Interdisciplinary methodology used to provide a broad view of cultures, artistic development and resultant art forms. Non-Western philosophical

basis of the arts discussed in relationship to varied belief systems and social customs. No student may earn credit for both 4803 and 5803. (Sp)

**G5813 Nineteenth Century North American Indian Art History (Slashlisted with 4813).** Prerequisite: graduate standing. Arts of North American Indians during the 19th century. Interdisciplinary methodology delineates major cultural areas and contexts within which arts were created. Issues of Euro-American influences and adaptation of new materials and styles. Maintenance of traditional conventions by native artists addressed. No student may earn credit for both 4813 and 5813. (Alt. Sp)

**G5823 20th-Century American Indian Art History (Slashlisted with 4823).** Examination and study of the arts of North American Indians. Included in the survey will be the examination of new materials, styles, and the shifts of gender roles in the creative arts. No student may earn credit for both 4823 and 5823. (F)

**G5833 Survey II: North American Indian Prehistoric Art (Slashlisted with 4833).** Prerequisite: graduate standing. Prehistory of North American Indian arts of northern and southeastern United States. Includes the Adena and Hopewell people, the early cultures of Florida, later Mississippian and Caddoan people. Includes fiber arts, pottery, painting, sculpture and architecture, as well as a non-Western philosophical view of iconography and underlying meanings. No student may earn credit for both 4833 and 5833. (F)

**G5843 20th Century Hispanic and Latin American Art History (Slashlisted with 4843).** Prerequisite: graduate standing. Visual arts of Mexico, Central and South America. Interdisciplinary methodology includes painting, sculpture, photography, video, installations, pottery, and weaving. No student may earn credit for both 4843 and 5843. (F)

**G5853 American Indian Women Artists (Slashlisted with 4853).** Prerequisite: Junior standing or permission of the instructor. Investigates the arts of indigenous women throughout the Americas. Students will participate in research, discussion of selected readings, written assignments and individual presentations concerning the non-western aesthetics and ideals that are found in arts of Indian women from the 20th century forward. No student may earn credit for both 4853 and 5853. (Irreg.)

**G5873 Japanese Art (Slashlisted with 4873).** Prerequisite: graduate standing. Art and architecture in Japan from prehistory to the present. No student may earn credit for both 4873 and 5873. (F)

**G5883 Chinese Art (Slashlisted with 4883).** Prerequisite: Graduate standing. A general survey of the art of China from the Neolithic period through the 20th century. No student may earn credit for both 4883 and 5883. (Irreg.)

**G5903 Methodologies and Theories in Art History.** Prerequisite: graduate standing in art history, or senior standing with permission of instructor. A study of various scholarly approaches to the history of art, as well as the theories which inform these approaches. Preparation of bibliographies; short presentations and papers. (Irreg.)

**G5913 Seminar (Slashlisted with 4913).** Prerequisite: permission of instructor. May be repeated with change of content; maximum credit twelve hours. Advanced topics in art history. No student may earn credit for both 4913 and 5913. (Irreg.)

**G5953 Museum Studies (Slashlisted with 4953).** Analysis of problems in collecting, authenticating, exhibiting and conserving works of art. Attention is also given to museum architecture and administration, as well as to the cultural and educational role of the museum in the community. Field trips, projects and papers are required. No student may earn credit for both 4953 and 5953. (Irreg.)

**G5960 Directed Readings.** Prerequisite: permission of instructor. May be repeated; maximum credit six hours. Research culminating in the preparation of papers using technical and critical literature in the history of art. (Irreg.)

**G5972 Thesis Proposal.** Prerequisite: graduate standing. Students will create a research topic, select a thesis committee and formulate a proposal and bibliography approved by their committee. (Irreg.)

**G5980 Research for Master's Thesis.** 2 to 9 hours. May be repeated for credit; maximum credit applicable toward degree, four hours. Directed research culminating in the completion of the master's thesis. (F, Sp, Su)

**G5990 Special Studies.** 1 to 6 hours. Prerequisite: graduate standing. May be repeated; maximum credit 12 hours. Advanced studies in various periods of art history, given under stated titles determined each semester by the instructor involved. (F, Sp)

**G5993 Special Studies.** Prerequisite: graduate standing. May be repeated; maximum credit twelve hours. Advanced studies in various periods of art history, given under stated titles determined semester by the instructor involved. (Irreg.)

**G6103 Regional Art and Artists.** Prerequisite: graduate standing. May be repeated with change in topic; maximum credit 12 hours. Advanced seminar that will examine in depth various concepts, individuals, schools, movements or themes. Topics may include: contemporary Oklahoma artists; Grant Wood, Thomas Hart Benton, 16 Taos and Santa Fe painters; contemporary Santa Fe artists; and Oklahoma artists, 1880–1950. (Irreg.)

**G6203 Native American Art.** Prerequisite: graduate standing. May be repeated with change in topic; maximum credit 12 hours. Advanced seminar that will examine in depth various concepts, individuals, schools, movements, or themes. Topics may include: Oklahoma Native American artist; Ledger art; art of Native American people; contemporary Native American painters; Native American sculptors; southwestern Native American weaving; jewelry; beadwork; potteries; coastal American art of the northwest; and native arts of Hawaii. (Irreg.)

**G6303 Western American Art.** Prerequisite: graduate standing. May be repeated with change in topic; maximum credit 12 hours. Advanced seminar that will examine in depth various concepts, individuals, schools, movements, or themes. Topics may include: contemporary western American artists; the impact of the west in New York artist – 1880-1920; Remington and Russell; Eastern artists and their western sojourns; monumental western American sculptors of the 19th or 20th century; utilitarian art of the west – saddles and tack, spurs, leather and ironwork; and American illustrators to artists. (Irreg.)

**G6403 19th Century American Art.** Prerequisite: graduate standing. May be repeated with change in topic; maximum credit 12 hours. Advanced seminar that will examine in depth various concepts, individuals, schools, movements, or themes. Topics may include: the western landscape in 19th century American art; 19th century American folk art; 19th and 20th century American landscape photographers; natural America as seen by native Americans and Europeans – a comparison; John James Audubon and the naturalists; the commemorative sculpture legacy of the Civil War; American mythology in 19th and 20th century art; American masters of the 19th century. (Irreg.)

**G6503 Contemporary American Art.** Prerequisite: graduate standing. May be repeated with change in topic; maximum credit 12 hours. Advanced seminar that will examine in depth various concepts, individuals, schools, movements or themes. Topics may include: Post-modernism and its view of western American icons; contemporary native American southwestern artists; the west coast artists; California impressionism; Peter Hurd and his contemporaries; black American artists; Georgia O'Keeffe and the ghost ranch years; 20th century American immigrants and their art; American innocents; outsiders art and folk artists; contemporary American crafts; contemporary American illustration and graphic design; and contemporary American architecture (Irreg.)

**G6603 Cross Cultural Art of the Americas.** Prerequisite: graduate standing. May be repeated with change in topic; maximum credit 12 hours. Advanced seminar that will examine in depth various concepts, individuals, schools, movements or themes. May be repeated with a change in topic. Topics may include: the Canadian seven; Mexican art in the 19th century; pottery of San Ildefonso pueblo; pottery of Santa Clara pueblo; New York's influence on Emilio Amero and his Mexican contemporaries; Diego Rivera in American; Jean Charlot and his American murals; and Inuit art of the arctic. (Irreg.)

**G6973 Dissertation Proposal.** Prerequisite: completion of core coursework for the PhD in Art History. Students will create a research topic and formulate a proposal and bibliography approved by their Doctoral committee. (F, Sp)

**G6980 Research for Doctoral Dissertation.** Prerequisite: Successful completion of the general examination. Directed research culminating in the completion of the Doctoral dissertation. May be repeated for credit; Maximum credit applicable toward the degree is nine hours. (F, Sp)

## Art Theory and Criticism (ARTC)

**1003 Introduction to Art Theory I.** Corequisite: ART 1013 and 1023.

Emphasis on critical thinking and a broad introduction to the aesthetic vocabulary of form, concept, criticism, and historical theories in the visual arts. Students will develop skills to articulate and defend a critical position about an artist, piece of work, or an exhibition through written and oral presentation. (F, Sp)

**1103 Introduction to Art Theory II.** Prerequisite: 1003; corequisite: ART 1113. Continuation of 1003. Emphasis on development of higher-level critical thinking skills learned from Introduction to Art Theory I. Further discourse of art theories, content, and meaning with emphasis on interpretation and judgment. (F, Sp)

**2010 Analysis of the Visual Arts.** 1 to 6 hours. For majors only. May be repeated; maximum credit 12 hours. Selected problems in the perception of art. Format and content changes with current needs. (F, Sp)

**2803 Media Arts Fundamentals.** Prerequisite: permission of department. Art majors only. Introduction to concepts and practices in media arts with exposure to a variety of media including film, video, photography, and new media. (F)

**2913 Media Arts: Critical History and Analysis.** Prerequisite: 2010 or 2803 or permission of instructor. May be repeated once with change of topic. Critical review of the media arts. Rotating topics may view media arts in the context of history, genre, medium cultural reference, or other related areas. (Irreg.)

**3930 Special Topics in Theory and Criticism.** Prerequisite: junior standing. May be repeated with change of content; maximum credit six hours. Covers various topics dealing with diverse issues relating to the visual arts. (Irreg.)

**3943 Media Arts Seminar.** Prerequisite: 2010 or 2803 or permission of instructor. May be repeated with change of topic; maximum credit nine hours. Seminar presents topics that are related to the media arts which may not utilize production as an element of the course. Topics may include but are not limited to critical viewing of specific genres of work, producing methods, and current issues within media arts culture. (Irreg.)

**4433 Seminar—Contemporary Artist I (Slashlisted with 5433).** Prerequisite: junior standing. May be repeated once with change of content; maximum credit six hours. Specific artists change each semester. The seminar presents the work of artists that deals with issues of race, class and gender as well as formalist modes. The aim is to facilitate the student/artist to perceive of his or her own works of art in a thoughtful manner. No student may earn credit for both 4433 and 5433. (F, Sp)

**4443 Seminar—Contemporary Artist II (Slashlisted with 5443).** Prerequisite: junior standing. May be repeated once with change of content; maximum credit six hours. Specific artists change each semester. The seminar presents the work of artists that deals with issues of race, class and gender as well as formalist modes. The aim is to facilitate the student/artist to perceive of his or her own works of art in a thoughtful manner. No student may earn credit for both 4443 and 5443. (F, Sp)

**4693 Contemporary Native American Artist (Crosslisted with NAS 4693).** Prerequisite: junior standing. Discussion of the broad and modern sensibilities that exist and make up the contemporary diversity of the indigenous arts and people of the North American hemisphere. May include but not limited to artwork dealing with race, class, tribal sovereignty as well as formalist modes. Introduction to a survey of common methods of contemporary artistic practice. (Irreg.) [IV-NW]

**4893 Contemporary Native American Artist II (Slashlisted with 5893).** Prerequisite: junior standing. A continuation of 4693. Student will learn the modern sensibilities that make up the contemporary diversity of indigenous arts and people of this hemisphere. No student may earn credit for both 4893 and 5893. (Sp)

**4923 Special Topics in Art Theory and Criticism.** Prerequisite: junior standing. May be repeated with change of content; maximum credit six hours. Covers various topics dealing with diverse issues relating to the visual arts. (Irreg.)

**4930 Special Topics in Theory and Criticism (Slashlisted with 5930).** Prerequisite: junior standing. May be repeated with change of content; maximum credit six hours. Covers various topics dealing with diverse issues relating to the visual arts. No student may earn credit for the same topic for both 4930 and 5930. (Irreg.)

**G5013 Graduate Seminar.** Prerequisite: graduate standing. A required course during the first semester that focuses upon developing an informed approach to the art making process. It will utilize readings, writings, and visual references to form a basis for discussions. Each student will conduct a presentation on the aesthetic basis of their own work to the class. (F, Sp)

**G5433 Seminar—Contemporary Artist I (Slashlisted with 4433).** Prerequisite: junior standing. May be repeated once with change of content; maximum credit six hours. Specific artists change each semester. The seminar presents the work of artists that deals with issues of race, class and gender as well as formalist modes. The aim is to facilitate the student/artist to perceive of his or her own works of art in a thoughtful manner. No student may earn credit for both 4433 and 5433. (F, Sp)

**G5443 Seminar—Contemporary Artist II (Slashlisted with 4443).** Prerequisite: junior standing. May be repeated once with change of content; maximum credit six hours. Specific artists change each semester. The seminar presents the work of artists that deals with issues of race, class and gender as well as formalist modes. The aim is to facilitate the student/artist to perceive of his or her own works of art in a thoughtful manner. No student may earn credit for both 4443 and 5443. (F, Sp)

**G5893 Contemporary Native American Artist II (Slashlisted with 4893).** Prerequisite: graduate standing. A continuation of 5693. Student will learn the modern sensibilities that make up the contemporary diversity of indigenous arts and people of this hemisphere. No student may earn credit for both 4893 and 5893. (Sp)

**G5930 Special Topics in Theory and Criticism (Slashlisted with 4930).** Prerequisite: graduate standing. May be repeated with change of content; maximum credit six hours. Covers various topics dealing with diverse issues relating to the visual arts. No student may earn credit for the same topic for both 4913 and 5913. (Irreg.)

**G6881 Thesis Proposal/Statement.** Prerequisite: 5013. Provides guidance for the development of the thesis exhibition proposal and the written statement required to accompany the exhibition of visual work. The student enrolls in this course the semester prior to the thesis exhibition and may enroll again for completion of the written component. (F, Sp)

## Astronomy (ASTR)

**1504 General Astronomy.** An introduction to the concepts of modern astronomy. The solar system, the sun and stars, the Milky Way and other galaxies, current theories of the origin, evolution and fate of the universe. Not for major credit. Students cannot receive credit in both 1504 and 1514. (F, Sp, Su) [II-NL]

**1514 General Astronomy with Laboratory.** An introduction to the concepts of modern astronomy. The solar system, the sun and stars, the Milky Way and other galaxies, current theories of the origin, evolution, and fate of the universe. Not for major credit. Students cannot receive credit in both 1504 and 1514. **Laboratory** (F, Sp, Su) [II-LAB]

**2512 Elements of Astronomy.** Prerequisite: algebra, plane geometry. Ancient and modern world systems, the law of gravitation with elementary applications, time, calendar; telescopes and accessories; the sun, the solar system and its origin; stellar motions and galactic structure, astronomical distance scales. (F)

**2513 Observatory Methods.** Corequisite: Physics 1215 or 2524, or permission of instructor. Elements of astronomy. Includes celestial coordinates, time, catalogs, star charts, magnitudes and color indices, an introduction to telescopes and detectors, electromagnetic radiation and basic atomic physics, error analysis, elements of astronomical optics. (F)

**2522 Elements of Mathematical Astronomy.** Prerequisite: algebra, plane geometry, elementary calculus. Spherical trigonometry and its applications to navigation and surveying. Planetary motions, principles of space travel. Stellar motions; a nonmathematical introduction to cosmology. Some laboratory and telescopic work. (Sp)

**3103 Stars.** Prerequisite: 2513 or permission of instructor. Stellar properties and stellar evolution. Includes fundamental properties of stars (temperature, luminosity, mass) and how to determine them, star formation, main sequence, post main sequence, supernovae, black holes, neutron stars, white dwarfs, binary stars. (F)

**3113 Galaxies and Cosmology.** Prerequisite: 2513 or permission of instructor; 3103 strongly recommended. Galactic and extragalactic astronomy. Includes the Milky Way galaxy, the interstellar medium, normal and active galaxies, clusters of galaxies, cosmology. (Sp)

**3190 Topics in Astronomy.** 1 to 3 hours. Prerequisite: permission of instructor. May be repeated with change of subject matter; maximum credit nine hours. (F, Su)

**3990 Independent Study.** 1 to 3 hours. Prerequisite: one course in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (Sp, Su)

**G4303 Stellar Astrophysics.** Prerequisite: 3113 or permission of instructor. Physics of stars: gas and radiation laws, stellar atmospheres and spectra, stellar interiors and evolution. (F)

**4990 Independent Study.** 1 to 3 hours. Prerequisite: three courses in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**G5403 High-Energy Astrophysics.** Prerequisite: 4303 or permission of instructor. High-energy radiation processes in astronomy: synchrotron radiation, bremsstrahlung, inverse Compton-effect. New wavebands of observation, UV, X-ray and gamma-ray astronomy. Radioastronomy: supernova remnants, pulsars, neutron stars. Radiogalaxies, active galactic nuclei, quasars. Theories of the origin of cosmic rays. (Irreg.)

**G5443 Galactic Astronomy.** Prerequisite: 4303 or permission of instructor. Basic properties of galaxies are explored with special focus on the Milky Way. Topics include galaxy classification and morphology, stellar populations, clusters and kinematics, interstellar medium, distributions of mass and light, spiral structure, chemical evolution, systemic rotation and galaxy mass, and distance-determining methods. (Irreg.)

**G5453 Extragalactic Astronomy and Cosmology.** Prerequisite: 3113 or 4303 or permission of instructor. Basic properties of stars. Review of observational tools for extragalactic work. Stellar content and interstellar medium in normal galaxies. Introduction to the theory of Big Bang cosmology. Comparison of observational data to cosmological predictions. The extragalactic distance scale and the age of the universe. Large scale structure: galaxy clusters and superclusters. Active galaxies—radio galaxies and quasars. (Irreg.)

**G5463 Stellar Atmospheres.** Prerequisite: 4303 or permission of instructor. Local thermodynamic equilibrium. Radiative transfer, continuous absorption coefficient and model stellar atmospheres. Atomic and molecular spectroscopy and the quantitative analysis of stellar spectra. Atomic processes and departures from local thermodynamic equilibrium. Extended and expanding atmospheres, novae, supernovae. (Irreg.)

**G5473 Stellar Interiors.** Prerequisite: 4303 or permission of instructor. Evolution and energy balance of stars including gravitational attraction, nucleosynthesis, radiative and convective energy, transport and equilibrium, construction of stellar models for pre-main sequence and main sequence stars, and the theory of giants and white dwarfs. (Irreg.)

**G5513 Interstellar Medium.** Prerequisite: 4303 or permission. Processes in low-density media are explored, including the physics relevant to emission line objects such as HII and HI regions, molecular clouds, and active galaxies. Techniques for deriving chemical abundances are explored, as are interstellar absorption by gas and dust and radiation transfer. (Irreg.)

**G5900 Seminar in Astrophysics.** Prerequisite: permission of instructor. May be repeated with change of subject matter; maximum credit nine hours. A research seminar devoted to the study of specialized topics in astronomy and astrophysics. Topics selected will reflect the interest of the instructor and students. (Irreg.)

may find it helpful to have taken either Geography 1114, or Geology 1104, or Meteorology 1014. **Laboratory** (F) [II-LAB]

**2014 The Earth System.** An integrated overview of earth sciences emphasizing earth materials, the oceans and atmosphere, the solar system, and earth's evolution. The interrelationship among the different earth systems will be emphasized. Topics will be explored through a learning-cycle approach. The lab component includes both in-class experiments and one field-based research project. **Laboratory** (Sp) [II-LAB]

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. Covers topics not usually presented in the regular courses.

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Subjects covered vary. Deals with concepts not usually treated in regular courses.

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work at a special project in the student's field.

**G4970 Seminar.** 1 to 9 hours. Prerequisite: permission of instructor. May be repeated with change of subject matter; maximum credit nine hours. Subjects covered vary. Deals with interdisciplinary concepts in geosciences not usually treated in regular courses. (Irreg.)

**4990 Special Studies.** 1 to 4 hours. Prerequisite: Permission of instructor, upper-division standing. Contracted special problems study for topics not currently offered in regularly scheduled courses; may include library and/or laboratory research and field projects.

**G5510 Selected Topics.** 1 to 9 hours. Prerequisite: permission of instructor. May be repeated; maximum credit nine hours. Current or special topics relating to the geosciences; may be structured for students in other areas. (Irreg.)

**G5823 Heat Flow.** Prerequisite: Geology 3114, Mathematics 2423, and Physics 2524. Terrestrial heat flow and thermal aspects of geologic processes. Fourier's law of heat conduction, diffusion equation, thermal properties of earth materials, laboratory and field methods, terrain corrections. Fluid flow and heat transport in the continental crust. Thermal evolution of sedimentary basins, hydrocarbon maturation, climate change from borehole temperature profiles. (F)

## Aviation (AVIA)

### 1003 Introduction to Computer Concepts and Applications.

Prerequisite: permission of instructor. Students learn to navigate in Windows, Microsoft Office: Word, Excel, PowerPoint, Access and Outlook. (F, Sp, Su)

**1013 Introduction to Air Traffic Control.** The purpose of this course is to learn about the air traffic control system from both the pilot and controller's perspectives. This course is the first of six courses for the ATC minor and a prerequisite for basic air traffic control regulations. (F, Sp)

**1113 Introduction to Aviation.** Prepares student to take the FAA private pilot written examination. Covers FAR's, meteorology, aerodynamics, flight physiology, performance charts, radio navigation techniques. (F, Sp, Su)

**1213 Basic Air Traffic Control Regulations.** Prerequisite: 1013. This course is a progressive continuation of introduction to air traffic control and a prerequisite for general air traffic control procedures. This course is more narrowly focused on study and interpretation of the FAA orders and regulations that govern the air traffic control system and the national airspace system. (F, Sp)

**1222 Primary Flying.** Prerequisite: 1113. Includes in-flight instruction with effort directed toward obtaining FAA certification as a private pilot. Third class medical must be obtained prior to solo. (F, Sp, Su)

**2013 General Air Traffic Control Procedures.** Prerequisite: 1213. This course will present the study of "general control" procedures used in the terminal and en route control options as well as FAA flight service processes and procedures. This course will serve as a prerequisite for airport traffic control procedures. (F, Sp)

**2231 Advanced Flying.** Prerequisite: 1222 or private pilot certificate. (F, Sp, Su)

## Atmospheric and Geographic Sciences (AGSC)

**2004 Evolution of the Earth System.** Overview of the earth from a systems perspective. Draws on knowledge from all geosciences to explore interconnections and co-evolution of the solid earth, atmosphere, oceans, and living things. Evolution of the Earth's climate over geologic time including the hydrologic cycle, carbon, cycle and "greenhouse effect". Role living things play in the global environment. Extensive use of numerical models to explore structure and response of the Earth system. Students

**2341 Secondary Flying.** Prerequisite: 2231. Consists of cross-country experience under the direct supervision of an instructor pilot. Part of the FAA Part 141 commercial certification course. (F, Sp, Su)

**2513 The History of Aviation.** Chronicles the history of aviation through an in-depth study of powered flight and focus on the development of civil, commercial, and military aviation. The course will cover significant events and people throughout aviation history from the first powered flight through present day developments and a brief look into the future. Also examines the impact of aviation on recreation, transportation, warfare, and exploration. (F, Sp)

**2613 Aviation Safety.** Prerequisite: 1113 and 1222. This course will examine all aspects of accidents/incidents involving airline and general aviation flights. It examines those areas from the perspective of pilots, crew members, air traffic controllers and National Transportation Safety Board (NTSB) findings. Each accident/incident is dissected with the goal of determining what went wrong and lessons that can be learned. (F, Sp)

**3013 Career Development for Aviation Professionals.** Prerequisite: completed 36 or more college credit hours. This course will provide an overview of the career planning process for aviation students. Students will master the techniques of self-assessment, resume and letter writing, interviewing, researching companies, proper writing techniques, ethics and etiquette, and networking. This course is intended to help students prepare for internship interviews or entering the aviation industry as a professional. (F, Sp)

**3103 Flight Deck Environmental Issues.** Prerequisite: departmental permission. Human-machine interface issues in today's modern flight deck are the focus of the course. Leading to that end, the student will explore the cognitive and psychomotor domains of learning, review studies of aircrew interface problems, learn coping mechanisms used by today's best aviation trainers to overcome design-induced problems in cockpit advanced technology. (F, Sp, Su)

**3111 Advanced Flight Maneuvers.** Prerequisite: 1222 or FAA private pilot certificate. Increase the student's knowledge and understanding of advanced flight maneuvers. Accelerated stalls, spins, inverted flight, and recovery from unusual altitudes. Advanced aerodynamics will be discussed and demonstrated. (F, Sp, Su)

**3113 Commercial Aviation.** Prerequisite: 1113 or private pilot certificate. To define the scope and narrow the field of study, insofar as possible, to the knowledge requisite to the commercial pilot certificate. (F, Sp, Su)

**3133 Fundamentals of Instrument Flight.** Federal aviation regulations as pertain to instrument flight rules, (IFR) weather and forecast products, interpretation of en route low altitude charts and terminal instrument approach procedure depictions, instrument flight procedures and techniques. (F, Sp, Su)

**3213 Airport Traffic Procedures.** Prerequisite: 2013. The primary focus of this course is to study visual air traffic control procedures, specifically, to learn the principles of operation and the separation methods required in the air traffic control tower environment. This course will serve as a prerequisite for IFR Air Traffic Control Procedures. (F, Sp)

**3313 IFR Air Traffic Procedures.** Prerequisite: 3213. Course focuses on the requirements and procedures used in the IFR air traffic control environment. The students will study all of the separation standards and rules used in radar and non-radar environments in the approach control and air route traffic control facilities. This course will serve as a prerequisite for Air Traffic Simulation. (F, Sp)

**3333 Survey of Aviation Law.** Prerequisite: 1113 or junior standing. Survey of legal issues in aviation. The student will review legislation, regulatory agencies, and case studies dealing with legal issues in the medium of airspace above the ground-predominantly over the United States. The student will be able to identify and comprehend the historical events and technical terms that describe national and international legal precedents that have shaped aviation law. (F, Sp)

**3513 Airport Operations Management.** Prerequisite: 1222. Provides the student with an in-depth analysis of airport management, operations and planning functions necessary to operate, develop, and maintain safe and efficient airport facilities as is the practice in the United States. Also introduces air traffic control (ATC) concepts. (F)

**3572 Instrument Flying.** Prerequisite: 3133 and private pilot certificate. Individual flight simulator instruction in the technique of flying solely by reference to instruments. Ground instruction in radio navigation, meteorology, instrument approach procedures, air traffic control procedures and federal aviation regulations. (F, Sp, Su)

**3581 Multi-engine Flying.** Prerequisite: 4552 or commercial pilot certificate. A study of the design, construction and flight characteristics of multiengine aircraft. Inflight instruction in pilotage and operation of multiengine airplanes. Designed to qualify the student for certification as a multiengine pilot. (F, Sp, Su)

**3591 Flight Management Systems.** Prerequisite: 4552 and permission of department. The programming and operation of a typical turbine aircraft system. Instructor uses PC-based program to demonstrate programming and operation of the flight management systems used in modern corporate, regional, and major airline aircraft. Students are expected to master the program using the system. (F, Sp, Su)

**4015 Air Traffic Simulation.** Prerequisite: 3313. Lab to prepare student for on-the-job training in an FAA air traffic control facility. Course will consist of dynamic simulation exercises in an ATC computer lab as well as classroom briefings. Students will run scenarios as the controller and as a pseudo pilot. (F, Sp)

**4113 CFI Seminar.** Prerequisite: 3133, 3113. Increase student knowledge of theories of learning, flight instructor authority, and responsibility and classroom and flight techniques. Emphasis on principles of instruction, student motivation and maneuver error analysis. (F, Sp, Su)

**4313 Turbine Transition.** Prerequisite: 3581 and 4552. Introduce the student to the procedures of flying a turbine aircraft and the concepts of crew resource management. Emphasis is placed on the basic terminology and procedures and emergency operations. (F, Sp, Su)

**4423 Crew Resource Management.** Prerequisite: 3581 and 4552. To teach the student the principles and procedures of a two or more person cockpit. Includes: briefings, call-outs, and emergency procedures. (F, Sp, Su)

**4552 Commercial Flying.** Prerequisite: 3113. The final stage of the FAA Part 141 commercial pilot certification course. Designed to polish pilot skills in commercial aircraft maneuvers. (F, Sp, Su)

**4602 Flight Instructor—Airplane.** Prerequisite: commercial pilot certificate and instrument rating. Flight instruction in preparation for FAA flight instructor certificate. (F, Sp, Su)

**4613 Instrument Flight Instructor.** Prerequisite: commercial pilot certificate and flight instructor-airplane certificate. Consists of lecture and flight instruction in the specialized teaching techniques and procedures required of an instrument flight instructor. At the end of the course, the student will meet the requirements for certification by the FAA as an instrument flight instructor. (F, Sp, Su)

**4622 Multiengine Flight Instructor.** Prerequisite: commercial multiengine pilot certificate and flight instructor—airplane certificate. Instruction in the specialized teaching techniques and procedures required of a multiengine flight instructor. At the end of the course, the student will meet the requirements to take the flight test for certification by the FAA as a multiengine flight instructor. (F, Sp, Su)

**4713 Senior Capstone.** Prerequisite: senior standing and permission of instructor; completion of all other major upper-division courses or concurrent enrollment. This project course builds on the accumulated knowledge from all courses to date. Lectures will cover problem identification, analysis, generation of alternatives, cost/benefit studies, interviews and presentations. Student teams will analyze and make recommendations on an actual problem for an aviation related organization, such as the FAA. (F, Sp, Su) [V]

**G4983 Airline Management.** Prerequisite: junior or graduate standing. Study of the managerial aspects of the airline industry to include economic and organizational characteristics, marketing, operational scheduling, fleet planning, and labor relations. Students participate in management simulation as senior executives of a regional domestic carrier. (F, Sp)

**4990 Special Studies in Aviation.** 1 to 4 hours. Prerequisite: departmental permission. Will encompass various aviation-related topics including many specialty flight programs; such as, aerobatic instruction, multiengine training, pilot refresher training, etc. (F, Sp, Su)

**G5113 Airport Operations and Management.** Prerequisite: admission to graduate program in Aviation Management. Provides individuals with a comprehensive knowledge of the major facets in the process of planning and managing airports in the dynamic post-deregulation era. Students will focus on operations, safety, security, community relations and development of the airport as a sound enterprise function of the United States government. Discussions will focus on the history of the airport-airway system, planning and funding in the airport, managing growth, and fiscal and administrative management processes. (Irreg.)

**G5213 Air Transportation Systems.** Prerequisite: admission to graduate program in Aviation Management. Provide students with a broad view of the air transportation industry, how it evolved, and where current trends indicate the industry is headed. The course traces the history of aircraft development and the rise of air carriers, with particular attention to the legislative impact. Emphasis will be placed on the economic characteristics, financing and marketing of both cargo and passenger air carriers, the structure and managerial functions of the airlines, labor relations, and the international dimension of the industry. (Irreg.)

**G5313 Aviation History.** Prerequisite: admission to graduate program in Aviation Management. In-depth study of five specific topics in aviation history. Included will be significant civilian, commercial, and military events as well as important people, places, and technological development. (Irreg.)

**G5940 Graduate Research or Applied Project in Aviation.** Prerequisite: graduate course in electronic access to research resources and theory or equivalent. May be repeated; maximum credit four hours. Designed to provide the application of theory to practice in the field of aviation management. Students are encouraged to begin developing a research interest or service project idea early in their course of study. The project is approved and supervised by a faculty adviser. Working from the perspective of consultant, the student thoroughly investigates the issues and proposes specific actions, using analysis, planning and management tools developed during their course of study. Continuous guidance and feedback are provided by the faculty adviser and sponsor during the project. The completed project will require a comprehensive written report. (F, Sp, Su)

## Botany (BOT)

The department offers courses which are slashlisted so undergraduate students may take an undergraduate 4000-level course while graduate students may take a graduate 5000-level course. The lectures in a slashlisted course are the same. However, students in the 5000-level course have substantial additional requirements beyond those for students in the 4000-level course. These additional requirements are listed in the slashlisted course syllabus.

**1003 Contemporary Issues in Biology (Crosslisted with Microbiology, Zoology 1003).** An introduction to biology, focusing on the scientific background needed to understand selected issues related to cells, genetics and inheritance, evolution and ecology. Not open to students with credit for BOT/MBIO/ZOO 1005, BOT 1114 or ZOO 1114. Cannot be used for major credit in Botany. (F, Sp) [II-NL]

**1005 Concepts in Biology (Crosslisted with Microbiology, Zoology 1005).** Prerequisite: none, but high school or college chemistry is recommended. An introduction to the life sciences, focusing on the structure and function of organisms and their relationship to the environment. Fulfills General Education laboratory science requirement. Not open to students with credit for Botany 1114 or Zoology 1114. **Laboratory** (F, Sp) [II-LAB]

**1114 General Botany.** Previous course in chemistry (high school or college) recommended. Fulfills Arts and Sciences' biological science requirement. Basic processes and structures in plants; their relation to factors in the environment; reproduction; heredity, heritable and nonheritable variations in plants and their causes and consequences are studied. Scientific procedures are acquired through application and discussion. **Laboratory** (F, Sp, Su) [II-LAB]

**2404 Ecology and Environmental Quality (Crosslisted with Zoology 2404).** Prerequisite: sophomore standing. Study of ecological principles and their applications to human systems, study of population, air pollution, water pollution, energy issues, etc. Laboratory exercises focus on learning scientific methods of measurement of environmental quality factors. **Laboratory** (Sp) [II-LAB]

**2503 Plant Care and Cultivation.** Prerequisite: 1005 or 1114. Application of the principles of botany to the cultivation, propagation, and maintenance of plants grown in home environments. Particular attention is given to the effects of light, water, minerals, and soil factors on plant growth; seed and vegetative propagation; pest control; and proper conditions for cultivated plants. (F)

**3113 Cell Biology (Crosslisted with Microbiology, Zoology 3113).**

Prerequisite: 1114 or Zoology 1114 and Chemistry 3013 or 3053. Introduction to the cell as a unit of life. A chemical and physical comparison of prokaryotic and eukaryotic cells to include a discussion of cell metabolism, types of metabolic regulation and an analysis of

ultrastructure. Emphasis will be placed on the dynamic changes in metabolism and ultrastructure which occur during the life of a cell. (F, Sp)

**3163 Economic Botany.** Prerequisite: introductory biology, 1005, Zoology 1005, 1114, or Zoology 1114. A survey of plants and plant products used in industry, drug plants and drugs, and especially food plants and food adjuncts. Origin of agriculture, domestication and evolution of crop plants, and uses of plants in different cultures are emphasized. (F) [IV-WC]

**+G3333 Genetics (Crosslisted with Zoology 3333).** Prerequisite: eight hours of zoology or eight hours of botany, or five hours of zoology or botany and permission. Principles of inheritance at gene, chromosome and population levels; nature of the genetic material and its involvement in the determination of structure and function. No laboratory. (F, Sp)

**+G3342 Genetics Laboratory (Crosslisted with Zoology 3342).** Prerequisite: 3333 or concurrent enrollment or equivalent. The demonstrations, crosses and experiments are designed to illustrate various genetic phenomena, including Mendelian laws, recombination, mutation, natural and artificial selection and interaction of genotype with environment. The primary organism studied is Drosophila, with some use of corn, Neurospora and others. **Laboratory** (F)

**+G3452 Methods in Plant Ecology.** Prerequisite: 3534, corequisite: 3453. Methodology in plant physiological, population, community and ecosystem ecology will be covered. Emphasis will be on actual field or laboratory experience and the applicability of these methods to other areas of ecology. **Laboratory** (F)

**+G3453 Principles of Plant Ecology.** Prerequisite: 3534 or equivalent. Introduction to physiological, population and community ecology. Emphasis is placed on environmental factors, disturbance and succession and how these factors affect species diversity and landscape patterns. One optional field trip. (F)

**3534 Flowering Plants.** Prerequisite: 1114 or six hours of biology or permission of instructor. Introduction to the classification of vascular plants with emphasis on the origin, evolutionary relationships and reproductive biology of the flowering plants. Laboratory activities stress identification skills, terminology, field techniques and family recognition for the flora of Oklahoma. Field trips. **Laboratory** (Sp)

**+G3932 Instrumental Methods in Biology (Crosslisted with Microbiology 3932).** Prerequisite: one of the following: 4115; Microbiology 2815; Zoology 2124 or one course in biochemistry; Physics 2414 and 2424. Principles of analytical measurements; common categories of instruments; advantages and disadvantages of each method; examples are chosen from medical technology, environmental technology, biochemistry, physiology, etc. (F)

**+G3942 Instrumental Methods Laboratory (Crosslisted with Microbiology 3942).** Prerequisite: credit or concurrent enrollment in 3932. Hands-on experience with analytical instruments used in research and clinical labs; identification of components and simple repairs; understanding measurement principles; assay design and analysis of unknowns; treatment and comparison of data. **Laboratory** (F)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. (F, Sp, Su)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. (By request)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. (F, Sp, Su)

**3990 Independent Study.** 1 to 3 hours. Prerequisite: one course in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**G4115 Principles of Plant Physiology.** Prerequisite: 1114 and organic chemistry. The physiology of green plants, including respiration, photosynthesis, metabolism of carbohydrates, fats and proteins, mineral nutrition, translocation, water relations, growth and development. **Laboratory** (F)

**G4283 Plant Anatomy.** Prerequisite: seven hours in biology or permission of instructor. The structure and development of the organs of vascular plants as revealed by observations of representative living and prepared specimens. Theories concerning the evolution of organs and internal structure. (Sp odd-numbered years)

**4413 Paleobotany (Crosslisted with Geology 4413; Slashlisted with 5413).** Prerequisite: permission of instructor. Introduction to the fossil record of terrestrial plants from algae to flowering plants. Lectures will address anatomy, morphology, taphonomy and paleoecology, including

climate and plant-animal interactions. Laboratories will put lecture topics into practice using fossil plants from the Oklahoma Museum of Natural History collection and from fieldwork. Field trips. No student may earn credit for both 4413 and 5413. **Laboratory** (Sp, even-numbered years)

**4553 Plant Geography (Slashlisted with 5553).** Prerequisite: 3453, 3534, or permission of instructor. Analysis of the evolutionary, ecological, genetic and historical factors that affect present-day distributional patterns of plants on continents and islands. Particular emphasis is directed to range disjunctions and endemism as well as the effects of continental drift, geoclimatic changes, dispersal, polyploidy and phylogeny on the flora of North America. No student may earn credit for both 4553 and 5553. (F odd-numbered years)

**4561 Field Studies (Slashlisted with 5561).** Prerequisite: 3453, 3534, or permission of instructor. May be repeated. Field-based studies of the flora and vegetation of a particular area. Readings and lectures focus on a regional flora, and the geohistorical, biogeographic, and ecological factors affecting vegetational patterns and dynamics. Observations of characteristic habitats and plant communities, and identification and recognition of important plants are stressed during field trips. No student may earn credit for both 4561 and 5561. (Irreg.)

**4623 Ecosystem Ecology (Slashlisted with 5623).** Prerequisite: 3453 or equivalent. Studies interactions between organisms and their environment with an earth-system context. Students will learn general concepts of ecosystems; examine major factors that control ecosystems properties; explore ecosystem functions and structure and their spatial and temporal variation; and evaluate implications of ecosystem processes for functioning of the global system and sustainable use by human beings. No student may earn credit for both 4623 and 5623. (F)

**4713 Introduction to Nematology (Crosslisted with Microbiology, Zoology 4713; Slashlisted with 5713).** Prerequisite: 12 hours of biology. Introduction to the field of nematology including nematodes of importance to human and veterinary medicine, agriculture and the environment. No student may earn credit for both 4713 and 5713. (Irreg.)

**4803 Plant Microbe Interactions (Crosslisted with Microbiology 4803; Slashlisted with 5803).** Prerequisite: 12 hours of biology. Biochemical, physiological, genetic, ultrastructural and molecular aspects of interactions between plants and their beneficial and harmful symbionts. No student may earn credit for both 4803 and 5803. (Irreg.)

**4810 Special Topics (Slashlisted with 5810).** 1 to 3 hours. Prerequisite: two courses in botany and permission. May be repeated with change of content; maximum credit three hours per semester, nine hours total. Topics will include newly developing areas of the discipline. Taught at an upper-division level based on previous course background. No student may earn credit for both 4810 and 5810 for the same course content. (Irreg.)

**4822 Applications of Molecular Biology (Crosslisted with Microbiology 4822; Slashlisted with 5822).** Prerequisite: eight hours of biology and permission of instructor; concurrent enrollment in 4812. Application of molecular biology to research in gene expression discussed with emphasis on how the molecular tools were developed, why they work and how they are used in current research. No student may earn credit for both 4822 and 5822.

**4843 Introduction to Molecular Biology (Crosslisted with Microbiology, Zoology 4843; Slashlisted with 5843).** Prerequisite: 1114 or Microbiology 3813 and 3812, or Zoology 1114 and one course in organic chemistry. Introduction to the characteristics and biological functions of nucleic acids and proteins in living cells with emphasis on nucleic acid replication, transcription, translation and regulation; also emphasis on the molecular aspects of microbial genetics—transformation, transduction and conjugation; and emphasis on molecular immunology and genetic engineering/recombinant DNA technology. No student may earn credit for both 4843 and 5843. (F, Sp)

**4873 Microbial Physiology and Molecular Biology Laboratory (Crosslisted with Microbiology 4873).** Prerequisite: junior standing or permission of instructor. Current techniques to explore molecular aspects of gene expression and regulation. Experiments include: plasmid and phage propagation, nucleic acid purification, DNA and protein manipulation, and gene analysis. (F, Sp)

**4983 Senior Capstone: Plant Biology for the 21st Century.** Prerequisite: 12 hours of botany and senior standing. Interdisciplinary approach to synthesize ideas from the major areas of botany. Readings, research and discussions on the important issues in botany at the present and into the next century. A major written assignment required. [V]

**4990 Independent Study.** 1 to 3 hours. Prerequisite: three courses in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**G5032 Radioisotope Techniques (Crosslisted with Civil Engineering, Environmental Science, Microbiology 5032).** Prerequisite: graduate standing or equivalent, permission; corequisite 5041. Fundamentals of detection and measurement of ionizing radiation with emphasis on radiotracer experimental design and applications; radiation effects and protection. (Sp)

**G5041 Radioisotope Techniques Laboratory (Crosslisted with Civil Engineering, Environmental Science, Microbiology 5041).** Corequisite: 5032. Laboratory techniques required for the utilization of radioisotopes in experimental work. **Laboratory** (Sp)

**G5144 Advanced Plant Physiology.** Prerequisite: 4115 or equivalent. Current research in nitrogen metabolism in plants, plant nutrition, metabolism, etc. Topics may vary with interests and previous experience of class members. (Sp odd-numbered years)

**G5264 Morphology of Vascular Plants.** Prerequisite: 12 hours of botany including 2213. The external form and internal structure of representative members of the major groups of vascular plants with emphasis on comparative life histories. The classification and interrelationships of living and extinct forms as revealed by structural data. (Irreg.)

**G5293 Cytology Ultrastructure (Crosslisted with Microbiology, Zoology 5293).** Prerequisite: 12 hours of biology. A descriptive survey of bacterial, plant and animal cells. Emphasis will be given to the ultrastructural morphology of cellular organelles and their functional significance. (F)

**G5364 Transmission Electron Microscopy (Crosslisted with Microbiology, Zoology 5364).** Prerequisite: permission. Introduction to the theory of transmission electron microscopy and practical instruction in specimen preparation, ultramicrotomy, instrument operation, photography and quantitative methods. **Laboratory** (F)

**G5374 Scanning Electron Microscopy (Crosslisted with Chemical Engineering, Microbiology, Zoology 5374).** Prerequisite: basic chemistry; basic physics; demonstrated need; permission of instructor. Principles of scanning electron microscopy combined with training in the operation of the SEM and ancillary equipment. Students will be certified in the operation of all equipment. Sample preparation on a variety of samples and darkroom procedures will be performed. Independent project with oral report and poster required. **Laboratory**

**G5413 Paleobotany (Crosslisted with Geology 5413; Slashlisted with 4413).** Prerequisite: permission of instructor. Introduction to the fossil record of terrestrial plants from algae to flowering plants. Lectures will address anatomy, morphology, taphonomy and paleoecology, including climate and plant-animal interactions. Laboratories will put lecture topics into practice using fossil plants from the Oklahoma Museum of Natural History collection and from fieldwork. Field trips. No student may earn credit for both 4413 and 5413. **Laboratory** (Sp, even-numbered years)

**G5453 Advanced Ecology and Evolutionary Biology (crosslisted with Microbiology and Zoology).** Prerequisite: general ecology. Required for students in the ecology and evolutionary biology doctoral program. An introduction to current research opportunities and research programs in ecology and evolutionary biology at the University of Oklahoma. Specific topics and lecturers will vary from week to week to give students a broad overview of ongoing research projects. (F)

**G5471 Seminar in Ecology and Evolutionary Biology (crosslisted with Microbiology and Zoology).** Prerequisite: graduate standing. Two semesters of enrollment are required for students in the ecology and evolutionary biology doctoral program. An intensive, student-based seminar in which students present both proposals and ongoing progress reports on doctoral level research projects in ecology and evolutionary biology. (F, Sp)

**G5553 Plant Geography (Slashlisted with 4553).** Prerequisite: 3453 or equivalent, 3534. Analysis of the evolutionary, ecological, genetic and historical factors that affect present-day distributional patterns of plants on continents and islands. Particular emphasis is directed to range disjunctions and endemism as well as the effects of continental drift, geoclimatic changes, dispersal, polyploidy and phylogeny on the flora of North America. No student may earn credit for both 4553 and 5553.

**G5561 Field Studies (Slashlisted with 4561).** Prerequisite: 3453, 3534, or permission of instructor. May be repeated. Field-based studies of the flora and vegetation of a particular area. Readings and lectures focus on a regional flora, and the geohistorical, biogeographic, and ecological factors affecting vegetational patterns and dynamics. Observations of characteristic habitats and plant communities, and identification and recognition of important plants are stressed during field trips. No student may earn credit for both 4561 and 5561. (Irreg.)

**G5594 Molecular Systematics.** Prerequisite: 3534 or permission of instructor. The systematic, evolutionary, and phylogenetic significance of variation among proteins (isozymes) and nucleic acids (nuclear and plastid DNA) in plants. Readings from the current literature, laboratory techniques, and methods of analyses are stressed. **Laboratory (F)**

**G5620 Investigations in Botany.** 1 to 6 hours. Prerequisite: 15 hours of botany, permission. May be repeated; nine hours for a masters student and twelve hours for Ph.D. student. Only six hours allowed with one professor. Fields: Ecology, morphology, physiology, systematics, mycology, anatomy, electron microscopy, plant molecular biology. (F, Sp, Su)

**G5623 Ecosystem Ecology (Slashlisted with 4623).** Prerequisite: 3453 or equivalent. Studies interactions between organisms and their environment with an earth-system context. Students will learn general concepts of ecosystems; examine major factors that control ecosystems properties; explore ecosystem functions and structure and their spatial and temporal variation; and evaluate implications of ecosystem processes for functioning of the global system and sustainable use by human beings. No student may earn credit for both 4623 and 5623. (F)

**G5713 Introduction to Nematology (Crosslisted with Microbiology, Zoology 5713; Slashlisted with 4713).** Prerequisite: 12 hours of biology. Introduction to the field of nematology including nematodes of importance to human and veterinary medicine, agriculture and the environment. No student may earn credit for both 4713 and 5713. (Irreg.)

**G5803 Plant Microbe Interactions (Crosslisted with Microbiology 5803; Slashlisted with 4803).** Prerequisite: 12 hours of biology. Biochemical, physiological, genetic, ultrastructural and molecular aspects of interactions between plants and their beneficial and harmful symbionts. No student may earn credit for both 4803 and 5803. (Irreg.)

**G5810 Special Topics (Slashlisted with 4810).** 1 to 3 hours. Prerequisite: two courses in botany and permission. May be repeated with change of content; maximum credit three hours per semester, nine hours total. Topics will include newly developing areas of the discipline. Taught at an upper-division level based on previous course background. No student may earn credit for both 4810 and 5810 for the same course content. (Irreg.)

**G5812 Applications of Molecular Biology Laboratory (Crosslisted with Microbiology 5812; Slash-listed with 4812).** Prerequisite: concurrent enrollment in 5822. Current techniques to explore molecular aspects of gene expression and regulation. Experiments include: plasmid and phage propagation, nucleic acid purification, DNA and protein manipulation, and gene analysis. No student may earn credit for both 4812 and 5812.

**G5822 Applications of Molecular Biology (Crosslisted with Microbiology 5822; Slashlisted with 4822).** Prerequisite: eight hours of biology and permission of instructor; concurrent enrollment in 5812. Application of molecular biology to research in gene expression discussed with emphasis on how the molecular tools were developed, why they work and how they are used in current research. No student may earn credit for both 4822 and 5822.

**G5843 Introduction to Molecular Biology (Crosslisted with Microbiology, Zoology 5843; Slashlisted with 4843).** Prerequisite: 1114 or Microbiology 3813 and 3812, or Zoology 1114, one course in organic chemistry. Introduction to the characteristics and biological functions of nucleic acids and proteins in living cells with emphasis on nucleic acid replication, transcription, translation and regulation; also emphasis on the molecular aspects of microbial genetics—transformation, transduction and conjugation; and emphasis on molecular immunology and genetic engineering/recombinant DNA technology. No student may earn credit for both 4843 and 5843. (F, Sp)

**G5910 Problems in Natural Science (Crosslisted with Geology, Microbiology, Physics, Zoology 5910).** 1 to 2 hours. Prerequisite: admission to candidacy for the degree of Master of Natural Science. (F, Sp, Su)

**G5971 Seminar in Botany.** Required of all graduate students in botany. May be repeated; maximum credit two hours for the master's degree, six hours for the doctor's degree. Selected topics in botany. Each student is called upon for discussion or formal presentations. No laboratory. (F, Sp)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, six hours. Preparation of an original research paper in one of the fields of botany. (F, Sp, Su)

**G5990 Special Studies in Botany.** 1 to 3 hours. Prerequisite: 15 hours of botany, permission. May be repeated; maximum credit six hours. The student selects an area in which the student desires to read intensively, then selects a staff member who is an authority in that field and together they plan a program for investigation of the literature. (F, Sp, Su)

**G6003 Ecological Modeling (Crosslisted with Microbiology, Zoology 6003).** Prerequisite: one computer course, one course in ecology, or permission of instructor. Trains students to use modeling tools in their research and to gain greater ability to understand, appreciate, and criticize modeling work. Students will learn general procedure and principles with case studies of successful models in ecology and participate in course projects to gain hands-on experience in model development. (Irreg.)

**G6484 Physiological Plant Ecology.** Prerequisite: 3451, 3453, 4115. Study of energy budgets, plant water relations, carbon uptake and release, nutrient uptake and availability, and other factors as they affect plant growth, competition and other ecosystem-level factors. In-depth analysis of current literature. (Sp)

**G6980 Research for Doctor's Dissertation.** 2 to 16 hours. Preparation of a research paper consisting of a notable contribution to knowledge in one of the fields of botany. (F, Sp, Su)

## Business Administration (B AD)

**1001 Personal Computing Productivity Tools.** Computer-assisted introduction to personal computing technology for spreadsheets, word processing, and presentation software. (F, Sp, Su)

**2110 Topics in Business for Non-Majors.** 1 to 3 hours. May be repeated with change of content; maximum credit six hours. Course is designed to familiarize and present business related topics to majors in other disciplines of study. Topics will vary and may encompass all divisions within the Price College of Business. (Irreg.)

**3013 Integrated Business Core Practicum.** Prerequisite: junior standing; Corequisite: enrollment in Integrated Business Core (L S 3323, MGT 3013, MKT 3013). Students will apply concepts from the corequisite courses to their own start-up business ventures and to community service projects. (F, Sp)

**3023 International Financial Statement Analysis (Crosslisted with Accounting 3023).** Prerequisite: Accounting 2113 and 2123. A review of international financial reporting development, procedures and standards with an emphasis on financial statement interpretation and analysis. Open to accounting majors only as an elective. (Sp)

**3503 Real Estate Principles.** Prerequisite: junior standing. Introduces the student to the broad field of real estate. Topics covered include real estate valuation, investment analysis, ownership forms, conveyancing, productivity analysis, development, marketing, financing and governmental regulation. (F, Sp)

**3513 International Business.** Prerequisite: student must be approved for degree candidacy in the Price College of Business. The nature and economic role of the multinational corporation including the impact of legal, political, educational, sociological, and cultural variables upon firm performance and managerial activity; case studies illustrate managerial, marketing, financial and accounting activities projected across national boundaries. (F, Sp)

**3603 Insurance.** Prerequisite: junior standing. Introduces the student to the broad field of insurance and provides a general understanding of the varied applications of the principles of insurance to situations of risk. (F, Sp)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to study materials not usually presented in regular courses. (F, Sp, Su)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program; junior standing. May be repeated; maximum credit six hours. Independent research on special projects. (F, Sp)

**4013 Business Strategy and Policy.** Prerequisite: senior standing and completion of all other College of Business core courses. Administrative decision making with emphasis on analyzing business problems, formulating policies and implementing plans for action; comprehensive cases provide the opportunity to study the proper interrelationships among

production, finance, marketing and the many other functions involved in managing a business enterprise. Should be taken in student's final semester. (F, Sp, Su) [V]

**4091 Career Planning and Placement for Business Students.** Prerequisite: junior or senior standing. An overview of the career planning process for business students including self-assessment of individual qualifications, interests and goals; development of personal skills in resume development, letter writing and the interviewing process; exploration of a variety of business careers. Should be taken prior to job search and interviewing. (F, Sp)

**4253 Small Business Strategy.** Prerequisite: senior standing or permission. The identification, definition and analysis of problems and strategies of small firms compared and contrasted with those of large firms. (F, Sp)

**4353 Entrepreneurship.** Prerequisite: senior standing or permission. Primarily for those interested in developing or acquiring a major management or equity position in a business venture. The application of management skills in the areas of finance, marketing, and management to the area of small business. (F, Sp, Su)

**4503 Real Estate Appraising.** Prerequisite: 3503 or permission. Appraisal processes and techniques used in the valuation of real property of all types. Appraisal value concepts; analysis of city, neighborhood and site data; determination of physical deterioration, functional and economic obsolescence; the capitalization rates and processes; the correlation of value estimate; the appraisal report; ethics of appraising. (Sp)

**4700 Internship in Business or Economics.** 1 to 3 hours. Prerequisite: nine hours of required core courses and permission of Director, Leadership Program. Application of the theory and principles of business and/or economics to actual businesses or other organizations in which the student receives on-the-job experience. (F, Sp, Su)

**4710 Special Problems in Business Administration.** 1 to 3 hours. Prerequisite: junior standing and permission. May be repeated; maximum credit six hours. Permits students to study topics in business administration not included in standard course offerings. Subject of course will vary. (F, Sp, Su)

**G5023 Management Science.** Prerequisite: permission (Director-CBA Graduate Programs). A quantitative methods course to prepare students for MBA functional courses. Includes elements of statistics and management science. (F, Sp)

**G5032 Business Integration.** Prerequisite: graduate standing and permission of instructor. Integrates the concepts of the functional areas of business and applies them to current events and current issues of concern. (F)

**G5033 Statistical Modeling for Decision-Making.** Prerequisite: graduate standing or permission of instructor. Covers basic statistical methods used in business decision-making. Topics include probability distributions, confidence intervals, hypothesis testing, regression analysis, correlation, fundamentals of decision theory, and utility theory. (Irreg.)

**G5100 MBA Prelude - Part A.** 0 hours credit. Prerequisite: admission to MBA program. This course meets immediately prior to the fall semester. An orientation to the University and MBA establishing student teams and team learning concepts, orientation to management by executives, and bringing students to common minimal competence in computers, math and statistics. (F)

**G5101 MBA - Professional Development.** Prerequisite: admission to MBA program. Stresses professional development skills. Designed to prepare students for their professional careers and the job search process in particular. Topics include: resume writing, job search and interview, negotiation skills, business etiquette, career decisions, and project and career management. (F)

**G5112 Microeconomics for MBAs.** Prerequisite: admission to MBA program. Microeconomic issues emphasizing applications of economic concepts to management problems. Supply and demand analysis and price determination; economic analysis of costs; competition, monopoly, and oligopoly; game theory; principal-agent issues; information economics; externalities and market failures; and regulation and antitrust. (F)

**G5113 Entrepreneurship and Venture Management.** Prerequisite: graduate standing. Designed for those interested in starting their own business or in developing new ventures for established companies. Students do everything necessary to set up a new business: establish objectives, develop plans, make market studies, make financial analyses, develop a financial program and organization structures, write a proposal for financing and developing a business plan. (F, Sp)

#### **G5123 Organizational Behavior and Human Resources Management.**

Prerequisite: admission to MBA program. Concepts and theories of organizational behavior and human resources management for MBAs. (Sp)

**G5133 Accounting for MBAs - Part A.** Prerequisite: admission to MBA program. Financial and managerial accounting concepts useful to the MBA. The use of financial and management information systems will be emphasized. (F)

**G5143 Quantitative Business Analysis - Part A.** Prerequisite: admission to MBA program. Statistics and management science techniques. Applications across all the functional areas of business and have a strong managerial focus will be included. Extensive use of computers will be required. (F)

**G5153 Management Information Systems.** Prerequisite: admission to MBA program. Concepts, theories and the strategic role of information systems as applied to business organizations will be covered. This course is to be highly integrative/cross-functional in nature. (F)

**G5163 Legal and Ethical Environments of Business.** Prerequisite: admission to MBA program. Review of the American legal process and ethical frameworks for gauging business decisions. (F)

**G5200 MBA Prelude - Part B.** 0 hours credit. Prerequisite: 5100, admission to MBA program. This course meets immediately prior to the spring semester and focuses on career planning, job placement, summer international and job experience opportunities, and planning of second year MBA electives. (Sp)

**G5212 Macroeconomics for MBAs.** Prerequisite: 5112. Macroeconomic issues emphasizing and understanding of the U.S. and world economics and on applications of economic concepts to management problems. Inflation, unemployment, production or GDP, productivity, the business cycle, interest rates, exchange rates, the budget deficit, the trade deficit, monetary policy, fiscal policy, and economic forecasting. U.S., Japan, and European economies are analyzed and compared. (F)

**G5233 Accounting for MBAs - Part B.** Prerequisite: 5132, admission to MBA program. Continuation of the financial and managerial accounting concepts useful to the MBA. The use of financial and management information systems will be emphasized. (Sp)

**G5242 Quantitative Business Analysis - Part B.** Prerequisite: 5143, admission to MBA program. Continuation of statistics and management science techniques. Contains applications across all the functional areas of business and has a strong managerial focus. Requires extensive computer use. (Sp)

**G5262 Production and Operations Management.** Prerequisite: admission to MBA program. Production and operations management techniques most applicable for MBAs will be covered. Topics include the design of systems and procedures to support organizational strategies such as product/process design, facilities layout/location, world class operations, and demand forecasting methodologies. (Sp)

**G5273 Marketing Management.** Prerequisite: admission to MBA program. Covers marketing concepts of use to MBAs. How management information systems can be useful to marketing managers will be included. Topics include pricing, product offerings, promotion, distribution and consumer behavior, as well as market segmentation and strategic marketing. (Sp)

**G5283 Financial Management.** Prerequisite: admission to MBA program. Principles and practice of financial management in corporations. Topics include the valuation of cash flows using risk adjusted required rates of return, the evaluation of domestic and international capital budgeting projects, working capital management, and domestic and international sources of financing. Personal computers are used to model financial management problems. (Sp)

**G5313 Strategic Management.** Prerequisite: completion of MBA core courses. The study of management decisions and actions to improve an organization's competitiveness in global business environments. Uses a variety of pedagogies to integrate strategies. Students develop skills to formulate, implement, and evaluate organizational strategies in rapidly changing environments. This course is an integrative/cross-functional course. (F, Sp)

**G5323 Business and Its Environment.** Prerequisite: graduate standing. An examination of business in society and the interaction of business with the economic, political-legal, social and technological environments. Certain ideas which are likely to affect the conduct of business in the future will be considered. (Irreg.)

**G5480 Research in Business Administration.** 1 to 3 hours. Prerequisite: graduate standing and permission. May be repeated with change of topic; maximum credit nine hours. Guided research in business administration. (Sp, Su)

**G5490 Readings in Business Communication and Business Administration—Selected Topics in Business Enterprise or Business Ethics.** 1 to 3 hours. Prerequisite: graduate standing and permission. May be repeated; maximum credit 12 hours. Preparation and submission of a research report on an assigned comprehensive topic relating to the business enterprise or to its ethical environment. (F, Sp, Su)

**G5973 Seminar.** Prerequisite: graduate standing, permission (Director-CBA Graduate Programs). May be repeated with change of topic; maximum credit nine hours. A seminar for graduate students with topics to be announced each time the course is offered. (F, Sp, Su)

**G6113 Business Integration.** Prerequisite: admission to MBA program. Encourages students to integrate their functional business knowledge into the start-up of a new business, product or service. Students must develop a business plan in which they establish objectives, conduct market studies and financial analyses, develop a financial program and organization structure, and write proposals for financing. Students will make formal presentations of their business plans. (F)

**G6243 Applied Univariate Statistics (Crosslisted with Marketing 6243).** Prerequisite: Ph.D. standing or permission of instructor, permission (Director-CBA Graduate Programs). Probability, algebra of expectations, random sampling, sampling distributions, point and interval estimation, tests of hypotheses, parametric and nonparametric, sampling methods, survey design, general linear model, computer applications, statistical analysis system. (F)

**G6253 Applied Multivariate Statistics (Crosslisted with Marketing 6253).** Prerequisite: 6243 or permission of instructor, permission (Director-CBA Graduate Programs). Multivariate data analysis with computer applications—introduction, survey, and computer applications—factor analysis, multidimensional scaling, cluster analysis, regression, analysis of variance, canonical analysis, discrimination analysis. (Sp)

## ***Business Communication (B C)***

**2813 Business Communication.** Prerequisite: English 1113 and 1213 or equivalent, Communication 1113 or 2613 and Business Administration 1001 or concurrent enrollment. This course is writing intensive. Focuses on oral and written communication as well as critical thinking. Also covers persuasive strategies and moves sequentially from analytical skills to composition strategies to written and oral reports. (F, Sp, Su)

**3000 Special Topics in Business Communication.** 1 to 3 hours. Prerequisite: 2813. May be repeated with change of content; maximum credit six hours. Content varies but may cover topics such as presentations and performance, intercultural business communications, communications in team building, leadership and managerial communications, organizational communication, business communication ethics, communication strategy and persuasion and others, depending on instruction. Course will be writing intensive. (Irreg.)

## ***Chemical, Biological and Materials Engineering (CH E)***

**2002 Introduction to Chemical Engineering Computing.** Prerequisite: 2033 or concurrent, Mathematics 1823 or concurrent. Introduction to engineering computing and programming using prevalent engineering computing software; program design and development; computer application exercises in engineering. (F)

**2033 Chemical Engineering Fundamentals.** Prerequisite: Chemistry 1415 or 1425 or equivalent. Material balances involving physical equilibria and chemical reaction; energy balances; gas behavior including vapor pressure and Raoult's Law. (F)

**2153 Electrical and Mechanical Engineering Concepts and Applications.** Prerequisite: Physics 2524; Mathematics 2433. Review of electrical circuits and statics and dynamics; application to engineering systems, including

motors, power systems, electrical safety, and design of flanges, spans, vessels and other mechanical systems. (Sp)

**2281 Engineering Co-Op Program (Crosslisted with AME, C E, C S, ECE, ENGR, EPHY, E S, G E, I E, P E 2281).** Prerequisite: student participation in the program. The Co-Op program provides student placement in jobs outside the university, but in a position related to the student's major. On completion of a semester work period, the student submits a brief written report. One hour of credit (elective) granted for each work period, with a maximum credit of six hours. (F, Sp, Su)

**2313 Structure and Properties of Materials.** Prerequisite: Chemistry 1415, Physics 2524. The behavior of materials under various conditions and environments is correlated to atomic and molecular structure and bonding. (Sp)

**3113 Momentum, Heat and Mass Transfer I.** Prerequisite: 2033; Mathematics 2443 or concurrent enrollment in 2443, Physics 2524 and completion or concurrent enrollment in Mathematics 3113. The common mathematical and physical basis of these processes is presented. Calculation methods for all three processes are developed. Design procedures of equipment for fluid flow, heat transfer and diffusional processes are given. (Sp)

**+G3123 Momentum, Heat and Mass Transfer II.** Prerequisite: 3113 and Mathematics 2443, or concurrent enrollment in Mathematics 3113. The common mathematical and physical basis of these processes is presented. Calculation methods for all three processes are developed. Design procedures of equipment for fluid flow, heat transfer and diffusional processes are given. (F)

**+G3333 Separation Processes.** Prerequisite: 3123, 3473, 3723. Coverage of the fundamentals and modeling techniques of various separation processes found in the chemical process industries. Discussion of various computational approaches for binary and multicomponent separations; factors affecting efficiency, capacity and energy requirements. (Sp)

**+G3432 Unit Operations Laboratory.** Prerequisite: 3123, 3333 or concurrent enrollment in 3333, 3473; corequisite: English 3153. Experimental examination of processes involving fluid flow, heat and mass transfer, kinetics and process control. Process parameters and physical properties are measured. **Laboratory** (Sp)

**+G3473 Chemical Engineering Thermodynamics.** Prerequisite: 2033. Application of the first and second laws of thermodynamics to the analysis of phase change, solution behavior and chemical equilibria and reaction. (F)

**+G3723 Numerical Methods for Engineering Computation (Crosslisted with Aerospace and Mechanical Engineering, Computer Science, and Petroleum Engineering 3723).** Prerequisites: 2002 or Aerospace and Mechanical Engineering 2401 or Computer Science 1313 or Computer Science 1323 or Engineering 1001 or Engineering 2003 and Mathematics 3113. Basic methods for obtaining numerical solutions with a digital computer. Included are methods for the solutions of algebraic and transcendental equations, simultaneous linear equations, ordinary and partial differential equations, and curve fitting techniques. The methods are compared with respect to computational efficiency and accuracy. This course may not be taken for graduate credit within the College of Engineering. (F, Sp)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. Covers materials not usually presented in the regular courses. (F, Sp, Su)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. The projects covered will vary. Deals with concepts not usually presented in regular coursework.

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work on a special project in the student's field. **Laboratory** (F, Sp, Su)

**3990 Undergraduate Research Experience.** Prerequisite: permission of instructor. May be repeated; maximum credit six hours. Individual research projects for undergraduates in Chemical Engineering before their junior year, and for high performing undergraduates not in the Honors Program. (F, Sp, Su)

**G4153 Process Dynamics and Control.** Prerequisite: 4473. Formulation of first-order models for storage tanks, chemical reactors and heated, stirred tanks; transient and steady-state process dynamics; three-mode control of unit operations; higher-order systems and counter-current operations; analog simulation and digital control of chemical processes. (F)

**G4253 Chemical Engineering Design I.** Prerequisite: 3333, 4473.

Processes and process equipment design; technical design of units combined into plants. (F)

**G4262 Chemical Engineering Design Laboratory.** Prerequisite: 3333, 3432, 4473 or concurrent enrollment in 4473, and 4253 or concurrent enrollment in 4253. Experimental techniques for the acquisition of pilot plant data, using unit operations equipment and reactors for use in process design. **Laboratory** (F)

**G4273 Advanced Process Design.** Prerequisite: 4253, 4262. Process and process equipment design, complete design of process plants including complete flow sheets, estimated plant costs, costs of process development, economics of investment. (Sp) [V]

**G4473 Kinetics.** Prerequisite: 3473, 3723, Mathematics 3113. Fundamentals of rates, homogeneous isothermal reactions, non-isothermal reactions, reactors and design, heterogeneous reactions, fixed and fluidized bed reactors, experimental data reduction, non-ideal flow reaction systems. (Sp)

**4980 Senior Research.** 1 to 4 hours. Prerequisite: senior standing, permission. Selected students work with individual faculty members on research problems. **Laboratory** (F, Sp, Su)

**G5163 Catalysis.** Prerequisite: 4473. Physical characterization of heterogeneous catalysts; catalytic activity of metals, semiconductors, solid acids, and shape-selective materials. Theories of catalytic activity, catalytic reactors, basics of catalyst surface characterization and activity measurement. (Irreg.)

**G5183 Graduate Transport Phenomena.** Prerequisite: 3123.

Fundamentals of the theory of transport process; heat, mass, momentum transfer combined with chemical reactions, derivation of different equations to describe processes and process units, analytical and numerical solutions of systems of describing equations. (F)

**G5193 Characterization of Solid Surfaces.** Prerequisite: Chemistry 3523 or equivalent. Physical-chemical characterization of surfaces with emphasis on catalysis and chemical reactivity. Temperature-programmed techniques: spectroscopy, microscopy, XPS, EXAFS, FTIR, field emission. (Irreg.)

**G5203 Bioengineering Principles (Crosslisted with Aerospace and Mechanical Engineering 5203).** Prerequisite: Engineering 2113 and 2613, and Mathematics 3113. Principles of bioengineering for the areas of the biomechanics of solids and fluids, mass transfer, biomaterials, electrical networks, imaging, and ionizing radiation as they apply to the human body. (Alt. F)

**G5243 Biochemical Engineering.** Prerequisite: 3123 or permission. Current bioprocesses for reaction and separation with emphasis on fundamental principles of chemical engineering, biochemistry and microbiology. (Alt. Sp)

**G5273 Biomedical Engineering.** Prerequisite: 3123 or permission. A general introduction to human physiology and biochemistry as it relates to current topics in biomedical engineering, including artificial organs, tissue engineering, blood interactions with biomaterials, drug delivery and cell adhesion. (Irreg.)

**G5293 Transport in Biological Systems (Crosslisted with Aerospace and Mechanical Engineering 5293).** Prerequisite: 3123 or permission of instructor. Theoretical and practical aspects of transport phenomena in living organisms and biomedical technologies. Applications include hemorheology, drug delivery, extracorporeal circulation, and artificial organs. (Irreg.)

**G5373 Tissue Engineering.** Prerequisite: graduate standing or permission of instructor. Examines the background and recent advances in the science of combining multiple cell types with an appropriate support to provide a construct that can replace or support damaged tissue. (Irreg.)

**G5443 Complex Fluids Rheology Laboratory.** Prerequisite: graduate standing or permission of instructor. A laboratory course designed to teach the student how to measure the rheological properties of non-Newtonian fluids. Steady-shear and oscillatory experiments for both solids and liquids will be described and discussed. **Laboratory** (Sp)

**G5453 Polymer Science (Crosslisted with Chemistry 5453).** Prerequisite: graduate standing or permission. Nomenclature, synthesis, structure and properties of high polymers, survey of production, processing and uses of commercial polymeric materials. (Sp)

**G5463 Polymer Processing.** Prerequisite: senior or graduate standing. The theory and practice of the production of finished polymer shapes (tubes, sheets, fibers, bottles, etc.) from polymeric raw materials. (Alt. F)

**G5480 Seminar in Selected Topics in Chemical Engineering.**

Prerequisite: permission of instructor. May be repeated with change of subject matter; maximum credit nine hours. Seminar course in specialized topics in chemical engineering. (Irreg.)

**G5523 Advanced Mathematical Methods in Science and Engineering (Crosslisted with Meteorology 5523).** Prerequisite: 3113 and Mathematics 2443. Scale and vector field theory. Ordinary and partial differential equations. Matrix algebra. Complex analysis. (F)

**G5643 Natural Gas Utilization.** Prerequisite: graduate standing or permission of instructor. Covers the uses of natural gas for combustion, power, LNG, gas conversion to chemicals and fuels, and gas transportation. (Alt. F)

**G5673 Colloid and Surface Science (Crosslisted with Chemical**

**Engineering and Environmental Science 5673).** Prerequisite: graduate standing or permission of instructor. Capillarity, surface thermodynamics, adsorption from vapor and liquid phases, contact angles, micelle formation, solubilization, emulsions and foams. Applications to be discussed include detergency, enhanced oil recovery and adsorption for pollution control. (Irreg.)

**G5843 Advanced Chemical Engineering Thermodynamics.** Prerequisite: 3473 or permission. Advanced thermodynamics as applied to engineering problems and design. (F)

**G5971 Seminar in Chemical Engineering Research.** May be repeated; maximum credit four hours for the master's degree, 10 hours for the doctoral degree. Speakers from academia and industry elaborate on methods and results from research in their areas of expertise to provide the student with an appreciation of the problems of current interest in chemical engineering. (F, Sp)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, six hours. **Laboratory** (F, Sp, Su)

**G6483 Seminar on Selected Topics in Engineering Sciences.** Prerequisite: permission. May be repeated with change of subject matter; maximum credit six hours. (F, Sp, Su)

**G6613 Modern Thermodynamics Seminar.** Prerequisite: 5183, 5843. (Irreg.)

**G6723 Advanced Kinetics and Reaction Engineering.** Prerequisite: 4473 or graduate standing. Understanding and analysis of complex kinetics and reactor systems: free radical and cracking reactions, polymerization, biokinetics and catalytic kinetics with mass heat transfer limitations. Advanced reactor systems such as a catalytic fixed bed reactors in one- and two-dimensions, equilibrium limited reaction systems, fluidized and trickle bed reactors, etc. are considered. (F)

**G6980 Research for Doctoral Dissertation. Laboratory** (F, Sp, Su)

**G6990 Special Chemical Engineering Problems.** 1 to 2 hours.

Prerequisite: permission. May be repeated; maximum credit four hours. Special research problems are pursued by the students either as individuals or as a group under staff direction. (F, Sp, Su)

## *Chemistry and Biochemistry (CHEM)*

**1315 General Chemistry.** Prerequisite: Mathematics 1503 or 1643, or math ACT equal to or greater than 23. First of a two-semester sequence in general chemistry. Topics covered: basic measurement, gas laws and changes in state, stoichiometry, atomic theory, electron configuration, periodicity, bonding, molecular structure and thermochemistry. **Laboratory** (F, Sp, Su) [II-LAB]

**1415 General Chemistry (Continued).** Prerequisite: 1315 with a minimum grade of C or a satisfactory score on the chemistry placement examination. Topics covered include: nature of solutions, equilibrium, thermodynamics, acid and base properties, kinetics and electrochemistry. **Laboratory** (F, Sp, Su)

**1425 General Chemistry for Majors.** Prerequisite: chemistry major, three years of high school math, high school chemistry, permission of instructor. Designed for chemistry majors well prepared in high school chemistry and math. **Laboratory** (F) [II-LAB]

**1613 General Chemistry for Non Science Majors.** Prerequisite: Math 0123. Content includes introduction, basic concepts, chemical bonds/names/properties, chemical equations/reactions, acids and bases, nuclear

chemistry, organic chemistry, food chemistry, and chemical toxicology. Students may not earn credit for both 1613 and 1315 or 1614. (F, Sp)

**3012 Organic Chemistry Laboratory.** Prerequisite: 3013 or concurrent enrollment. (F)

**3013 Organic Chemistry.** Prerequisite: 1415 or 1425. Structure and reaction of both aliphatic and aromatic compounds. Reaction mechanism and modern structural theory. (F)

**3053 Organic Chemistry.** Prerequisite: 1415 or 1425. Two-semester sequence (3053 and 3153) covering the fundamental concepts of organic structure and reactions of the principal functional groups. Reaction mechanisms. (F, Sp, Su)

**3152 Organic Chemistry Laboratory.** Prerequisite: 3013 or 3053. Selected experiments designed to illustrate the fundamental techniques used in organic research, to develop familiarity with the properties of organic compounds and to demonstrate the application of the scientific approach to laboratory work. (F, Sp, Su)

**3153 Organic Chemistry.** Prerequisite: 3053 with a grade of "C" or better. Two-semester sequence (3053 and 3153) covering the fundamental concepts of organic structure and reactions of the principal functional groups. Reaction mechanisms. (F, Sp, Su)

**3214 Quantitative Analysis.** Prerequisite: 1415 or 1425, Mathematics 1523 or 1643. Principles of chemical stoichiometry and equilibrium applied to gravimetric and volumetric methods of analysis; practice of volumetric and gravimetric analysis; introduction to simple instrumental methods. **Laboratory** (F, Sp)

**+TG3421 Physical Chemistry Laboratory.** Prerequisite: 3423 or concurrent enrollment. Physiochemical measurements and calculations. (F, Sp, Su)

**+TG3423 Physical Chemistry I.** Prerequisite: 1415 or 1425; Mathematics 2423 or concurrent enrollment. States of matter, chemical thermodynamics, equilibria, etc. (F, Sp, Su)

**+TG3451 Basic Physical Chemistry Laboratory.** Prerequisite: 3453 or concurrent enrollment. Laboratory application of physical chemical principles and techniques. (F, Sp)

**+TG3453 Basic Physical Chemistry.** Prerequisite: 1415 or 1425; Mathematics 2423; Physics 2524 or 2424. The application of physical chemical principles and methods. (F, Sp)

**+TG3521 Physical Chemistry Laboratory.** Prerequisite: 3523 or concurrent enrollment. (F, Sp, Su)

**+TG3523 Physical Chemistry II.** Prerequisite: 3423 with a grade of "C" or above. Continuation of 3423. Kinetics, electrochemistry, atomic and molecular states of matter, etc. (F, Sp)

**+TG3653 Introduction to Biochemistry.** Prerequisite: 3013 or 3053. Chemistry of proteins, carbohydrates, lipids, and nucleic acids; enzyme kinetics; biochemical energetics; intermediary metabolism; regulatory processes. (F)

**3753 Introduction to Biochemical Methods.** Prerequisite: 3653 or concurrent enrollment. A survey of current and routinely used methods in biochemistry. Students attend lecture twice weekly and a three-hour lab per week. **Laboratory** (Sp)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: permission of instructor and permission of Honors College. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. The topics will cover materials not usually presented in the regular courses. (F, Sp, Su)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. The projects covered in this course will vary. The content will deal with concepts not usually presented in regular coursework.

**3980 Honors Research.** 1 to 3 hours. Prerequisite: permission of instructor and permission of Honors College. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work at a special project in the student's field. (F, Sp, Su)

**3990 Independent Study.** 1 to 3 hours. Prerequisite: permission of instructor. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**G4023 Instrumental Methods of Chemical Analysis (Slashlisted with 4023).** Prerequisite: 3214. Introduction to instrumental methods of analysis, with emphasis upon electrometric and spectroscopic techniques

and instruments. Includes sampling procedures, requirements of reagents and standards, and evaluation of errors. No student may earn credit for both 4023 and 5023. (F)

**G4033 Instrumental Methods of Chemical Analysis Laboratory.** Prerequisite: 4023. Selected experiments illustrating the principles developed in 4023. Two four and a half hour laboratories per week. **Laboratory** (Sp)

**G4232 Laboratory Glassblowing (Crosslisted with Engineering Physics 4232).** Prerequisite: permission. Discussion of materials and techniques with demonstrations of procedures. Exercises will be performed in the laboratory with a special emphasis upon the different types of seals required in the construction of glass apparatus. One hour of lecture and three hours of laboratory will be scheduled each week. (F, Sp)

**G4333 Advanced Inorganic Chemistry—Periodic System.** Prerequisite: 3013 or 3053. A survey of all elements and important compounds based on atomic structure and position in the Periodic System; effect of atomic size, ionic size and charge on the properties of elements. Inorganic nomenclature. (F)

**G4444 Advanced Synthesis and Spectral Characterization.** Prerequisite: 3152 and 3153. Lectures cover spectroscopic analysis, thermodynamics of synthesis and fundamentals of advanced techniques, and hand-on spectroscopic identification of reaction products. Two lecture and six laboratory hours per week. **Laboratory** (Sp)

**4503 Applied Oceanography (Crosslisted with Geological Engineering 4503).** Prerequisite: Geology 1124 or 2233, permission of instructor.

Interdisciplinary approach in physical, chemical and biological oceanography, whereby ocean processes affect erosion, deposition, development of coastlines and ocean bottoms, and dictate construction practices. Economic factors of life forms in each zone of ocean; controlling chemical aspects of water depths, temperatures, salinities, oxygen content in the ecological system. (Irreg.)

**4753 Principles of Biochemistry I (Slashlisted with 5753).** Prerequisite: 3153, 3423 or 3453, 3653 or equivalent. The first semester of a two-semester sequence covering the fundamental principles of protein structure and function, enzymology, carbohydrate and lipid metabolism, biochemical energetics, membranes, nucleic acid and protein metabolism, information transfer and the genetic code, and the interdependence of biochemical pathways. No student may earn credit for both 4753 and 5753. (Sp)

**4913 Senior Thesis.** Prerequisite: permission of instructor and permission of department. Capstone Course. Research project, theoretical or experimental, to be arranged with individual faculty member, leading to a senior thesis. Each student will present an oral report in a lecture presentation or poster format to an audience of students and faculty.

**Laboratory** (F, Sp) [V]

**4923 Senior Project.** Prerequisite: permission of instructor and permission of department. Capstone Course. Topics of current interest and importance in chemistry or biochemistry, requiring indepth reading or individual laboratory work, extensive literature search, and report writing. **Laboratory** (F, Sp) [V]

**4933 Current Topics in Biochemistry.** Prerequisite: 3653, 3652, and one semester of physical chemistry with lab. Capstone course for biochemistry majors. Topics of current interest in biochemistry. Students will attend lectures and will be involved in literature search, group discussion, oral presentation, laboratory work, and report writing. **Laboratory** (Sp) [V]

**4990 Independent Study.** 1 to 3 hours. Prerequisite: permission of instructor. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**G5023 Instrumental Methods of Chemical Analysis (Slashlisted with 4023).** Prerequisite: Graduate standing. Introduction to instrumental methods of analysis, with emphasis upon electrometric and spectroscopic techniques and instruments. Includes sampling procedures, requirements of reagents and standards and evaluation of errors. No students may earn credit for both 4023 and 5023. (F)

**G5103 Physical and Chemical Separations.** Prerequisite: 4023 or permission. Analytical separations; unifying concepts of "separation sciences"—mathematical treatments; equilibrium and kinetics in liquid-liquid partition; fractionation, practical column chromatography and TLC; gas chromatography; ion exchange. (Irreg.)

**G5113 Equilibrium and Kinetic Methods of Analysis.** Prerequisite: 4023 or permission. General concepts of equilibrium based on methods of detection, determination, and separation; equilibrium in aqueous and nonaqueous media; graphical presentation of equilibrium data; conditional equilibrium constants and alpha coefficients: analytical implications; generalities of kinetic methods of analysis. Reaction rates in chemical analysis. (Irreg.)

**G5123 Intermediate Physical Chemistry.** Prerequisite: 5623 or concurrent enrollment, or equivalent. Chemical thermodynamics, statistical thermodynamics, chemical kinetics, applications of quantum chemistry, structure of matter. This is a core course for graduate majors. (Sp)

**G5153 Molecular Symmetry.** Development of the concept of symmetry elements will be followed by the development of point group theory and applications to molecular systems. (F)

**G5201 Seminar in Chemical Education.** Prerequisite: 20 hours of chemistry; teaching experience (corequisite). Explores the pedagogical issues associated with teaching chemistry at the undergraduate level. Includes: administration of instruction, student and teacher behavior, goals of instruction, instructional strategies, student thinking processes, problem solving and grading.

**G5233 Advanced Inorganic Chemistry—Reactions and Mechanisms.** Prerequisite: 3523, 4333, or permission. Core course for graduate majors. The descriptive and mechanistic chemistry of inorganic systems.

**G5323 Advanced Organic Chemistry.** Prerequisite: 3153, 3523. Introduction to organic reaction mechanisms. Core course for graduate majors. (F)

**G5333 Advanced Inorganic Chemistry—Bonding and Structure.** Prerequisite: 3523 and 4333, or permission. Experimental methods and concepts for understanding inorganic bonding and structure. Core course for graduate majors. (Sp)

**G5433 Reaction Chemistry of the Main-Group Elements.** Prerequisite: graduate standing or permission of instructor. Presents the reaction chemistry of the main-group elements. Uses periodic trends, thermodynamic calculations, kinetic guidelines to link the material and memorization of reactions. Also includes organometallic chemistry of metallic members of each family and the role of transition metals as catalysts for reactions within the main-group elements.

**G5453 Polymer Science (Crosslisted with Chemical Engineering 5453).** Prerequisite: graduate standing or permission. Nomenclature, synthesis and properties of high polymers, survey of production, processing and uses of commercial polymeric materials. (F)

**G5623 Physical Chemistry III.** Prerequisite: 3523 or permission of the department. Review of classical mechanics; introduction to wave mechanics and applications to atoms and molecules. (F)

**G5673 Colloid and Surface Science (Crosslisted with Chemical Engineering and Environmental Science 5673).** Prerequisite: graduate standing or permission of instructor. Capillary, surface thermodynamics, adsorption from vapor and liquid phases, contact angles, micelle formation, solubilization, emulsions and foams. Applications to be discussed include detergency, enhanced oil recovery and adsorption for pollution control. (Irreg.)

**G5753 Principles of Biochemistry I (Slashlisted with 4753).** Prerequisite: 3153, 3423 or 3453, 3653 or equivalent and permission or satisfactory score on placement examination or graduate standing. The first semester of a two-semester sequence covering the fundamental principles of protein structure and function, enzymology, carbohydrate and lipid metabolism, biochemical energetics, membranes, nucleic acid and protein metabolism, information transfer and the genetic code, and the interdependence of biochemical pathways. No student may earn credit for both 4753 and 5753. (Sp)

**G5853 Principles of Biochemistry II.** Prerequisite: 5753 or equivalent and permission. Second semester of a two-semester sequence covering the fundamental principles of protein structure and function, enzymology, carbohydrate and lipid metabolism, biochemical energetics, membranes, nucleic acid and protein metabolism, information transfer and the genetic code, and the interdependence of biochemical pathways. (Sp)

**G5923 Fundamentals/Applications of Nanotechnology and Bionanotechnology.** Prerequisite: Graduate student status. Design and synthesis of nanomaterials. Characterization of nanomaterials using physical and chemical methods. Properties of nanomaterials. Imaging nanomaterials at atomic, molecular and nano scales. New devices designed and fabricated using nanomaterials. Application of nanomaterials

to life sciences. Exploitation of biochemistry and biology in developing areas of nanotechnology. (Irreg.)

**G5960 Directed Readings in Chemistry.** 1 to 2 hours. Prerequisite: permission. May be repeated with change of content; maximum credit six hours. Selected from topics of current interest in any of the areas of chemistry. (F, Sp, Su)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, six hours. (F, Sp, Su)

**G5990 Independent Studies.** 1 to 3 hours. May be repeated with change of subject matter; maximum credit nine hours. Staff members in the student's field of interest supervise research and/or library studies which closes gaps in student's training or builds on this training in specialized areas. (F, Sp, Su)

**G6103 Electroanalytical Chemistry.** Prerequisite: 4023 or permission. Electrode materials; current-potential relationships; diffusion and other mass trans-port phenomena; dropping mercury electrode; solid electrodes in quiet solutions; rotated disk electrode; cyclic voltammetry; chronoamperometry; chronopotentiometry; electrode mechanisms; electrochemistry in chemical kinetics. (Irreg.)

**G6113 Spectroscopic Methods of Analysis.** Prerequisite: 4023 or permission. UV-VIS, IR, fluorescence, X-ray and electron spectroscopy; atomic emission and absorption. (Irreg.)

**G6210 Seminar in Analytical Chemistry.** 1 to 2 hours. Prerequisite: 5103 or permission. May be repeated with change of content; maximum credit 12 hours. Research seminar on the theory and practice of advanced analytical chemistry as related to topics of current or projected research areas. (F, Sp)

**G6411 Seminar in Organic Chemistry.** Prerequisite: 5323 or enrollment in 5323. May be repeated; maximum credit 12 hours. Seminar in synthetic methods and reaction mechanisms using examples from current literature. (F, Sp)

**G6431 Colloquium in Organic Chemistry.** Prerequisite: enrollment as graduate student in chemistry, or permission. May be repeated; maximum credit 12 hours. Oral presentation of recent developments in organic chemistry. Required of graduate students majoring in organic chemistry during each semester of residence. (F, Sp)

**G6443 Advanced Organic Chemistry.** Prerequisite: 3153, 3523. Continuation of 5323. Lectures in synthetic methods of organic chemistry. (Sp)

**G6453 Chemical Kinetics.** Empirical treatment of reaction rate data, collision and transition-state theories of homogeneous and heterogeneous reactions, mechanisms of chemical reactions. (Irreg.)

**G6553 Molecular Spectroscopy.** Prerequisite: 5623. Radiation-matter interactions; time-dependent perturbation theory; coupling of angular momentum; potential energy; harmonic oscillators; band intensities; multi-photon processes; raman effect; normal coordinates; force constants; polyatomic rotations; symmetry; condensed phases; ultrafast spectroscopy; resonance transitions and relaxations; spectroscopy of contemporary interest and applications. (Irreg.)

**G6650 Special Topics in Physical Organic Chemistry.** 1 to 3 hours. Prerequisite: 5323, 6443 or concurrent enrollment in 6443. May be repeated with change of subject matter; maximum credit nine hours. Selected from topics in physical organic chemistry—emphasis on the mechanisms of organic reactions through study of kinetics, stereochemistry, isotope effects, and products of reactions; simple molecular orbital calculations; free energy correlations; physical methods; newer techniques of synthesis. (F)

**G6670 Selected Topics in Physical Chemistry.** 1 to 3 hours. Prerequisite: 3523 and/or permission of instructor. May be repeated with change of subject matter; maximum credit 12 hours. Studies in special areas of physical chemistry not covered in the regular course curriculum. (As needed)

**G6680 Special Topics in Synthetic and Structural Organic Chemistry.** 1 to 3 hours. Prerequisite: 5323, 6443 or concurrent enrollment in 6443. May be repeated with change of subject matter; maximum credit nine hours. Selected topics include aliphatic and alicyclic hydrocarbons, terpenes, steroids, alkaloids and other heterocycles, aromatic compounds and polymers. Emphasis will be placed on synthesis and the application of modern spectrometric methods to problems of structure determination. (Irreg.)

**G6721 Seminar—Biochemistry.** Prerequisite: 12 hours of chemistry including five hours of biochemistry, permission. May be repeated; maximum credit 12 hours. Participation required of all majors in biochemistry. Discussion of recent advances in biochemistry. (F, Sp)

**G6730 Special Topics in Advanced Analytical Chemistry.** 1 to 3 hours. Prerequisite: 4023 or permission. May be repeated with change of content; maximum credit 12 hours. A consideration of specialized topics in analytical chemistry related to current research or advances. (Irreg.)

**G6733 Special Topics in Biochemistry.** Prerequisite: 6813 or permission. Special topics in biochemical area to investigate the frontiers of knowledge in this area. Topics vary according to current information in the field and interests of instructors. If topic is particularly useful and/or area becomes broader part of the discipline, a regular class in the area of concern will be started. (Irreg.)

**G6813 Introduction to Biochemical Methods.** Prerequisite: 5753 or permission. Basic principles and practical applications of the analytical and preparative techniques used in current biochemical research. Students will have the opportunity to apply these principles in an independent laboratory project. (F)

**G6823 Proteins, Nucleic Acids and Gene Expression.** Prerequisite: 6813 or permission. The structure and function of proteins and nucleic acids. The organization and expression of genetic information. (Irreg.)

**G6833 Structure and Function of Membranes and Hormones.** Prerequisite: 6813 or permission. The biosynthesis, structure and function of membranes and hormones. The involvement of membranes in transport, energy transduction and cellular communication processes. The mechanisms of hormone action. (Irreg.)

**G6843 Enzyme Mechanisms and Metabolic Regulation.** Prerequisite: 6813 or permission. General principles of enzyme function and metabolic regulation. Molecular basis of enzyme mechanisms and metabolic control. (Irreg.)

**G6850 Seminar in Inorganic Chemistry.** 1 to 2 hours. Prerequisite: permission. May be repeated; maximum credit 12 hours. Research seminar, with a selection of topics from current or projected research at the University of Oklahoma. (F, Sp)

**G6853 Protein Structure and Function.** Prerequisite: 6813 or permission. The levels of protein structure organization, general principles of macromolecular x-ray crystallography, and protein structure-function relationships. (Irreg.)

**G6863 Advanced Inorganic Chemistry—Properties of Inorganic Systems.** Prerequisite: 5333 or permission. May be repeated with change of subject matter; maximum credit 12 hours. Selected topics in theoretical, structural and synthetic chemistry as applied to inorganic chemistry. (Irreg.)

**G6933 Metals and Membrane Bioenergetics.** Prerequisite: 6813 or permission. Participation of metals in the generation of energy by living cells. Components and chemistry of bioenergetic systems in prokaryotes and eukaryotes. Metal containing proteins involved in energy generation by biological systems. Redox chemistry and ion flow. (Irreg.)

**G6970 Departmental Colloquium.** No credit. Prerequisite: enrollment as graduate student in chemistry, or permission. Enrollment expected during each semester of graduate study. Oral presentation of reports on recent developments in chemistry by faculty, invited speakers and advanced graduate students. (F, Sp)

**G6980 Research for Doctor's Dissertation.** (F, Sp, Su)

## Cherokee (CHER)

**1715 Beginning Cherokee.** Introduction to the structure of the Cherokee language with special attention to its phonology, morphology, and syntax. Conversational practice, vocabulary-building, and the history and culture of the native speech community also are emphasized. (F, Sp) [I-FL]

**1725 Beginning Cherokee Continued.** Prerequisite: 1715. A continuation of the study of the structure of the Cherokee language with special attention to its phonology, morphology, and syntax. Conversational practice, vocabulary-building, and the history and culture of the native speech community are emphasized. (Sp) [I-FL]

**2733 Intermediate Cherokee.** Prerequisite: 1723. A systematic review of the structure of the Cherokee language. Syntactic control and vocabulary expansion are emphasized. Conversational practice and traditional oral texts are used to develop proficiency. (F)

## Chinese (CHIN)

**1115 Beginning Chinese.** An elementary course in understanding, speaking, reading and writing Mandarin Chinese. This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics. (F) [I-FL]

**1225 Beginning Chinese (Continued).** Prerequisite: 1115. Continued training in understanding, speaking, reading and writing elementary Mandarin Chinese. This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics. (Sp) [I-FL]

**2113 Intermediate Chinese.** Prerequisite: 1225. Combination of basic Chinese grammar and vocabulary and their application to spoken and written Mandarin Chinese. (F)

**2223 Intermediate Chinese.** (Continued) Prerequisite: 2113. Continued training in the use of grammar and vocabulary in both spoken and written Mandarin Chinese. (Sp)

**3113 Advanced Chinese I.** Prerequisite: 2223 or equivalent. An integrated advanced course designed to improve skills in the four aspects of learning Mandarin Chinese as a foreign language: listening, speaking, reading, and writing. Emphasis on the phonetics of standard Mandarin Chinese and conversation on topics in daily life. (F)

**3223 Advanced Chinese II.** Prerequisite: 3113 or equivalent. Continue to improve skills in the four aspects of learning Mandarin Chinese as a foreign language: listening, speaking, reading, and writing. Emphasis on composition and advanced-level reading comprehension. (Sp)

**3990 Independent Study.** 1 to 3 hours. Prerequisite: two courses in Chinese; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp)

**4113 Advanced Reading and Writing.** Prerequisite: 3223. Advanced reading and comprehension of authentic Chinese texts. Development of good writing skills with correct usage of grammar. (Sp)

**4223 Advanced Listening and Speaking.** Prerequisite: 3223. Develops listening and speaking skills of students who have taken third year Chinese. Conversations are presented in authentic and naturally-paced language. Lessons are constructed to support existing knowledge and develop mastery of new vocabulary, grammatical patterns, and sociocultural formalities in ways that are compatible with genuine communication. (F)

**4533 Newspaper Reading.** Prerequisite: 3223 or equivalent. Fourth-year language course so designed that students who have taken the third-year language course can enhance their proficiency in Chinese through reading authentic materials from Chinese newspapers. Through such readings they will familiarize themselves with all aspects of Chinese culture and society and with the kinds of language use associated with them. (F)

**4543 Introduction to Classical Chinese.** Prerequisite: 3223. Major aspects covered in this course will include 1) grammatical structures of classical Chinese compared to modern Chinese; 2) lexical and semantic features of most commonly used words and phrases; 3) reading and understanding of simple texts from the classics; 4) cultural perspectives to appreciate Chinese heritage texts, paintings and calligraphy. (F)

**4633 Structure of the Chinese Language.** Prerequisite: 3223. The major topics of the course include 1) basic knowledge of general linguistics; 2) overview of the Han language; 3) Chinese morphology; 4) structure of phrases and sentences; 5) the dialects of Chinese. (F)

**4643 The Study of Chinese Characters.** Prerequisite: 3223. Major topics of this course are 1) the world's writing systems in comparison with the word writing system of Chinese; 2) the evolution of Chinese characters; 3) the structures of and rules in writing Chinese characters; 4) the pinyin phonetic system for the pronunciation of Chinese characters; and 5) the reform and policy of Chinese characters. (Sp)

**4990 Independent Study.** 1 to 3 hours. Prerequisite: four courses in Chinese and general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

## Choctaw (CHOC)

**1715 Beginning Choctaw.** Introduction to the structure of the Choctaw language with special attention to its phonology, morphology, and syntax. Conversational practice, vocabulary-building, and the history and culture of the native speech community also are emphasized. (F, Sp) [I-FL]

**1725 Beginning Choctaw Continued.** Prerequisite: 1715. A continuation of the study of the structure of the Choctaw language with special attention to its phonology, morphology, and syntax. Conversational practice, vocabulary-building, and the history and culture of the native speech community are emphasized. (Sp) [I-FL]

**2733 Intermediate Choctaw.** Prerequisite: 1723. A systematic review of the structure of the Choctaw language. Syntactic control and vocabulary expansion are emphasized. Conversational practice and traditional oral texts are used to develop proficiency. (F)

## Civil Engineering and Environmental Science (CEES)

**1000 CEES Seminar.** Seminar provides a common meeting time for students and faculty for department activities, such as invited speakers, project presentations, educational surveys, cross-course project coordination, and policy announcements. Students must enroll every semester that they are matriculated in CEES at OU after the freshman year, but in no case can a student graduate without successfully completing four semesters of seminar. (F, Sp)

**1111 Introduction to Civil Engineering and Environmental Science.** May be repeated; maximum credit three hours. Introduction to fundamental concepts (principles of mechanics, energy balances, simple circuits), problem solving and computing software for architectural, civil or environmental engineers and environmental scientists. (F)

**1213 Computing Applications in Civil Engineering and Environmental Science.** Prerequisite: Mathematics 2423, Physics 2514 or concurrent enrollment. Introduction to a computer-aided engineering and environmental science. Introduction to application software and tools relevant to civil engineering and environmental science such as AutoCAD, Java and spreadsheets. (F)

**2113 Statics and Dynamics.** Prerequisites: Physics 2514 and Mathematics 2433 or concurrent enrollment in Mathematics 2433. Vector representations of forces and moments; general three-dimensional theorems of statics and dynamics; centroids and moments of area and inertia. Free-body diagrams, equilibrium of a particle and of rigid bodies, principles of work and energy; principle of impulse-momentum. Motion of particles and rigid bodies in translating and rotating reference frames. Newton's law of motion and LaGrange's equation, including application to lumped-parameter systems. Analyses of trusses, frames and machines. (F, Sp)

**2153 Mechanics of Materials.** Prerequisites: 2113. Basic principles of mechanics, including the definition of stress and strain, transformations and principal values for the stress and strain tensors, kinematic relations, review of conservation equations and the development and application of constitutive laws for idealized materials. Elementary elastostatics utilizing Hooke's law; constitutive relations for a linear-elastic continuum, including elastic parameters such as Young's modulus, shear and bulk moduli and Poisson's ratio. Solution of elementary one- and two-dimensional mechanics problems, including thermal stresses and strains, beam flexure, shear and deflections, pressure vessels and buckling of columns. (F, Sp)

**2223 Fluid Mechanics.** Prerequisites: 2113, Mathematics 3113 or concurrent enrollment. Coverage of the fundamentals of fluid statics and dynamics. Formulation of the equation of fluid flow, i.e., Navier-Stokes equations, Eulers equations, Bernoulli equations, etc. and their application. Examples of ideal fluid flow and viscous fluid flow, such as flow in open and closed conduits. (Sp)

**2281 Engineering Co-Op Program (Crosslisted with AME, CH E, C S, ECE, ENGR, EPHY, G E, I E, P E 2281).** Prerequisite: student participation in the program. The Co-Op program provides student placement in jobs outside the University, but in a position related to the student's major. On completion of a semester work period, the student submits a brief written report. One hour of credit (elective) granted for each work period, with a maximum credit of six hours. (F, Sp, Su)

**2313 Introduction to Mass Balance and Fate Processes.** Prerequisite: Chemistry 1415, Mathematics 2423. Introduction to environmental mass balance and fate processes. Studies of mass and energy transfer, introductory environmental chemistry, water quality parameters, mathematics of growth, statistics and data analysis, introduction to environmental laws and regulations. (F)

**2323 Environmental Transport and Fate Process.** Prerequisite: 2313. Physicochemical and biological processes controlling contaminant distribution and fate; hydrological processes controlling contaminant transport; sources, prevention and remediation of environmental pollutants. (Sp)

**3213 Water Resources Engineering.** Prerequisite: 2223 or permission of instructor. Municipal water demands, surface water hydrology, ground water hydrology, water distribution systems, pump design, wastewater collection systems, storm water management, water law. (F)

**3243 Water and Wastewater Treatment Design.** Prerequisite: 2223 and 2313. Design of municipal water and wastewater treatment plants. Emphasis is placed on the characterization of water and wastewater and physical, chemical and biological treatment methods. Sludge processing advanced treatment methods and treatment plant hydraulics are also considered. (Sp)

**3253 Introduction to Continuum Mechanics.** Prerequisite: 2153 and Mathematics 3113. Mechanics of a deformable continuum, including applications of plane stress, plane strain and an introduction to three-dimensional elastostatics. Thermodynamics of deformable media, including energy formulations suitable for closed-form applications and for computational approximations. Constitutive relations for engineering materials, including nonlinear stress-strain relations and multiphysics problems with coupling of the behavior of solids and fluids within the framework of poromechanics. Considerations for structural mechanics, micromechanics and nanomechanics. (F)

**3334 Measurements in CEES.** Prerequisites: Mathematics 2423, Physics 2424 or Physics 2524. Introduction to measurement (laboratory and field) techniques, data analysis and interpretation and applications to architectural, civil or environmental engineering and environmental science problems. Topics include statistics, land surveying, remote sensing, GIS, environmental sampling and analysis and sensors. **Laboratory** (Sp)

**3364 Soil Mechanics.** Prerequisite: 2153. General treatment of the physical and mechanical properties of soils. Theories of effective stress, consolidation, lateral earth pressure, bearing capacity, slope stability and groundwater flow. **Laboratory** (F)

**3403 Materials.** Prerequisite: 2153. Study of the properties of materials utilized by architectural and civil engineers; analyses of aggregates, concrete, masonry, steel, asphalt, plastics and wood. **Laboratory** (Sp)

**3414 Structural Analysis I.** Prerequisite: 2153. Loads, reactions and force systems; introduction to design codes; analysis of frames and trusses; calculation of structural deformations; and analysis of indeterminate structures. Emphasis on classical solutions and time-tested approaches to structural engineering. Introduction to structural analysis computer programs to solve complex problems. (F)

**3663 Structural Design—Steel I.** Prerequisite: 3403, 3414. Design of steel structural members including tension elements, columns, beams and beam-columns; bolted and welded connection design; composite beam design; introduction to plastic design. **Laboratory** (F)

**3673 Structural Design—Concrete I.** Prerequisite: 3403, 3414. Analysis and design of reinforced concrete beams, columns, slabs, footings, etc., along with discussion of current building practice. **Laboratory** (Sp)

**3884 Transportation Engineering.** Prerequisite: 2153 and 3334. Introduction to transportation planning, design, construction, operations and maintenance emphasizing the highway/street mode. Includes demand modeling, route location and design, pavements including hot mix asphalt volumetrics and stability, drainage, and traffic control devices. **Laboratory** (Sp)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. The topics will cover materials not usually presented in the regular courses. (F, Sp, Su)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. The projects covered will vary. Deals with concepts not usually presented in regular coursework.

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work on a special project in the field. (Sp)

**G4050 Design Projects in Civil and Environmental Engineering.** Prerequisite: permission of instructor. May be repeated; maximum credit eight hours. Students are required to demonstrate the ability to apply background knowledge in engineering science, design and project management by executing a real-world project defined by an industrial client or professional society. Subject matter based on completion of identified semester goal. Projects may include lecture, discussion, laboratory and/or field experiences. (F, Sp)

**4114 Aquatic Chemistry (Slashlisted with 5114).** Prerequisite: Senior standing and one year of general chemistry. Environmental kinetics and thermodynamics in aquatic systems; acid/base, precipitation/solubility, metal complexation and oxidation/reduction reactions; environmental colloidal and solid-liquid interface chemistry. No student may earn credit for both 4114 and 5114 or Environmental Science 4114 and 5114.

#### Laboratory (F)

**G4123 Open Channel Flow.** Prerequisite: 2223. Theory, analysis and design of channels, aqueducts, headworks, siphons, spillways and hydraulic structures. An in-depth study of critical flow and measurement techniques. Backwater analysis by analytical, calculator and computer methods. Special emphasis on practical problems of general interest. (Sp)

**4234 Applied Environmental Microbiology (Slashlisted with 5234).** Prerequisite: 2323 and 3243. Basic environmental microbiology and bioenvironmental engineering. Presentation of the diversity and importance of organisms involved in solid and liquid waste reduction. The course examines basic microbiology, biodegradation mechanisms, bioavailability, biotreatability studies, groundwater remediation (both oxic and anoxic), and bioengineering process technologies. No student may earn credit for both 4234 and 5234. **Laboratory (F)**

**G4263 Hazardous and Solid Waste Management.** Prerequisite: 3213. Sources and types of solid wastes; identification and classification of hazardous wastes; waste handling, transportation, treatment and disposal techniques, federal and state legislation; and environmental and health effects. (F)

**4324 Environmental Biology and Ecology (Slashlisted with 5324).** Prerequisite: 3603, 4863, and Civil Engineering 3334. Examines applied environmental biology; biological consequences of environmental impacts; mitigation of environmental impacts via biogeochemical, ecological and microbial processes. No student may earn credit for both 4324 and 5324.

#### Laboratory (F)

**G4362 Experimental Stress Analysis (Crosslisted with Aerospace and Mechanical Engineering 4362).** Prerequisite: 2153, AME 3112 or equivalent or graduate standing. Determination of stress by means of bonded wire, metal film and semiconductor strain gages, brittle coating and photoelasticity. Design, selection and use of gages for measuring static, dynamic and combined strains. (F, Su)

**4423 CEES Professional Internship.** Prerequisite: Completion of at least 19 hours of Civil Engineering/Environmental Science course work (for Civil Engineering and Electrical Engineering majors); or completion of at least 19 hours of Civil Engineering/Environmental Science and science coursework (for Environmental Science majors); or completion of at least 19 hours of Civil Engineering/Environmental Science and Architecture coursework (for Architecture Engineering majors). Provides 3 hours of professional elective credit for 400 hours of internship. Prior to starting the internship, students should select a Civil Engineering/Environmental Science faculty member as an advisor, write a proposal of planned activities, and secure the approval of the advisor. On completion of the internship, the students should enroll in this course, submit a report, and make an oral presentation for a three-member review committee that includes the faculty advisor. (F, Sp, Su)

**4463 Environmental Evaluation and Management (Slashlisted with 5463).** Prerequisite: senior standing. Broad overview of natural resources management with attention to techniques used in decision making and analysis. Class discussion and readings include a review of measures used to value natural systems (e.g. benefit cost analysis) and the role of private and public institutions in management. No student may earn credit for both 4463 and 5463.

**G4473 Soil Science.** Prerequisite: senior standing, graduate option. Discusses basic physical, chemical, and biological properties of soils. Soil formation, clay mineralogy, organic matter and cation exchange capacity

are included. Current environmental problems of soil pollution are also covered. **Laboratory (F)**

**4603 Environmental Protection (Slashlisted with 5603).** Prerequisite: senior standing or permission of instructor. Mitigation of human health and environmental problems with a focus on differences between developing and developed countries. Topics include baseline health indicators, population growth, toxicology, epidemiology, and risk assessment, water and wastewater, air quality, solid and hazardous waste, and environmental management systems. No student may earn credit for both 4603 and 5603. (F)

#### G4663 Introduction to Matrix Methods in Structural Analysis.

Prerequisite: 3414. Review of matrix algebra and solution of linear equations; energy concepts and principle of virtual work; fundamentals of flexibility and stiffness methods; coordinate transformation and matrix assemblage; computer-oriented direct stiffness method and computer code developments; secondary effects; support settlement and temperature change; method of finite differences and application to beam and plate problems. **Laboratory (F)**

**4753 Structural Design – Wood (Slashlisted with 5753).** Prerequisite: 3414 or equivalent. Material properties and behavior of wood. Analysis and design of solid and laminated structural members, connections, systems, trusses and arches. Current developments in structural wood design and research. No student may earn credit for both 4753 and 5753. (F)

**4803 Civil Engineering Professional Practice.** Prerequisites: 3253, 3364 and 3414. Nature of profession, duties and administrative responsibilities, organization and management of operating divisions with emphasis on role of architectural and civil engineering professional. Functional approach to planning and implementing public works needs with emphasis on role of architectural and civil engineering professional. (F)

#### 4813 Environmental Science and Environmental Engineering

**Professional Practice.** Prerequisite: senior standing in environmental science or environmental engineering, 3603 or Civil Engineering 3213, and Civil Engineering 3334. Nature of profession, duties and administrative responsibilities. Organization and management of operating divisions with emphasis on role of environmental professional. Functional approach to planning and implementing public works needs with emphasis on role of environmental professional. (F)

#### 4863 Environmental Assessment Methodologies (Slashlisted with 5863); Crosslisted with Regional and City Planning 4863).

Prerequisite: senior standing in CEES or permission of instructor. Develop knowledge of various environmental assessment methodologies or "tools", including assessments of socio-economic, physical/chemical and biological impacts at the pre-project, operational and post-project phases on human and non-human components of the environment. No student may earn credit for both 4863 and 5863. (Sp)

**4903 Architectural and Civil Engineering Design.** Prerequisite: 4803 and senior standing. Solution of major design problems by a team approach of disciplines. Problems to be varied within the areas of architectural (structures; building mechanical and electrical systems; and construction management) and civil engineering (structural; geotechnical; and transportation) according to the student's major interest. The design project will be under direct staff supervision. (Sp)

**4913 Environmental Science Capstone.** Prerequisite: Civil Engineering 4803 and senior standing. Solution of major environmental problems by a team approach of disciplines. Problems to be varied within the area of environmental science according to the student's major interest. The Capstone project will be under direct staff supervision. (Sp) [V]

**4923 Environmental Engineering Design.** Prerequisite: Civil Engineering 4803 and senior standing. Solution of major design problems by a team approach of disciplines. Problems to be varied within the area of environmental engineering (water resources; water and wastewater treatment; environmental remediation; hazardous and solid waste design) according to the student's major interest. The design project will be under direct staff supervision. (Sp)

**4980 Environmental Science Senior Research.** Prerequisite: senior standing. Maximum credit 12 hours. Intensive research investigation of a special project under the direction of a faculty member. (F, Sp, Su)

**G5010 Civil Engineering Problems.** Prerequisite: senior or graduate standing and permission of instructor. May be repeated; maximum credit four hours for a master's program or six hours for a doctoral program, including hours taken as part of another graduate program. Independent or small group study under the supervision of one or more faculty members. (F, Sp, Su)

**G5020 Special Topics in Civil Engineering.** 1 to 6 hours. Prerequisite: senior or graduate standing and permission of instructor. May be repeated with change of topic; maximum credit 12 hours. Examines subject matter in civil engineering not covered by existing course offerings as a regular course. (F, Sp, Su)

**G5021 Technical Communications.** Prerequisite: CEES graduate standing or permission of instructor. Focused on enabling students to improve oral and written communications skills. Examines appropriate formats for various technical publications, as well as methods and practices for developing effective oral presentations. Each student will be required to develop an oral presentation about his/her written product. (F)

**G5023 Corporate Environmental Management.** Prerequisite: CEES graduate standing or permission of instructor. This course examines the growing importance of environmental science and technology for business and industry. Student will gain an appreciation of the dimensions of the natural environment in today's business climate with the express goal of providing a sense of what issues are of central policy importance as well as what career opportunities may be available to civil engineering and environmental science students. (F)

**G5032 Radioisotope Techniques (Crosslisted with Botany, Microbiology 5032).** Prerequisite: graduate standing or equivalent, permission; corequisite 5041. Fundamentals of detection and measurement of ionizing radiation with emphasis on radiotracer experimental design and applications; radiation effects and protection. (Sp)

**G5041 Radioisotope Techniques Laboratory (Crosslisted with Botany, Microbiology 5041).** Corequisite: 5032. Laboratory techniques required for the utilization of radioisotopes in experimental work. **Laboratory** (Sp)

**G5114 Aquatic Chemistry (Slashlisted with 4114).** Prerequisite: graduate standing, one year general chemistry. Environmental kinetics and thermodynamics in aquatic systems; acid/base, precipitation/solubility, metal complexation and oxidation/reduction reactions; environmental colloidal and solid-liquid interface chemistry. No student may earn credit for both 4114 and 5114 or Environmental Science 4114 and 5114.

**Laboratory** (F)

**G5234 Applied Environmental Microbiology (slashlisted with 4234).** Prerequisite: 2323, 3243, or permission of instructor. Basic environmental microbiology and bioenvironmental engineering. Presentation of the diversity and importance of organisms involved in solid and liquid waste reduction. The course examines basic microbiology, biodegradation mechanisms, bioavailability, biotreatability studies, groundwater remediation (both oxic and anoxic), and bioengineering process technologies. No student may earn credit for both 4234 and 5234. **Laboratory** (F)

**G5244 Water and Waste Treatment Processes.** Corequisite: 5114. Analysis and design of physical and chemical treatment operations and processes used for environmental quality control. Solids and liquids separation, heat transfer, gas transfer, sludge treatment, advanced water and wastewater processes and operations. (F)

**G5253 Environmental Administration and Law.** Prerequisite: senior or graduate standing or permission of instructor. An introduction to the political, legal, and administrative aspects of environmental management. A study of the processes involved in environmental policy development and promulgation. Overview of major environmental laws and regulations. (F)

**G5273 Wetlands Science and Management.** Prerequisite: senior or graduate standing. A comprehensive field-based examination of wetland science, ecology, and management. Major wetland types and resources are examined and the biogeochemical and ecological diversity of wetland waters, soils, vegetation and fauna is investigated. Biological, physical, chemical, and hydrological aspects of wetland ecosystem structure and function are explored through visits to several field sites. Current issues in wetland valuation, classification, management and identification are considered as well as the evaluation of created, restored and constructed wetlands. **Laboratory** (Su)

**G5283 Environmental Organic Chemistry.** Prerequisite: 4114 or permission of instructor. Solubility, partitioning, and sorption of organic compounds in aqueous systems; linear free energy relationships; natural organic matter chemistry and characterization; environmentally pertinent hydrolysis, oxidation, and reduction reactions; disinfection reactions; and aqueous photochemistry. (Sp)

**G5303 Asphalt Materials and Mix Design.** Prerequisite: 3403 and 3884. May be repeated once with change of content. Asphalt cement, cutbacks, emulsions, testing procedures and grading; aggregate properties, blending; asphalt concrete mix design (Marshall, Hveen and Superpave); MHA

construction; HMA pavement performances; special asphalt mixes; recent developments. **Laboratory** (Sp)

**G5324 Environmental Biology and Ecology (Slashlisted with 4324).** Prerequisite: graduate standing in Environmental Science. Examines applied environmental biology; biological consequences of environmental impacts; mitigation of environmental impacts via biogeochemical, ecological and microbial processes. No student may earn credit for both 4324 and 5324. **Laboratory** (F)

**G5333 Foundation Engineering.** Prerequisite: 3364, 3673. Advanced substructure analysis and design to meet various soil conditions; footings and rafts, shoring and underpinning, piles, cofferdams, caissons, breakwaters, piers, wharves, vibratory effects on foundations. (Sp)

**G5343 Advanced Soil Mechanics.** Prerequisite: 3364, Mathematics 3113. Advanced treatment of theories and principles of shearing strength, stress distribution and settlement analysis. (F)

**G5353 Introduction to Soil Dynamics.** Prerequisite: 3364 or permission of instructor. Review of basic concepts (single- and multi-degree of freedom system, wave propagation, behavior of dynamically loaded soils), liquefaction, vibrations of footings on elastic half space, analog models, dynamics of pile foundations, machine foundations, design of foundations for dynamic loads including earthquake loading. (Irreg.)

**G5363 Ecological Engineering Science.** Prerequisite: Senior or graduate standing. Defined as the design of sustainable ecosystems that integrate human society with its natural environment for the benefit of both. It is distinct from both environmental engineer and ecology and uses a systems perspective based on the premise that sustainable solutions require working with natural ecological and biogeochemical process and not against them. Ecologically engineered systems are designed to require less fossil fuel input, produce less pollution and represent cost-effective alternatives to traditional energy-and resource-intensive technologies. (Sp)

**G5373 Transportation Systems Analysis (Crosslisted with Regional and City Planning 5373).** Prerequisite: graduate standing or permission.

Financial and economic aspects of transportation planning, with emphasis on highway and public mass transportation systems. Federal, state and local financing and administration; practical analysis techniques; and related issues such as government policy and transit productivity. (F)

**G5404 Soil Stabilization.** Prerequisite: 3403, 3364. Principles and methods of soil stabilization; soil-aggregate, soil-chemical stabilization; grouting; design and laboratory testing of stabilized soils. **Laboratory** (Irreg.)

**G5413 Soil-Structure Interaction.** Prerequisite: 3364 or permission of instructor. Introduction-definition, methods of solution; beams on deformable foundations; analysis and design of axially loaded structures—single pile, pile groups, retaining walls; plates on deformable foundations; role of interfaces and joints; wave equation for pile behavior. (Irreg.)

**G5423 Environmental Geotechnology.** Prerequisite: 3243 and 3364, or permission of instructor. Covers geotechnical issues in environmental problems and solutions. Site characterization; laboratory and in-situ testing for environmental applications; soil mineralogy and fabric; design and construction of contaminant barriers and landfill liners. (Sp)

**G5433 In-Situ Soil Testing.** Prerequisite: 3364. This is a "hands-on" course that focuses on conducting and interpreting laboratory and in-situ tests for geotechnical engineering. Topics can include but are not limited to drilling, sampling, soil characterization, triaxial shear testing, one-dimensional compression, flexible wall permeability testing, pressuremeter, cone penetrometer, borehole shear, and pile load testing. **Laboratory** (Sp)

**G5453 Public Mass Transportation Systems (Crosslisted with Regional and City Planning 5453).** Prerequisite: 3884 or permission of instructor. Service characteristics of the principal modes of public mass transportation with emphasis on urban transit (fixed-route bus, light rail, subways, commuter rail, paratransit, taxi); legislation and regulations; institutional structures; financing; need and demand studies; planning strategies; management; operations and record keeping; case studies of leading systems. (Irreg.)

**G5463 Environmental Evaluation and Management (Slashlisted with 4463).** Prerequisite: graduate standing. Broad overview of natural resources management with attention to techniques used in decision making and analysis. Class discussion and readings include a review of measures used to value natural systems (e.g. benefit cost analysis) and the role of private and public institutions in management. No student may earn credit for both 4463 and 5463.

**G5483 Urban and Regional Transportation Planning (Crosslisted with Regional and City Planning 5483).** Prerequisite: graduate standing or permission. Characteristics of urban and regional passenger and freight demand; travel demand forecasting methodologies; long- and short-range planning strategies; role of governments; characteristics of major modes of transport; decision-making strategies; case studies. (Sp)

**G5493 Transportation and Land Development (Crosslisted with Regional and City Planning 5493).** Prerequisite: graduate standing or permission. Study of interactions between land development activity and the transportation network. Application of planning and design techniques to manage the impacts of development upon the transportation system.

**G5600 Environmental Quality Management Field Training.** 1 to 4 hours. Prerequisite: graduate standing or permission of instructor. A practical problem in environmental quality control is chosen and the class participates in its solution. **Laboratory** (Su)

**G5603 Environmental Protection (Slashlisted with 4603; Crosslisted with Regional and City Planning 5603).** Prerequisite: instructor permission. Mitigation of human health and environmental problems with a focus on differences between developing and developed countries. Topics include baseline health indicators, population growth, toxicology, epidemiology, and risk assessment, water and wastewater, air quality, solid and hazardous waste, and environmental management systems. No student may earn credit for both 4603 and 5603. (F)

**G5624 Biological Waste Treatment.** Treatment of waste using biological processes; emphasis on treatment kinetics, municipal wastewater treatment processes, and design of municipal wastewater unit processes; application of biological treatment concepts to other wastes including industrial wastes, groundwater, and solid or hazardous wastes. **Laboratory** (F)

**G5633 Urban Environmental Systems (Crosslisted with Regional and City Planning 5633).** Prerequisite: Senior standing in Civil Engineering or Environmental Science or permission; for professional elective, graduate standing. Designed to bring together all of the physical elements of the urban systems treated separately in civil engineering and environmental science such as water, sewage, watersheds, etc., into an organized system. The model and parameter of the elements are first described and then followed by the whole system, its goals, alternatives, components, arrangements, model of effectiveness and methods of forecasting. (Irreg.)

**G5653 Advanced Mechanics of Materials.** Prerequisite: Engineering 2153 and senior or graduate standing. Principal stresses and strains; theories of failure; introduction to elasticity; unsymmetrical bending and shear; torsion of noncircular solid cross sections, cellular sections and open sections; introduction to plate bending and buckling. (F)

**G5673 Colloid and Surface Science.** Prerequisite: graduate standing or permission of instructor. Capillarity, surface thermodynamics, adsorption from vapor and liquid phases, contact angles, micelle formation, solubilization, emulsions and foams. Applications to be discussed include detergency, enhanced oil recovery and adsorption for pollution control. (Irreg.)

**G5683 Dynamics of Structures.** Prerequisite: 3253, 3414. Free vibration, forced vibration and transient response of structures having one, multiple or infinite number of degrees-of-freedom; structural damping effects; numerical solution techniques; LaGrange's equation of motion, Rayleigh-Ritz method. General matrix formulation for multiple degrees-of-freedom, modal coordinate transformation. Introduction to earthquake engineering concepts. (F)

**G5693 Structural Design of Pavements.** Prerequisite: 3364, 3884. Effect of load and climate on the design of rigid and flexible pavements and interaction of pavement components. (Irreg.)

**G5743 Design of Concrete Mixtures and Materials.** Prerequisite: 3673. Examine material properties of plain concrete in the fresh and hardened states. The following topics will be covered: chemistry of cement and pozzolans; properties of constituent materials; proportioning of concrete mixtures; the proper use and effects of chemical and mineral admixtures; measurement of concrete properties; and construction practices and handling of fresh concrete. **Laboratory** (Irreg.)

**G5753 Structural Design—Wood (slashlisted with 4753).** Prerequisite: 3414 or equivalent. Material properties and behavior of wood. Analysis and design of solid and laminated structural members, connections, systems, trusses and arches. Current developments in structural wood design and research. No student may earn credit for both 4753 and 5753. (Irreg.)

**G5763 Introduction to Finite Element Method (Crosslisted with Aerospace and Mechanical Engineering 5763).** Prerequisite: 5663. Weighted residual and variational approaches. Finite element formulation

for rod, truss and beam elements; plane stress and plane strain problem; axi-symmetric and three-dimensional analysis; isoparametric elements; conforming and nonconforming plate and shell elements. **Laboratory** (Sp)

**G5773 Structural Design—Steel II.** Prerequisite: 3664. Advanced structural steel design including steel deck diaphragms, column and beam bracing, composite beam design, rigid frame design, torsional member design, plate girder design, and design of building connections. (Sp)

**G5783 Structural Design—Concrete II.** Prerequisite: 4673. Advanced reinforced concrete behavior and design including limit design, anchorage slender columns, truss models for shear and torsion on beams, two-way and flat slabs, and the art of detailing. (Sp)

**G5793 Design of Prestressed Concrete Structures.** Prerequisite: 3673. Design procedures for pretensioned and post-tensioned concrete structures, with emphasis on the behavior of prestressed concrete. Topics include methods of analysis, time dependent effects, fabrication and construction procedures, connections, highway bridges, frames, composite construction, continuous structures, and anchorage zone detailing. (Irreg.)

**G5823 GIS Applications in Environmental Modeling.** Prerequisite: Math 3113 or equivalent. Consideration of the many spatially distributed parameters affecting such processes as transport and fate of contaminants, hydrologic processes, and many other environmental phenomena. Geographic Information Systems are increasingly used as an indispensable tool for analysis, management, and modeling. (Sp)

**G5833 Ground Water Quality Protection.** Prerequisite: graduate standing or permission. Introduction to ground water quality protection. Covers sources of ground water, ground water hydrology, ground water information sources, ground water pollution sources, subsurface transport and fate processes and monitoring of ground water systems. (F)

**G5843 Hydrology.** Prerequisite: graduate standing in civil engineering, environmental science or geology, or permission. An applied course on hydrology dealing with environmental water problems; principles of hydrologic systems, their structure and components; methods of analysis and their application to various purposes of water resources planning and development. (Sp)

**G5853 Groundwater and Seepage (Crosslisted with Geology 5853).** Prerequisite: graduate standing in civil engineering, environmental science or geology or permission. An applied course dealing with properties of aquifers, modeling of groundwater flow, groundwater hydrology and its interrelation with surface water, well hydraulics, pumping tests and safe yield of aquifers. (F)

**G5863 Environmental Assessment Methodologies (Slashlisted with 4863; Crosslisted with Regional and City Planning 5863).** Prerequisite: graduate standing or permission of instructor. Develop knowledge of various environmental assessment methodologies or "tools", including assessments of socio-economic, physical/chemical and biological impacts at the pre-project, operational and post-project phases on human and non-human components of the environment. No student may earn credit for both 4863 and 5863. (Sp)

**G5873 Water Quality Management.** Prerequisite: senior or graduate standing. Water quality in lakes, rivers, estuaries; chemical, physical and biological aspects of marine and fresh waters; waste assimilation; system modeling; water quality management; waste load allocation, and engineer controls. (Sp)

**G5883 Environmental Modeling.** Prerequisite: Aerospace and Mechanical Engineering 5573 or permission of instructor. Introduction to theoretical and practical issues of computer-based environmental modeling. Covers problem formulation, implementation, and application. Topical areas include conceptualizing problems, conservation laws, partial differential equations, numerical methods, and applications ranging from coastal hydrodynamics to contaminant transport. Emphasis on understanding the model process rather than using "canned" models. (F)

**G5913 Risk Assessment and Management.** Prerequisite: senior or graduate standing or permission of instructor. Basic concepts of risk assessment and management process including hazard (risk) identification, dose-response and exposure assessment, risk characterization and evaluation, and risk management. Case studies and applications of concepts, with the orientation toward environmental issues and risk-cost-benefit analyses.

**G5923 Air Pollution Control Engineering.** Prerequisite: senior or graduate standing. Basic aspects of air pollution; legislation, sources and effects; monitor and atmospheric dispersion. Particulate emissions; control of particulates by settling chambers, cyclones, scrubbers, filters, electrostatic

precipitators; gaseous emissions; control of gases by absorption; absorption (scrubbers) and combustion. (F)

**G5943 Air Quality Management.** Prerequisite: graduate standing or permission of instructor. This course is responsive to the Clean Air Act Amendment of 1990. Included are topics related to air quality strategies for non-attainment areas, motor vehicles, hazardous air pollutants, acid deposition control, and stratospheric ozone protection. Information on permit programs is also covered. (Sp)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp, Su)

**G6210 Environmental Science Special Topics.** 1 to 6 hours. Prerequisite: graduate standing. May be repeated with change of topic; maximum credit four hours for master's candidate, six hours for a doctoral candidate. Research-oriented problems dealing with current topics of special interest in environmental science. (F, Sp, Su)

**G6663 Advanced Finite Element Methods (Crosslisted with Aerospace and Mechanical Engineering 6663).** Prerequisite: 5763. Selected topics such as: nonlinear material problems, plasticity, creep (visco-plasticity), fracture, etc.; geometrically nonlinear problems, large displacement and structural stability; dynamic problems and analytical solution procedures; soil-structure interactions; application of finite element method to fluid and heat transfer problem. (Irreg.)

**G6743 Earthquake Engineering.** Prerequisite: 5673. Causes and characteristics of earthquakes; source mechanisms and source parameters; types and effects of various seismic waves; seismic risk and seismicity in a region; attenuation relationship; structural response to earthquakes, aseismic design of structures and seismic codes; case studies and special topics in earthquake engineering. (Irreg.)

**G6980 Research for Doctoral Dissertation.** (F, Sp, Su)

## Classical Culture (CL C)

**These courses, conducted in English, require no knowledge of Greek or Latin; they may not be used to satisfy requirements in foreign languages.**

**2383 Classical Mythology.** Prerequisite: sophomore standing. Lectures, with assigned readings. The origin and development of Greek and Roman myths indispensable for the understanding of ancient and modern literature; with allusion to their influence on art and religion. (F, Sp, Su) [IV-WC]

**2412 Medical Vocabulary.** Prerequisite: sophomore standing. Designed to be of special use to students of the biological sciences. Study of basic Greek and Latin elements of medical terminology through the analysis of select vocabularies and word lists. (F, Sp, Su)

**2603 Survey of Ancient Greek Culture.** Traces the development of the democratic ideal in Greece through the Classical period. Aspects of culture such as literature, religion, art and architecture, education, science and technology, intellectual life and the role of women are emphasized. (F) [IV-WC]

**2613 Survey of Roman Civilization.** Examines the development and dissemination of Roman civilization in ancient times and its influence on the modern world. Aspects of Roman culture such as literature, law, religion, art and architecture, education, intellectual life, popular entertainment, and the role of women are emphasized. (Sp)

**3013 Cinematic Representations of the Ancient World.** Prerequisite: Junior standing or permission of the instructor. Study of the way that the ancient Greeks and Romans are depicted in cinema. Cinematic representations will be studied in conjunction with the ancient sources upon which they are based and in the light of modern research. (Sp)

**3033 Latin Literature in English Translation.** Prerequisite: sophomore standing. May be repeated; maximum credit six hours. Readings in a selected genre (e.g., epic, drama, satire, lyric), with lectures on the history and development of Latin literature. The Greek background to Latin literature and the Romans' influence on later works. [IV-WC]

**3043 Freedom in Rome.** Covers the ideas and institutions of liberty in Rome. Focus is on the balanced constitution of the Roman republic individual and the emergence of new forms and conceptions of liberty. These ideas are taken from within the framework of the intellectual, social and political currents of the Roman Empire. (Sp) [IV-WC]

**3113 Greek Epic Poetry in English Translation.** Prerequisite: junior standing. Lectures with reading and discussion. The early Greek epic poetry of Homer and Hesiod in its literary and historical context. The Greek epic tradition in later Latin and European literature. (F) [IV-WC]

**3123 Greek Tragedy in English Translation.** Prerequisite: junior standing. Lectures on the development of the Greek theater and tragedy. Lectures with readings and discussion from the works of Aeschylus, Sophocles and Euripides and from Aristotle's *Poetics*. The influence of Greek tragedy in later Latin and European literature. (Sp) [IV-WC]

**3133 Plato and the Platonic Tradition.** A study of the major ideas in the central works of Plato and of their influence on the Neoplatonists. (Sp) [IV-WC]

**3153 Vice and Virtue in Ancient Rome.** Prerequisite: sophomore standing. The transformation of the character of ancient Romans from the early Republican period through the Empire. Focus on changes in their value system brought about through the acquisition of an empire, intrusion of Greek ideas, results of specific historical events, and actions of specific individuals.

**3163 Virgil and Dante.** Prerequisite: sophomore standing. This course focuses on Virgil's influence on Dante. Virgil celebrates, in both *The Georgics* and *The Aeneid*, the outcome of the struggle against external furor and passion and those elements within the individual. Dante, with Virgil as his spiritual guide in *The Inferno*, presents a series of spiritual exercises. (F) [IV-WC]

**3173 Freedom in Greece.** The ideas and institutions of liberty in Greece. Focus is on the Athenian democracy and the relationship between democracy and the art and literature of Athens. (F) [IV-WC]

**3213 Classical Art and Archaeology: Greek Art to the Death of Alexander (Crosslisted with Art History 3213).** Prerequisite: sophomore standing. Lectures, occasionally illustrated, and assigned readings. Survey of the architecture, sculpture, painting and minor arts in the Greek regions of the eastern Mediterranean in the successive stages of their development; with analyses of dominant styles and detailed study of select masterpieces and monuments. (F) [IV-AF]

**3223 Classical Art and Archaeology: Hellenistic Greek Art; Roman Art (Crosslisted with Art History 3223).** Prerequisite: sophomore standing. Continuation of 3213. Survey of Hellenistic art with particular attention to the individuality of style and diversity of matter. Early Etruscan and Roman art. The development of Roman art in native and assimilated forms; studies in domestic and national monuments. (Sp) [IV-AF]

**3233 The Roman Forum and Its Monuments.** Focus on the excavation of the Roman Forum, the central part of ancient Rome. Concentrated study on archaeological methodology, specific excavations, topography of Rome and the cultural significance of Roman urban development on the ancient world. (Sp)

**3243 The Ancient City: Urban Development in the Mediterranean World.** Prerequisite: permission of instructor. This course deals with the development of urban centers in the ancient Mediterranean world, principally Greek and Roman, from their origins to their highest level of architectural, administrative and cultural expressions. Attention is given to urban planning, city administration, maintenance of public facilities, protection and entertainment of the populace. (Su)

**3253 Practicum in Mediterranean Archaeology.** Prerequisite: Permission of Instructor. Introduces students to the methodology of Mediterranean archaeology through participation in excavating an ancient site. (Su)

**3303 Comparative Mythology.** Focus on Greek, Scandinavian and Celtic mythology. Show similarities between the myths of different cultures and how myths can be culture-specific. [IV-WC]

**3313 Religions of Rome.** Prerequisite: Junior standing. This course surveys the religions that flourished in ancient Rome, from its beginning to the establishment of Christianity. Particular attention will be given to syncretism and the key role that it played in the evolution of religious life at Rome. (F)

**3510 Selected Topics in Classical Culture.** 2 to 3 hours. May be repeated; maximum credit nine hours. A study of selected topics in the civilizations and cultures of the Romans, Greeks and Hebrews. (F, Sp, Su)

**3613 Classical Influence on Modern Literature.** Identifies the continuing importance of the classical tradition in modern literature. [IV-WC]

**3623 Celtic Myth and Irish Literature.** Prerequisite: junior standing. Examines how early Celtic myths and legends are used and reinterpreted by 19<sup>th</sup> and 20<sup>th</sup>-century Irish writers as part of the formation of an Irish cultural identity. (Sp) [IV-WC]

**3713 Women in Ancient Greece.** Prerequisite: junior standing. Survey of the roles of women in ancient Greece from the Bronze Age through the Hellenistic Period. Primary and secondary sources are utilized to provide students with both a literary and historical perspective of women in this time frame. (Irreg.) [IV-WC]

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. The topics will cover materials not usually presented in the regular courses. (F, Sp, Su)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. The projects covered will vary. The content will deal with concepts not usually presented in regular coursework. (F, Sp)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Will provide an opportunity for the gifted honors candidate to work at a special project in the student's field. (F, Sp, Su)

**4503 Classical Culture Capstone Course.** Prerequisite: senior standing in major. Students work on an individual basis in conjunction with a member of the Classics faculty and the student will write a senior paper on a topic to be chosen in consultation with the faculty member which will demonstrate a comprehensive understanding of one of the major areas of Greco-Roman civilization. [V]

**4990 Independent Study.** 1 to 3 hours. Prerequisite: three courses in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**G5990 Special Studies.** 1 to 3 hours. Prerequisite: graduate standing. May be repeated; maximum credit six hours. Reading and research, arranged and directed in consultation with the instructor, in specified areas of classical civilization and culture. (F, Sp, Su)

## College of Arts and Sciences (CAS)

**3033 Managing the Nonprofit Organization.** Prerequisite: junior standing or permission. A comprehensive overview of the nonprofit sector, its characteristics, and how to manage a nonprofit organization on a business model. Includes interaction with leading nonprofit and for-profit practitioners, as well as hands-on experience working with nonprofit organizations. (F, Sp)

**3901 Arts and Sciences Co-Op Program.** Prerequisite: concurrent participation in A&S Co-Op Program. Program allows students to work outside the university in a job related to the major. Enrollment in this course will be during a term in which a student is working full-time, with the cooperation of the employer, with the intent of returning to OU to continue with the degree requirements. Upon completion of the term's work, the student will write a paper describing their work experience and the relevance to their major. (F, Sp, Su)

**4033 Managing the Nonprofit Organization II.** Prerequisite: Junior standing or permission of instructor. A continuation of nonprofit organization management, with emphasis on board members, volunteers, paid staff, accountability, interactions, risk management, finances, and trending. (Sp)

**4091 Career Planning for Arts and Sciences Students.** Prerequisite: junior standing in College of Arts and Sciences. Assist students in the College of Arts and Sciences to determine personal career goals, explore career opportunities beyond graduation, develop a strategy for the job search process, and improve job search techniques as life-long resource tools. (F, Sp)

**4630 CAS Internship.** Prerequisite: must have completed at least 30 hours; permission of instructor. May be repeated; maximum credit three hours. Provides hands-on experience for students in chosen field of study. (F, Sp, Su)

**G5960 Directed Readings.** 1 to 3 hours. Prerequisite: graduate standing and permission of department. May be repeated; maximum credit twelve hours. Directed readings and/or literature reviews under the direction of a faculty member. (F, Sp, Su)

## Communication (COMM)

**1113 Principles of Communication.** Introductory study of human communication emphasizing both theoretic understanding of the process as well as skillful application of communication principles and techniques within a variety of settings. (F, Sp, Su) [I-O]

**2003 Communication in Non-Western Culture.** Designed to broaden students' perspectives on human communication beyond the boundaries of Western cultural traditions. Patterns of perception, language, verbal behavior, nonverbal behavior, and interpersonal orientation in Asian, Middle Eastern, African and Latin American traditions are studied. (F, Sp) [IV-NW]

**2111 Practicum in Forensics.** May be repeated; maximum credit four hours. Develop performance materials (speeches, interpretive cuttings, debate briefs) for use in speech/debate contests. Practice sessions with critiques of performances are given. (F, Sp)

**2113 Business and Professional Communication.** Seeks to enhance the student's awareness and appreciation of communication processes in business and professional settings. An emphasis is placed on improving skills in interpersonal relations, professional oral presentations, interviews, and group processes. Career opportunities in business and professional contexts are discussed. (F, Sp)

**2213 Interpersonal Communication.** Introduces the student to the complex interaction of social and psychological forces operating in human communication. Theories will be considered, but in the context of real communication situations in industry, education, medical and legal practice, etc., as well as in empirical research. The most recent laboratory and field research results will be discussed. (F, Sp)

**2313 Native American Intercultural Communication.** An introduction to the study of cross-cultural communication as it pertains to Native Americans. Includes a survey of Native American culture, communication concepts, intercultural communication problems and approaches to their resolution. (F, Su)

**2513 Introduction to Statistics.** Prerequisite: Mathematics 0123 at OU or satisfactory score on the math placement test. This course introduces statistics with the purpose of providing tools which aid in conducting scientific research. Topics include: measurement, central tendency, variability, normal distribution, probability, correlation, sampling distributions. (F, Sp) [I-M]

**2613 Public Speaking.** Develops skill in the composition and delivery of speeches suitable to various common speech situations and criteria for judging speeches heard or read. Topics include: nature of public speaking; choosing and presenting a topic; analyzing an audience; organizing and outlining. (F, Sp, Su) [I-O]

**2713 Communication in Society—Core I.** Prerequisite: 1113. Examines the formats, roles, strategies and constraints of human communication in varied social contexts. (F, Sp, Su)

**3003 Political Campaign Processes.** Prerequisite: Grade of C or better in 2713, 3023 and 3113. Teaches students to apply communication skills including public speaking, debating, mass media news and advertising to political campaigns. (F, Sp)

**3023 Communication Research Methods.** Prerequisite: 1113, 2513 or equivalent (Psychology 2003, Economics 2843, Sociology 3123), 2613 and 2713 with a grade of C or better. Studies the goals, objects and methods of communication research. Emphasis on the student's role as a critical consumer of research; exploration of vocational/professional applications of communication study. (F, Sp)

**3113 Communication Research Procedures.** Prerequisite: 1113, 2513 or equivalent (Psychology 2003, Economics 2843, Sociology 3123), 2613 and 2713 with a grade of C or better. Introduction to empirical research design and statistical analysis specifically applied to communication questions. Basic skill building in areas of statistical probability, descriptive statistics, sampling procedures, group comparisons, population estimates and confidence levels. (F, Sp)

**3223 Small Group Communication.** Prerequisite: 1113 and 2713 or junior standing with permission of instructor. Examination of communication principles in the small group setting. Includes consideration of task and interpersonal dimensions, cohesiveness, conformity and approaches to leadership. (F, Sp)

**3243 Communication and Social Change.** Prerequisite: Grade of C or better in 2713, 3023 and 3113. Critical analysis and evaluation of persuasive strategies employed in historical and contemporary social movements, especially situations involving agitation and counter-agitation. (F, Sp)

**3253 Persuasion Principles.** Prerequisite: Grade of C or better in 2713, 3023 and 3113. Study of the humanistic and social scientific approaches to attitude change through discourse. Rhetorical and psychological theories are examined. (F, Sp)

**3263 Organizational Communication.** Prerequisite: Grade of C or better in 2713, 3023 and 3113. Focus on the communication patterns and strategies of private and governmental organizations, including most recent research on problems in management, motivation and communication systems. (F, Sp)

**3283 Communication and Emotion.** Prerequisite: 1113 and 2713. Communication and emotion is an advanced course designed to examine the interrelationships between human communication and affective, emotional, and cognitive processes. Emphasis is on theory and research regarding the function of affect and emotion as they impact thinking, feeling, mood, memory, and expression in communication and social interaction. (F, Sp, Su)

**3413 Interethnic Communication.** Prerequisite: 1113 and 2713; or junior standing with permission of instructor. Examines the nature of communication between individuals of differing ethnic/racial backgrounds. Identifies behaviors that impede or facilitate the development of positive interethnic relationships. Explores various societal, situational, and psychological forces that influence the communication process. (Irreg.)

**3473 Creative Problem Solving.** Prerequisite: 1113 and 2713 or junior standing with permission of instructor. Explores the nature of creativity, creative thinking and creative problem solving. Emphasis will be placed on small group communication problem-solving processes and techniques. (Irreg.)

**3483 Communication and Argumentation.** Prerequisite: Grade of C or better in 2713, 3023 and 3113. Seeks to acquaint the student with ways of constructing valid arguments, with application to such communication contexts as policy making, legal decision-making, organizational decision-making and personal inquiry. Fundamentals of argumentation are explored, along with methods of argument construction and numerous contextual applications. (F, Sp) [I-O]

**3513 Intercultural Communication.** Grade of C or better in 2713, 3023, and 3113 or junior standing with permission of instructor. Introduction to intercultural communication theory, research and selected applications. Topics include conceptualizing intercultural communication theoretically, trends in research, diffusion of innovation, nationality barriers and training for foreign assignments. (F, Sp) [IV-WC]

**3523 Advanced Interpersonal Communication.** Prerequisite: 2213, grade of C or better in 2713, 3023, and 3113. Introduces and discusses various theoretical approaches (social exchange, pragmatism, social cognition, etc.) toward understanding human interaction. In addition, the following topics are covered: relationship development and termination, life-span communication, the family, friendship relationships, therapeutic relationships, and interpersonal relationships in various organizational settings. (Irreg.)

**3633 Health Communication.** Prerequisite: Grade of C or better in 2713, 3023, and 3113. Communication studies within health and medical care communities. Study of communication between health care provider and patient within health care organizations. Health care policies and health care media campaigns. Look at multiple levels of communication within each area: Interpersonal, intrapersonal, small group, organizational, intercultural and mass media. (Irreg.)

**3643 Media and Society.** Prerequisite: 1113 and 2713. Examines the role of the mass media in social life. Topics include the impact of technology, economics, law, work routines, and culture on media content, and the relationship between the messages created and the audiences that receive them. Competing theories about information dissemination and reception are considered. Emphasis on providing students a framework for thinking critically about mass media content. (F, Sp, Su)

**3810 Variable Topics in Communication.** 1 to 6 hours. Prerequisite: 1113 and 2713 or junior standing with permission of instructor. May be repeated with change of subject matter; maximum credit six hours. (F, Sp)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: 1113, 2713 or junior standing with permission of instructor, and admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. The topics will cover materials not usually presented in the regular courses. (Irreg.)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: 1113, 2713 or junior standing with permission of instructor, and admission to Honors Program. May be repeated; maximum credit six hours. The projects will vary. The content will deal with concepts not usually presented in regular coursework. (Irreg.)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: 1113, 2713 or junior standing with permission of instructor, and admission to Honors Program. May be repeated; maximum credit six hours. Will provide an opportunity

for the gifted honors candidate to work at a special project in the student's field. (Irreg.)

**4010 Communication Internship.** 1 to 6 hours. Maximum credit six hours. Prerequisite: junior, senior or graduate student major who has completed two-thirds of the communication courses required for graduation, plus permission. Undergraduate applicants must have minimum overall GPA of 2.50 or higher and a minimum GPA of 2.75 in communication courses. Graduate applicants must have minimum overall GPA of 3.25 and minimum GPA for communication courses of at least 3.50. A planned work experience related to personal career and academic goals, integrated into the student's academic schedule. It includes working in an assigned workplace several hours a week in addition to completing academic assignments and meeting regularly with organizational and academic supervisors. (F, Sp, Su)

**4153 Nonverbal Communication.** Prerequisite: 1113 and 2713 or junior standing with permission of instructor. Seeks to expose students to recent research on nonverbal behavior, emphasizing those properties of communication which characterize social and cultural group memberships. (Irreg.)

#### **4233 Free Speech: Responsible Communication Under Law.**

Prerequisite: 1113 and 2713 or junior standing with permission of instructor. A study of the interaction between communication and the law. A consideration of the role of law as both deterrent and protector of the communicator's efforts. Attempts to provide a better understanding of the pervasiveness of regulation of communication. (F, Sp)

**4253 Strategic Communication Campaigns.** Prerequisite: 1113, 2713, 3253. The focus of this course is on the use of influence in modern campaigns. The course attempts to apply theories and strategies of persuasion to applied campaign settings. The broad objectives of the course includes fostering a student's ability to understand and to use the theories, strategies, and methods involved in persuasive campaigns in a generic sense and in terms of specific contexts (e.g. health campaigns, political campaigns, marketing, etc.). (F, Sp, Su)

**4323 Political Communication (Crosslisted with Political Science 4323).** Prerequisite: Grade of C or better in 2713, 3023, and 3113. Considers the role of communication in political settings. Major topics include political persuasion, public speaking in political campaigns, political debating, political advertising, bias in news coverage of campaigns. (F, Sp)

**4423 Communication and Public Opinion.** Prerequisite: 1113 and 27113. This course examines the concept and measurement of public opinion. The purpose of the course is to provide students with the critical and analytical tools for evaluating the role of public opinion in modern times. Students will learn how public opinion is measured and learn how to interpret polling data. Other topics will include: Psychological and social psychological aspects of public opinion, impacts of mass media and interpersonal communication on public opinion, public opinion as group behavior, and the role of public opinion in democratic societies. (F, Sp, Su)

**4513 International Communication.** Prerequisite: 1113, 2713 and 3513 or junior standing with permission of instructor. Studies communication as an essential component of international organizations and relations. Surveys major topic areas and emphasizes communication and international decision-making, media systems and national philosophies, and third-world issues and policy development. (F)

**4643 Mass Media Effect.** Prerequisite: 1113 and 2713 or junior standing with permission of instructor. Examines theories and research findings that inform conclusions about the effects of mass communication. Focuses on media use patterns, social effects (violence, pornography, and stereotyping) use and effects on children, public opinion, political effects (election campaigns), economic effects (advertising), cultural effects, new communication technologies, and long-term effects. The course also seeks to enhance the skills of critical reading, logical thinking, and use of evidence about the effects of mass communication. (F, Sp, Su)

**4713 Issues in Communication Study.** Prerequisite: 2713 (with a grade of C or better), 3023 (with a grade of C or better), 3113 (with a grade of C or better), and four courses chosen from the following list: 3003, 3243, 3253, 3263, 3483, 3513, 3523, 3633, 4323. Must have earned senior standing (90 hours or more) prior to the semester of enrollment. Provides the opportunity to integrate knowledge about communication and apply it to a project culminating in a speech and senior paper. The project will develop a selected problem, issue, or controversy in communication. (F, Sp) [V]

**4810 Special Topics in Communication.** 1 to 4 hours. Prerequisite: permission of instructor and junior standing. May be repeated with change

of content; maximum credit nine hours. Topics vary and are intended to acquaint the advanced communication major with specialized study involving communication theory, methodology, and research. (F, Sp, Su)

**4990 Independent Study.** 1 to 3 hours. Prerequisite: 1113 and 2713 and three courses in general area to be studied or junior standing with permission of instructor. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**G5003 Quantitative Research Methods.** Prerequisite: Successful score on a proficiency test in statistics administered during new graduate student orientation (deficiency remedied via completion of COMM 3113 or equivalent during the first semester of graduate work at OU). Introduction to social-behavioral science processes of inquiry about human communication phenomena. Examines the relationship of theory and method, looks at various research paradigms and designs, and provides an introduction to descriptive and inferential statistics. (Sp)

**G5013 Introduction to Graduate Study.** Prerequisite: graduate standing or permission. Traces the development of research and professions in communication, providing an integrative conception of the discipline and an introduction to research and theory formulation. Students are exposed to those skills critical to success in graduate training in communication. (F)

**G5033 Advanced Statistics.** Prerequisite: permission of instructor. Advanced statistics covering topics which include: anova, ancova, manova, multiple regression, path analysis, and confirmatory and exploratory factor analysis. (F)

**G5043 Organizational Research Practicum.** Prerequisite: graduate student major who has completed two-thirds of the communication courses required for graduation, plus permission. Applicants must have an overall grade point average of 3.25 or higher. Provides practical research experience in an organization. Student adviser and organization's sponsor must agree through a written contract about the goals, plan, and activities associated with the research project. (Irreg.)

**G5113 Nonverbal Communication: Theory and Research.** Prerequisite: graduate standing; 5003 or permission. Studies social-psychological and linguistic-ethological approaches to nonverbal communication research and theory building. (Irreg.)

**G5213 Interpersonal Communication.** Prerequisite: graduate standing or permission. Studies the research and theories in interpersonal communication with emphasis on dyads and small groups, public address, message analysis and nonverbal communication. (Irreg.)

**G5223 Historical Development of Communication Theory.** Prerequisite: graduate standing or permission. Presents the evolution of communication theory from ancient rhetorical traditions of Aristotle and Plato to World War II. Emphasis is given to both the constant and the changing elements of communication theory from the ancient to the modern era. (Sp)

**G5233 Communication and Social Change.** Prerequisite: graduate standing or permission. Studies alternative theories of social change, both historical and modern, with emphasis on the role played by communication at the interpersonal, group and social levels. (F)

**G5243 Language Perspectives of Communication.** Prerequisite: graduate standing or permission. Investigates the role of language behavior research, epistemological foundations, linguistics, speech act theory, sociolinguistics, psycholinguistics and ethnomethodology. (Irreg.)

**G5253 Cross-Cultural Communication: Theory and Research.** Prerequisite: graduate standing or permission. Study of theory of cross-cultural communication with special attention to language, stereotyping, perception, role, power and nonverbal communication as such variables operate in cross-cultural situations. (Irreg.)

**G5263 Health Communication.** Prerequisite: graduate standing or permission. A broad overview of theoretical and applied approaches to health communication. Students are exposed to a variety of health communication topics including doctor-patient communication, health information campaigns, mass media influences on health, role of culture in health and disease, health care organizations, and group influences on well-being. (F)

**G5313 Qualitative Research Methods (Crosslisted with Sociology 5313).** Prerequisite: graduate standing. Survey of different qualitative methodological strategies used in the social sciences to collect, code, and analyze information. (Sp)

**G5333 Organizational Communication.** Prerequisite: graduate standing. Focuses on the communication environment of organizations, both internal

and external, emphasizing implications of organizational designs for communication, communication principles to motivate employees, and the role of communication for productivity and the quality of life. (Irreg.)

**G5343 Mass Communication Perspectives.** Prerequisite: graduate standing. Analyzes the development of modern mass communication theory, discusses the effects of the media on individuals and society, and surveys new approaches to research and theory development in the mass communication area. (Irreg.)

**G5353 Conflict Management.** Prerequisite: graduate standing. Examines theory and research about conflict management in various communication contexts. Takes a social scientific approach to conflict management with emphasis on cognitive processes, affective systems, interaction sequences and strategies and tactics related to how people negotiate the meaning and management/resolution of conflict. (Irreg.)

**G5363 Communication and Technology.** Prerequisite: graduate standing or permission. Provides a comprehensive overview of emerging technologies (e.g., teleconferencing, electronic mail, videotext, electronic bulletin boards, telecommuting, distance education, media richness, voice messaging, invisible technologies, etc.) and analyzes some of the social and behavioral effects of these technologies on human interaction in interpersonal, organizational, small group, and international contexts. (F)

**G5373 Communication and Leadership.** Prerequisite: graduate standing. Examines theory and research related to the philosophy and behaviors associated with leadership communication in various contexts. Emphasis placed on unique aspects of messages as individuals enact leadership roles. Scholarship from several areas of the social sciences will be considered, but communication theory will be given primary emphasis. (F)

**G5383 Survey of Political Communication (Crosslisted with Political Science 5383).** Prerequisite: graduate standing. Surveys communication in the political system. Discusses theory and research on interpersonal, public and mass communication in politics, particularly political campaigns. (Irreg.)

**G5453 Social Influence.** Prerequisite: graduate standing. A social scientific approach to the study of influence (persuasion), emphasizing scholarship drawn from speech communication, mass communication and social psychology. (F)

**G5553 Persuasive Communication Campaigns.** Prerequisite: graduate standing. Theory and research about persuasive communication campaigns which involve conscious sustained communication efforts designed to influence the thinking, feelings and/or behaviors of targeted receiver groups. (Sp)

**G5810 Special Topics in Communication.** 1 to 4 hours. Prerequisite: junior standing and permission of instructor. May be repeated with change of content; maximum credit nine hours. Topics will vary and are intended to acquaint the graduate communication major with specialized study involving communication theory, methodology and research. (F, Sp, Su)

**G5960 Directed Readings.** 1 to 3 hours. Prerequisite: 12 hours of graduate work in communication and permission of instructor. May be repeated; maximum credit, six hours for the master's degree and nine hours for the Ph.D. Intensive survey of the literature in a selected area of communication under the direction of a graduate faculty member. (F, Sp, Su)

**G5970 Seminar.** 1 to 3 hours. Prerequisite: graduate standing; others vary by topic. May be repeated with change of content; maximum credit nine hours. Varied special topics in communication.

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp, Su)

**G6013 Special Problems in Communication Research.** Prerequisite: graduate standing; 5003 and permission. Other preparation may be needed for enrollment in particular sections. May be repeated with change of topic. Explores special issues and problems in communication research which characterize areas of specialty in communication, including social and mass communication, evaluative techniques and rhetorical criticism. (F, Sp)

**G6023 Communication Research Task Groups.** Prerequisite: graduate standing; 5003 and permission. May be repeated; maximum credit 15 hours. Designed to explore numerous topics in communication study, including the development and execution of research in communication. (F, Sp)

**G6233 Small Group Processes.** Prerequisite: 5003 and 5323 or permission. Considers current status of small group theory and research, emphasizing leadership. Includes both the development of a tentative theory of leadership and the application of small group theory to the process of decision making. (F, Sp)

**G6283 Political Advertising.** Prerequisite: graduate standing or permission. Studies the content and effects of advertising for political policy issues, and international political advertising. (F)

**G6314 History and Theory of Communication.** Prerequisite: 5003, 5013, and 5313 or permission of instructor. Presents the evolution of communication theory from ancient rhetorical traditions to the present. Topics covered include: classical origins of communication; enlightenment contributions to theory; interdisciplinary roots of communication study; and contemporary theories of communication. (Sp)

**G6323 International Communication.** Prerequisite: 5253 or permission. Studies communication as an essential component of international organizations, nation states, diplomatic relations and other political and social units. Emphasizes the role of communication in international decision making, conflict resolution and negotiation. (Irreg.)

**G6373 Seminar in Mass Communication.** Prerequisite: 5343 or permission. May be repeated with change of topic; maximum credit nine hours. Variable content seminar. Considers differing topics in contemporary mass communication theory and research. (Sp)

**G6383 Seminar in Political Communication (Crosslisted with Political Science 6383).** Prerequisite: permission. May be repeated with change of topic; maximum credit nine hours. Considers current topics in political communication theory and research. (F)

**G6410 Instructional Problems in Speech Communication Education.** 1 to 4 hours. Prerequisite: graduate standing or permission. May be repeated; maximum credit four hours. Studies educational problems in teaching oral communication in secondary schools and colleges. (Irreg.)

**G6413 Interethnic Communication Seminar.** Prerequisite: graduate standing or permission. An interdisciplinary survey of theory and research pertaining to issues of interethnic/interracial communication. Specific verbal and nonverbal communication behaviors are examined in conjunction with salient contextual factors of the macro-societal, situational, and psychological milieu surrounding the communication process. (Irreg.)

**G6423 Communication in Health Organizations.** Prerequisite: graduate standing. Examines delivery and exchange of messages within health organizations with emphasis on conflict, bargaining, and negotiating, communication networks and environments, virtual systems of communication, etc. (Sp)

**G6433 Seminar in Intercultural Communication.** Prerequisite: 5003 and 5253 or equivalent or permission. Studies communication across cultural boundaries with emphasis on comparative analysis of communication systems of various cultures, factors involved in predicting intercultural communication patterns and effects, and the role of communication in cultural and technological development. Special attention is given to communication problems between subcultures in American society. (Irreg.)

**G6453 Seminar in Social Influence.** Prerequisite: 5453 or permission of instructor. May be repeated with change of topic; maximum credit six hours. Seminar on specialized topic in social influence. Content focus varies with instructor. (Sp)

**G6970 Seminar.** 1 to 4 hours. Prerequisite: graduate standing, permission of instructor. May be repeated with change of topic; maximum credit 15 hours. (F, Sp, Su)

**G6980 Research for Doctor's Dissertation.** 2 to 16 hours. (F, Sp, Su)

**G6990 Independent Study.** 1 to 4 hours. May be repeated; maximum credit eight hours. An individual course of intensive study with the area and problem to be determined by the student and the instructor responsible for supervising the study. (F, Sp, Su)

student's major. On completion of a semester work period, the student submits a brief written report. One hour of credit (elective) granted for each work period, with a maximum credit of six hours. (F, Sp, Su)

**2334 Programming Structures and Abstractions.** Prerequisite: 1323 and Mathematics 1823. Application of software engineering principles with examples from central areas of computer science. Use of abstract data types such as stacks, queues, lists, trees, file processing. Introduction to ethics in computer science, including philosophical ethics theories. Discussion of intellectual property rights and privacy. A program design tool will be used. (F, Sp)

**2413 Data Structures.** Prerequisite: 2334 and 2813 or 1813 or Mathematics 2513, or concurrent enrollment in 2813 or Mathematics 2513. Representation and analysis of widely used data structures and associated algorithms. Design of software systems. Written communications required in some projects. Discussion of ethical issues including computer crime, abuse, and hacker ethics. The Microsoft Windows operating system will be used. A debugging tool will be used. (F, Sp)

**2603 Applied Logic for Hardware and Software.** Prerequisite: 1323 and Mathematics 1823. Mathematical aspects and applications of logic in the analysis of hardware and software. Introduction to combinational and sequential circuits. Topics include propositional and predicate calculus, Boolean algebra, combinational and sequential circuits, number systems and circuits for arithmetic, sets, inductive definitions, proof techniques including natural deduction, and equational reasoning. (F, Sp)

**2613 Computer Organization.** Prerequisite: 2603 or Electrical and Computer Engineering 2213 or Electrical and Computer Engineering 2214. Introduction to the organization and structuring of the major components of computers and the transfer of information among these components for control and data processing. (F, Sp)

**2813 Discrete Structures.** Prerequisite: 2603 or Electrical and Computer Engineering 2213 or 2214. Introduction to the mathematical foundation of computer science. Topics include combinatorics, logic, relations, functions, computational complexity, recurrences, and graph theory. (F, Sp)

**3053 Human Computer Interaction.** Prerequisite: 2413. An introduction to human-computer interaction and graphical user interfaces. Topics include: principles of human-computer interaction, human cognitive abilities, interface analysis and design, window systems, and social implications of computing. Current interface programming tools will be described and used. Oral presentations are required for some assignments. (F, Sp)

**3113 Introduction to Operating Systems.** Prerequisite: 2413 and, either 2613 or Electrical and Computer Engineering 3223. An introduction to the major concept areas and techniques of designing and implementing operating systems. Class projects require the design of medium-scale software systems. The Unix operating system will be used. A performance evaluation tool will be used. (F, Sp)

**3323 Principles of Programming Languages.** Prerequisite: 2413. Study of the theoretical foundations and principles that form the basis of programming language design; introduction to the functional programming paradigm. (F)

**+G3723 Numerical Methods for Engineering Computation (Crosslisted with Aerospace and Mechanical Engineering, Chemical Engineering and Petroleum Engineering 3723).** Prerequisites: 1313 or 1323 or Aerospace and Mechanical Engineering 2401 or Chemical Engineering 2002 or Engineering 1001 or Engineering 2003, and Mathematics 3113. Basic methods for obtaining numerical solutions with a digital computer. Included are methods for the solutions of algebraic and transcendental equations, simultaneous linear equations, ordinary and partial differential equations, and curve fitting techniques. The methods are compared with respect to computational efficiency and accuracy. This course may not be taken for graduate credit within the College of Engineering. (F)

**3823 Theory of Computation.** Prerequisite: 2413 or 4005. Introduction to abstract machine theory and formal language theory. Topics include turing machines, finite/pushdown automata, deterministic versus nondeterministic computations, context-free grammars, and mathematical properties of these systems. (F, Sp)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. Covers materials not usually presented in the regular courses. (F, Sp)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated with change of topic; maximum credit eight hours. Projects covered will vary. Deals with concepts not usually presented in regular coursework. (Irreg.)

## Computer Science (C S)

**1313 Programming for Nonmajors.** Prerequisite: Mathematics 1523 or equivalent. Introduction to the design and implementation of computer programs. Emphasis on problem solving. (F, Sp)

**1323 Introduction to Computer Programming.** Prerequisite: Mathematics 1523 or equivalent. Introduction to the design and implementation of computer software with an emphasis on abstraction and program organization. (F, Sp)

**2281 Engineering Co-Op Program (Crosslisted with AME, CH E, C E, ECE, ENGR, EPHY, E S, G E, I E, P E 2281).** Prerequisite: student participation in the program. The Co-Op program provides student placement in jobs outside the University, but in a position related to the

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated with change of subject matter; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work on a special project in the student's field. (F, Sp, Su)

**+G4004 Graduate Preparation II.** Prerequisite: permission of graduate liaison. An introduction to Boolean algebra, combinatorial logic circuits, finite state machines, and sequential circuits. Design and analysis of the architecture and organization of computer systems. Topics include processor, control, and memory design and organization, pipelining and vector processing, and computer arithmetic. An introduction to operating systems. Process management including CPU scheduling, process synchronization, and deadlocks; memory management, file systems, protection and security, and I/O systems. Credit hours earned for this course cannot be used to fulfill degree requirements for the M.S. or Ph.D. programs in computer science. (Irreg.)

**+G4005 Graduate Preparation I.** Prerequisite: permission of graduate liaison. This course has three parts: discrete mathematics, object-oriented programming in C++, and data structures in C++. As part of the discrete mathematics students will be introduced to combinatorics, logic, relations, functions, computational complexity, automata, and graph theory. Students will be introduced to the fundamentals of object-oriented programming and learn to design, build, and analyze data structures using object-oriented principles and techniques. Credit hours earned for this course cannot be used to fulfill degree requirements for the M.S. or Ph.D. programs in computer science. (Irreg.)

**G4013 Artificial Intelligence.** Prerequisite: 2413 or 4005. Study of the methods of search, knowledge representation, heuristics, and other aspects of automating the solution of problems requiring intelligence. (Sp)

**4023 Introduction to Intelligent Robotics (slashlisted with 5023).** Prerequisite: 2413 or permission of instructor. History of intelligent robotics; functional models approach; reactive robots; ethology for robotics; architectures and methodologies; implementation; sensing; hybrid deliberative/reactive robotics; multi-robot systems; navigation; topological path planning; metric path planning; localization and mapping. No student may earn credit for both 4023 and 5023. (Sp)

**4053 Computer Graphics (Slashlisted with 5053).** Prerequisite: 2413 and Mathematics 3333. An introduction to computer graphics. Topics include coordinate systems, transformations, rendering in both two and three dimensions, and graphical programming. No student may earn credit for both 4053 and 5053. (Sp)

**4113 Operating Systems Theory (Slashlisted with 5113).** Prerequisite: 3113 and Mathematics 4753 or Industrial Engineering 3293 or Mathematics 4743 or Engineering 3293. Continuation of study from 3113. Advanced topics and examples and simulation techniques used in performance evaluation. No student may earn credit for both 4113 and 5113. (Sp)

**4133 Data Networks (Slashlisted with 5133).** Prerequisite: 3113 or permission of instructor. Comprehensive treatment of data networking principles including: layered protocol design and their functions, tools for performance analysis, multi-access communication, routing and flow control. No student may earn credit for both 4133 and 5133. (F)

**4263 Software Engineering I.** Prerequisite: 3323 and Communication 2613 and English 3153 or Business Communication 2813 and permission of instructor. Methods and tools for software specification, design, and documentation. Emphasis on architectural modularity, encapsulation of software objects, and software development processes such as design review, code inspection, and defect tracking. Students working in teams apply these ideas to design and document software products. Study of professional ethics, responsibility, and liability. (F)

**+G4273 Software Engineering II.** Prerequisite: 4263 and 3053 and permission of instructor. Methods and tools for software development, testing, and delivery. Emphasis on data abstraction and reusable components. Students working in teams implement a significant software product, including design documents, user's guide, and process reports, using methods and processes studied in Software Engineering I. Students will practice oral and written communication skills. (Sp)

**G4323 Compiler Construction.** Prerequisite: 3323. Introduction to the theory and implementation of programming language compilers and interpreters. Class projects require the design of medium scale software systems. (Sp)

**G4413 Algorithm Analysis.** Prerequisite: 2413 or 4005. Design and analysis of algorithms and measurement of their complexity. (F)

#### 4433 Computational Methods in Discrete Optimization (Slashlisted with 5433)

Prerequisite: Mathematics 3333 and 4413 or concurrent enrollment in 4413. Linear programming: simplex method for LP problems, degeneracy and anticycling strategies, duality theory and complementary slackness conditions, revised simplex method, sensitivity analysis and simplex method for general LP problems. Network optimization: the transshipment problem, network simplex method, shortest path algorithms, the maximum flow problem, and the primal dual method. No student may earn credit for both 4433 and 5433. (F)

**G4513 Database Management.** Prerequisite: 2413 and senior standing or 4005. Emphasizes concepts and structures necessary to design and implement a database management system. (F)

**G4613 Computer Architecture (Crosslisted with Electrical and Computer Engineering 4613).** Prerequisite: 2613 or Electrical and Computer Engineering 3223, or 4004. Covers basic concepts of computer system design and communication between components, along with current and historical examples of computer architecture. (F, Sp)

**4743 Scientific Computing I (Slashlisted with 5743).** Prerequisite: Mathematics 3333 and Aerospace and Mechanical Engineering 3723 or Mathematics 4073 or Engineering 3723. Interaction between applications, architectures, and algorithms. Review of linear algebra, serial, pipelined vector processors, cluster of processors. Measures of performance of parallel algorithms. Parallel algorithms for the solution of linear systems. No student may earn credit for both 4743 and 5743. (F)

**4823 Cryptography (Slashlisted with 5823).** Prerequisite: 3823 and 4413. Elementary number theory, time complexity for doing arithmetic, finite fields, RSA, discrete logarithm and Diffie-Hellman, zero-knowledge protocols and oblivious transfer. Basic elliptic curve cryptosystems, elliptic curve factorization and primality proving. No student may earn credit for both 4823 and 5823. (Sp)

**4910 Senior Reading and Research.** 1 to 3 hours. Prerequisite: senior standing, permission of instructor. May be repeated with change of subject matter; maximum credit six hours. Individually supervised reading and research in computing science for gifted seniors. (F, Sp, Su)

**4970 Undergraduate Seminar.** 0 to 3 hours. May be repeated with change of subject matter; maximum credit three hours. A special type of seminar necessitated by the rapidly changing nature of modern data processing information science and computing sciences. (Irreg.)

**4973 Special Topics.** Prerequisite: 2413 and permission of instructor. May be repeated with change of subject matter; maximum credit nine hours. A special topics course necessitated by the rapidly changing nature of computer sciences. Topics offered under this number will be accepted as approved Computer Science electives for Computer Science majors. (Irreg.)

**G5023 Introduction to Intelligent Robotics (slashlisted with 4023).** Prerequisite: 2413 or permission of instructor. History of intelligent robotics; functional models approach; reactive robots; ethology for robotics; architectures and methodologies; implementation; sensing; hybrid deliberative/reactive robotics; multi-robot systems; navigation; topological path planning; metric path planning; localization and mapping. No student may earn credit for both 4023 and 5023. (Sp)

**G5033 Machine Learning.** Prerequisite: 4013 or permission of instructor. Topics will include decision trees, relational learning, neural networks, Bayesian learning, reinforcement learning, multiple-instance learning, feature selection, learning appropriate representations, clustering, and kernel methods. (F)

**G5053 Computer Graphics (Slashlisted with 4053).** Prerequisite: Mathematics 3333 and 2413 or 4005 and graduate standing. An introduction to computer graphics. Topics include coordinate systems, transformations, rendering in both two and three dimensions, and graphical programming. No student may earn credit for both 4053 and 5053. (Sp)

**G5113 Operating Systems Theory (Slashlisted with 4113).** Prerequisite: 3113 or 4004, and Mathematics 4753 or Industrial Engineering 3293 or Mathematics 4743 or Engineering 3293. Continuation of study from 3113. Advanced topics and examples, and simulation techniques used in performance evaluation. No student may earn credit for both 4113 and 5113. (Sp)

**G5123 System Modeling and Performance Evaluation.** Prerequisite: 3113 or 5004, and Engineering 3293 or Mathematics 4753. Study of queuing network models and their applications to operating systems, communication networks, and multi-access computing systems. (Sp)

**G5133 Data Networks (Slashlisted with 4133).** Prerequisite: 3113 or 5004 or permission of instructor. Comprehensive treatment of data networking principles including: layered protocol designs and their functions, tools for performance analysis, multi-access communication, routing and flow control. No student may earn credit for both 4133 and 5133. (F)

**G5143 Network Design and Management.** Prerequisite: 4133 or 5133, or equivalent. Basic concepts in networks; modeling and evaluation techniques; network analysis: delay, loss and throughput, centralized network design; distributed network design, network reliability; applications to local area wireless, wide area, multi-service networking, etc.; network management: SNMP, OSI management, distributed network management and architectures. (Sp)

**G5153 Network Security.** Prerequisite: 4133 or 5133. Topics in network security including the inter-network security model, introduction to cryptography, public key encryption and hash functions, network security practice, and system security. (Sp)

#### **G5193 Special Topics in Networks and Distributed Systems.**

Prerequisite: permission of instructor. May be repeated; maximum credit 12 hours. Topics vary; deals with issues related to networks and distributed systems. (F)

**G5213 Software Engineering Processes.** Prerequisite: 3113 or 3823 or 5004. Effective processes for software requirements specification, planning, design, documentation, development, review, defect tracking, testing, product delivery, and product evaluation. Emphasis on resource tracking and software quality. Students work in teams to develop, deliver, and evaluate software products. (F)

**G5413 Computational Complexity.** Prerequisite: 4413 and 3823 or 5813. Computational complexity theory dealing with various models of computation and a detailed analysis of P and NP hard problems. (Sp)

**G5433 Computational Methods in Discrete Optimization (Slashlisted with 4433).** Prerequisite: mathematics 3333 and 4413 or concurrent enrollment in 4413. Linear programming: simplex method for LP problems, degeneracy and anticycling strategies, duality theory and complementary slackness conditions, revised simplex method, sensitivity analysis and simplex method for general LP problems. Network optimization: the transshipment problem, network simplex method, shortest path algorithms, the maximum flow problem, and the primal dual method. No student may earn credit for both 4433 and 5433. (F)

**G5443 Advanced Discrete Optimization and Networks.** Prerequisite: 4413. Review of basic algorithm techniques: DFS, BFS, shortest paths, min-cost spanning tree, etc.; maximum flow problem: labeling and preflow-push algorithms, maximum flow in unit capacity networks and complexity analysis; min cost-flow problems: duality theory, network simplex, primal-dual and relaxation methods; matching: bipartite matching, weighted matching and optimum assignment problems; connectivity: biconnectivity and K-connectivity algorithms; heuristics and approximation algorithms; applications: network design, network reliability and QoS routing etc. (Sp)

**G5513 Advanced Database Management.** Prerequisite: 4513. An advanced course dealing with both current database applied research subjects and theoretical aspects of relational databases. Selected topics such as distributed databases, object-oriented databases, real-time databases, and multimedia databases will be discussed. (Sp)

**G5613 Computer Networks and Distributed Processing.** Prerequisite: 4613. Provides a comprehensive treatment of the analysis and design of computer networks. Data communication techniques and distributed processing in a network architecture will be examined. (Sp)

**G5633 Advanced Computer Architecture.** Prerequisite: 4613. An advanced treatment of computer architecture covering new technological developments, including details of multiprocessor systems and specialized machines. Special emphasis will be devoted to new concepts such as data flow machines, higher level language processors and associative processors. (F)

**G5743 Scientific Computing I (Slashlisted with 4743).** Prerequisite: Mathematics 3333 and Aerospace and Mechanical Engineering 3723 or Mathematics 4073 or Engineering 3723. Interaction between applications, architectures, and algorithms. Review of linear algebra, serial, pipelined vector processors, clusters of processors. Measures of performance of parallel algorithms. Parallel algorithms for the solution of linear systems. No student may earn credit for both 4743 and 5743. (F)

**G5753 Scientific Computing II.** Prerequisite: 5743. Special research topics in scientific computing. Possible topics include optimization

algorithms, time series modeling, Kalman filtering techniques, and multivariate statistical techniques. (Sp)

**G5813 Formal Languages.** Prerequisite: 3823. Theory of formal languages. Mathematical modeling of natural or artificial objects, events, and phenomena. Topics include systems for linear/nonlinear objects, their language-theoretical properties, and the related machine theory. (F)

**G5823 Cryptography (Slashlisted with 4823).** Prerequisite: 3823 and 4413. Elementary number theory, time complexity for doing arithmetic, finite fields, RSA, discrete logarithm and Diffie-Hellman, zero-knowledge protocols and oblivious transfer. Basic elliptic curve cryptosystems, elliptic curve factorization and primality proving. No student may earn credit for both 4823 and 5823. (Sp)

**G5973 Special Topics in Computer Science.** Prerequisite: permission of instructor. May be repeated with a change of subject matter. Selected topics of current research interest not covered by regularly scheduled coursework. (F, Sp, Su)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, six hours. (F, Sp, Su)

**G5990 Independent Studies.** 1 to 3 hours. Prerequisite: graduate standing, permission of instructor. May be repeated with change of topic; maximum graduate credit nine hours. Supervised individual reading and research in computer science for graduate students. (F, Sp, Su)

**G6143 Wireless and Mobile Networks.** Prerequisite: 4133 or 5133 or permission of instructor. A complete treatment of the issues related to wireless networks, mobility in wireless networks, protocols in wireless and mobile networks, location management, quality of service in wireless networks; application in wireless and mobile networks including distributed applications, middleware, mobile transactions, mobile multimedia, and remote execution. (Sp)

**G6973 Advanced Topics in Computer Science.** Prerequisite: graduate standing. May be repeated with change of subject matter. Selected topics of current faculty research interest at the Ph.D. level not covered by regularly scheduled coursework.

**G6980 Research for Doctoral Dissertation.** (F, Sp, Su)

## **Construction Science (CNS)**

### **1113 Construction Industry: Impact on Society.** Prerequisite: none.

Analysis of the cultural context of construction, emphasizing its centrality in the evolution and expansion of the built environment. The primary focus will be on the human elements and issues that have impacted the industry and society in both historical and present contexts. (F)

**1212 Computers in Construction.** An introductory course providing the student with basic computer application knowledge. Familiarizes student with current applications of spreadsheet, presentation, and AutoCAD software for use in the construction industry. (Sp)

**2713 Construction Materials and Procedures.** Prerequisite: 1212. Detailed survey of materials, methods, and procedures used in a variety of building types. Students will also gain an understanding of the basis for choosing different materials and methods. (F)

**2813 Construction Documents.** Prerequisite: 2713. Provides students with the knowledge and skill to interpret, explain, quantify, and use working drawings to bid, construct, and inspect construction projects. Understanding and quantifying working drawings permits the construction manager to interpret the intent of the designer and to communicate this to the field personnel. (Sp)

**2913 Construction Equipment and Methods.** Prerequisite: 1212. Performance, relative cost, depreciation and use of equipment in construction. Class reports are required on construction equipment. Field trips are made to view and evaluate construction equipment. (Sp)

**3103 Construction Surveying.** Prerequisite: 2713. The practical application of taping, differential, profile, trigonometric leveling, angle measurement, traversing, and other instrument layout techniques for vertical and horizontal construction project control and layout. (F)

**3113 Project Construction Administration.** Prerequisite: 2813. Introduction to construction project administration procedures and necessary documentation; including simplified project accounting, contract administration, project permitting, daily administration, field documentation, and progress and cost reporting. (F)

**3153 Legal Issues in Construction.** Prerequisite: 3113, Legal Studies 3323. An examination of current construction law as it pertains to the day-to-day management of the construction contract. Includes legal ramifications of construction bidding, contracts, changes, delays and dispute resolution. Emphasis is on the reduction of dispute through knowledge. (Sp)

**3513 Cost Estimating I.** Prerequisite: 2113, 2713. Familiarizes students with the basic foundations of the estimating process including quantity surveying, the organization of the estimate, and visualization of the project. Labor costs as well as overhead and profit are also introduced. (F, Sp)

**3813 Project Planning and Scheduling.** Prerequisite: 3113, 3513. Application of scheduling techniques in an integrated construction planning, scheduling and control system. Includes theory, options, legal implications and practice. Students plan the construction of their projects from estimating and use microcomputer software to schedule and set up control systems for the projects. **Laboratory** (Sp)

**3943 Field Work.** Prerequisite: junior standing and permission. Utilize a construction work experience to prepare for construction management functions. Student is responsible for finding the construction-related activity and proposing a work-related project. Written and oral presentation is required. (F, Sp, Su)

**4123 Construction Economics.** Prerequisite: 3813. Learn to work with the time value of money, present value, and sensitivity analysis. Develop both graphic and computer-based cash flow models of typical income-producing construction projects. (F)

**4523 Construction Cost Estimating II.** Prerequisite: 3513, 3813, and Business Communication 2813. Continuation of Estimating I. Estimating skills learned in Estimating I will be reinforced. Emphasis on pricing work, sub-contracting and bidding strategies. Introduction to cost estimating software. (Sp)

**4613 Soils and Foundations.** Prerequisite: Architecture 3633. Soil identification and classification. Engineering properties of soils. Spread footings and foundation design. Piles and caissons. Retaining wall design. Settlement of foundations. Observation of field and laboratory tests. Practical applications emphasized. (F)

**4853 Heavy-Civil Construction Projects.** Prerequisite: Junior standing in Construction Science major. This course is designed to familiarize students with the peculiarities of the heavy-civil construction industry, and to provide students with the analytical skills to compete for projects in that arena. Students will study projects which may include the construction of airports, highways, bridges, dams, tunnels, and similar heavy civil projects. (Sp)

**4863 Production Residential Construction.** Prerequisite: Junior standing in Construction Science major. Residential construction processes, scheduling, subcontracting, financing, estimating, project control, and current trends in site selection, design, and energy efficiency in the residential construction industry. (Sp)

**4881 Construction Safety Management.** Prerequisite: Junior standing in Construction Science major. An overview of the entry-level management positions in the construction industry through the use of guest speakers, leadership training programs, and attendance at professional organizational meetings. Provides students with an introduction to construction site and associated recordkeeping and reporting. (F)

**4960 Directed Reading.** 1 to 4 hours. Prerequisite: senior standing, permission. May be repeated with change of subject matter; maximum credit eight hours. Subjects proposed by students or instructors may be used to expand knowledge beyond the normal core construction curriculum. Verbal or written presentation may be required to demonstrate successful completion of a subject unit. (F, Sp, Su)

**4970 Undergraduate General Departmental Seminar.** 1 to 4 hours. Prerequisite: senior standing, permission. May be repeated with change of subject matter; maximum credit 12 hours. Special topics in construction science. (Irreg.)

**4991 Construction Seminar.** Prerequisite: 3813. An overview of the entry-level management positions in the construction industry through the use of guest speakers, leadership training programs, and attendance at professional organizational meetings. (F)

**4993 Construction Science Capstone.** Prerequisite: all required CNS courses through fall semester of the senior year. A capstone course integrating all aspects of the construction project management process. Class interaction requires participants to utilize and extend knowledge of areas of expertise used by construction managers. (Sp) [V]

**G5513 Project Management and Controls.** Prerequisite: 3013, 3813, 5523, 5613, 5623; graduate standing or permission. Detailed application of earned value theory for project control with advanced scheduling and value analysis. Synthesis of construction management and control simulation. (F)

**G5523 Design-Build Contracting.** Prerequisite: 3113, 3513, 5813, and graduate standing or permission. Evaluation of the life-cycle of a design-build project. Focus on roles and relationships among the owner, designer and builder. Application of advanced cost estimating, proposal writing, performance criteria development, and risk allocation via contract structure. (Sp)

**G5613 Information Technology Applications for Construction.**

Prerequisite: graduate standing or permission. Participants utilize industry and classroom interaction to explore the application of available digital information management technologies in the construction process, create and incorporate digital resources into linear and nonlinear presentation formats, and explore communication potential in the construction marketplace for the World Wide Web. (F)

**G5623 Construction Contracts and Finance.** Prerequisite: 3113, 3513, 5823, and graduate standing or permission. Development of techniques for economic analysis in construction. Exploration of the legal issues most critical to construction administration. (Sp)

**G5813 Facilities Acquisition Planning.** Prerequisite: graduate standing or permission. How to buy building design and construction services from the owner's perspective. (F)

**G5823 Quality Management in Construction.** Prerequisite: 3113, 3513 or concurrent enrollment, graduate standing or permission. Quality management, productivity evaluation and problem solving skills for construction decision making. Students complete the ten-hour OSHA construction safety class. (F)

**G5940 Construction Industry Practicum.** 1 to 3 hours. Prerequisite: graduate standing and permission. Utilize construction work experience to prepare for construction management functions. Student is responsible for finding the activity and proposing a work-related project. (Sp)

**G5952 Special Studies Presentation.** Prerequisite: permission of committee chair. May be repeated; maximum credit six hours. Completion of research for the required special studies project selected by the student and advisory committee. (Irreg.)

**G5960 Directed Readings.** 1 to 4 hours. Prerequisite: senior or graduate standing. May be repeated once with change of subject; maximum credit six hours. Studies in major field as approved by the individual instructor. (F, Sp, Su)

**G5980 Research for Master's Thesis.** Research for master's thesis. 2 to 9 hours. May be repeated; Maximum credit towards degree, five hours. (F, Sp, Su)

**G5993 Special Studies Research.** Prerequisite: permission of committee chair. May be repeated; maximum credit six hours. Credit for applied research for the special studies project selected by the student and advisory committee. (Irreg.)

## Creek/Seminole (CREK)

**1713 Beginning Creek/Seminole.** Introduction to the structure of the Creek/Seminole language with special attention to its phonology, morphology, and syntax. Conversational practice, vocabulary-building, and the history and culture of the native speech community also are emphasized. (F, Sp) [I-FL]

**1723 Beginning Creek/Seminole Continued.** Prerequisite: 1713. A continuation of the study of the structure of the Creek/Seminole language with special attention to its phonology, morphology, and syntax. Conversational practice, vocabulary-building, and the history and culture of the native speech community are emphasized. (Sp) [I-FL]

**2733 Intermediate Creek/Seminole.** Prerequisite: 1723. A systematic review of the structure of the Creek/Seminole language. Syntactic control and vocabulary expansion are emphasized. Conversational practice and traditional oral texts are used to develop proficiency. (F)

## Dance (DANC)

**1112 Tap I (Crosslisted with Musical Theatre 1112).** Prerequisite: 1212 and permission of instructor. May be repeated; maximum credit four hours. A beginner class emphasizing tap fundamentals and terminology that includes weight change, proper placement and simple step patterns. The course concentrates on basic rhythms, counting, ear training and clarity of sound. (F, Sp)

**1212 Ballet Technique I.** May be repeated; maximum credit four hours. Practice of ballet technique at beginning level. This course does not count for major credit in the School of Dance. (F, Sp, Su)

**1312 Modern Technique I.** May be repeated; maximum credit four hours. Practice of modern dance technique at the beginning level. This course does not count for major credit in the School of Dance. (F, Sp, Su)

**1411 Stage Makeup for the Dancer.** To develop skill in the application of basic stage makeup for the dancer, including character analysis and traditional styles. (Irreg.)

**1442 Jazz I (Crosslisted with Musical Theatre 1442).** Prerequisite: 1212 and permission of instructor. May be repeated; maximum credit four hours. A beginner class that provides the student with a comprehensive understanding of the technical fundamentals of jazz dance including basic rhythms, vocabulary and skills. Focus is aimed towards proper placement, strength and flexibility development. (F, Sp)

**1713 The Understanding of Dance.** A course in dance appreciation covering all aspects of various theatrical dance styles. [IV-AF]

**1813 Introduction to Non-Western Dance Forms.** An abbreviated examination of the history, evolution, and significance of dance in three regions of the non-western world which possess very distinct dance cultures. (F, Sp) [IV-NW]

**1911 Rehearsal and Production.** Prerequisite: open to dance majors only. May be repeated; maximum credit four hours. Study, practice and participation in every phase of dance production work and management.

**Laboratory** (F, Sp, Su)

**2112 Tap II (Crosslisted with Musical Theatre 2112).** Prerequisite: 1112 and permission of instructor. May be repeated; maximum credit four hours. An advanced beginner class that maintains focus on proper placement and clarity of sound while introducing more complicated rhythms, step patterns and vocabulary. Counting and ear training continues as the student hones assimilation skills. Focus is placed on tap dynamics including accenting, shading and movement quality. A variety of styles will be introduced. (F, Sp)

**2212 Ballet Technique II.** Prerequisite: 1212 or permission. May be repeated; maximum credit eight hours. Continuation of 1212. (F, Sp, Su)

**2214 Intermediate Ballet Technique.** Prerequisite: permission. May be repeated; maximum credit 12 hours. Class includes participation in a complete ballet barre and center including adagio, pirouettes, petit allegro and grande allegro. The emphasis will be on the practice and principles of the classical ballet vocabulary. Students will be expected to develop and demonstrate the ability to perform the movements with proper body alignment and a sense of artistic expression as well as improved skill and strength. (F, Sp, Su)

**2242 Pointe Class.** Prerequisite: 2212 or permission. May be repeated; maximum credit eight hours. Technique and practice on pointe to build strength and proficiency for ballet. (F, Sp)

**2292 Ballet Company Apprentice.** Prerequisite: permission of instructor. A practical analysis and application of the original and classical ballet repertoire. (F, Sp, Su)

**2312 Modern Technique II.** Prerequisite: 1312 or permission. May be repeated; maximum credit eight hours. Continuation of 1312. (F, Sp)

**2314 Intermediate Modern Technique.** Prerequisite: 1312 or permission. May be repeated; maximum credit 16 hours. Intermediate modern dance technique emphasizing skill refinement, increased vocabulary, and performance capabilities, thus enabling the student a more comprehensive education and preparation for a professional dance career. (F, Sp)

**2392 Modern Company Apprentice.** Prerequisite: permission of instructor. A practical analysis and application of the past and present choreographic dance works within the modern dance area. (F, Sp, Su)

**2412 Pilates Body Conditioning.** May be repeated; maximum credit eight hours. The philosophy of awareness in movement and a total body/mind workout based on the methods developed by Joseph Pilates over 75 years

ago. This method is one of physical and mental conditioning designed to work every muscle in the body in an efficient and balanced manner. (F, Sp)

**2442 Jazz II (Crosslisted with Musical Theatre 2442).** Prerequisite: 1442 or permission of instructor. May be repeated; maximum credit four hours. This advanced beginner class expands on the techniques learned in Jazz I with focus on cleanly executed technique, well connected movement quality, dynamics and increased strength and flexibility. A variety of jazz styles will be introduced. (F, Sp)

**2512 Ballroom Dancing I.** May be repeated; maximum credit eight hours. Instruction in traditional and popular social dances, as well as social skill and etiquette. Includes instruction in the basic ballroom dances of cha-cha, salsa, swing, tango, and waltz. Dancers take the basic skills and introduce new dances and rhythms with an added emphasis on dancing technique. (F, Sp)

**2522 Ballroom Dancing II.** Prerequisite: 2512 or permission of instructor. May be repeated; maximum credit eight hours. Intermediate-level ballroom dancing which builds on the basic skills of the dancer and introduces new dances and rhythms with an added emphasis on dancing techniques. Includes instruction in the foxtrot, rumba, samba, and east and west coast swings. A brief review of basic skills is presented at the beginning of the semester. (F, Sp)

**2551 Yoga.** May be repeated; maximum credit eight hours. The course focuses on flexibility, balance, strength, and relaxation. Using postures and breathing exercises adapted to each person's individual level, students will develop improved alignment and a balanced body/mind. Discussion includes ways to incorporate Hatha yoga techniques into the students' daily activities. (Su)

**2552 Introduction to Flamenco.** Class includes participation in elementary flamenco exercises. Students will be instructed in several aspects of the art of Flamenco, including footwork, arm movements, hand clapping, choreography. Emphasis of class will be on practice, principles and vocabulary of flamenco dance. Students will be expected to perform with proper body alignment, an element of performance style and correct technical vocabulary and rhythms. (Irreg.)

**2632 Elements of Dance Composition.** Prerequisite: Dance major and 2312 or permission. Theoretical and practical experience with the principles of composition in the area of expressive movement. (Irreg.)

**2712 Body Science for Dancers.** An introduction to human anatomy and body mechanics through the study of skeletal alignment and movement efficiency in dance training, teaching and performance. This course is only open to Dance majors, and is intended to be taken during the second semester of the freshman year or the first semester of the sophomore year. (Irreg.)

**2713 Survey of Dance History.** The history of dance as a religion, as recreation and as a fine art will be traced from primitive to modern man. (Irreg.) [IV-AF]

**3112 Tap III (Crosslisted with Musical Theatre 3112).** Prerequisite: 2112 or permission of instructor. May be repeated; maximum credit six hours. An intermediate class with focus placed on refinement of technical and assimilation skills while dramatically increasing tap vocabulary. Students focus on tap dynamics, performance quality, style variety and movement coordination while learning longer and more complicated step patterns. Tap improvisation is introduced. (Irreg.)

**3214 Ballet Technique III.** Prerequisite: 2212 or permission. May be repeated; maximum credit 32 hours. Continuation of 2212. (F, Sp, Su)

**3232 Ballet Pantomime.** Prerequisite: 2212 or permission. Study and practice in dramatic movement and formalized gesture as related to nineteenth- and twentieth-century ballet in current repertory. (Irreg.)

**3252 Character Dance.** Prerequisite: 2212 or permission. May be repeated; maximum credit four hours. Basic ethnic dance styles utilized in ballet performance. (Irreg.)

**3262 Ballet Variations.** Prerequisite: 3214 or 4214, permission. May be repeated; maximum credit four hours. The study and practice of solo variations in the professional ballet repertoire with emphasis on individual male and female techniques. (Alt. F)

**3292 OU Ballet Company.** Prerequisite: permission. May be repeated; maximum credit 16 hours. Rehearsal and performance with the OU Ballet Company. **Laboratory** (F, Sp, Su)

**3314 Modern Technique III.** Prerequisite: 2312 or permission. May be repeated; maximum credit 32 hours. Continuation of 2312. (F, Sp, Su)

**3392 Contemporary Dance Oklahoma.** Prerequisite: permission of instructor. May be repeated; maximum credit 16 hours. Rehearsal and performance with the Contemporary Dance Oklahoma. (F, Sp, Su)

**3412 Pilates Equipment Class.** Prerequisite: 2412 and permission of the instructor. May be repeated; maximum credit eight hours. Using Pilates equipment, the class foundation is built on that developed by Joseph Pilates as a method of physical and mental conditioning to work every muscle in one's body in an efficient and balanced manner. The basis throughout the semester is that philosophy of awareness in movement and a total body/mind workout. (F, Sp)

**3442 Jazz III (Crosslisted with Musical Theatre 3442).** Prerequisite: 2442 or permission of instructor. May be repeated; maximum credit four hours. An intermediate class that moves at a heightened pace, this level expands on the techniques learned in Jazz II. Additional focus is placed on style variety, assimilation skills, and more advanced movement coordination and rhythms. (Irreg.)

**3632 Dance Composition.** Prerequisite: 2332 and either 2312 or 3314 or permission. Theoretical and practical experience with the principles of composition in the area of expressive movement. (Irreg.)

**3713 History of Modern Dance.** Prerequisite: English 1213. History of modern dance from the turn of the twentieth century to the present. (Irreg.) [IV-AF]

**3733 History of Ballet.** History of ballet from 1580 to the present time. (Alt. Sp) [IV-WC]

**3813 History of World Dance.** Prerequisite: junior standing or permission of instructor. An examination of the history, evolution and significance of dance in regions which possess very distinct dance cultures throughout the non-European world. (Irreg.) [IV-NW]

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated with change of subject; maximum credit six hours. Consists of either reading topics or independent study designated by the instructor in keeping with the student's major program. Covers materials not usually presented in the regular courses. (F, Sp, Su)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program, junior or senior standing. May be repeated with change of subject; maximum credit six hours. The projects covered will vary. Deals with concepts not usually presented in regular coursework.

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated with change of subject; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work at a special project in the student's field. (F, Sp, Su)

**G4022 Ballet Repertoire.** Prerequisite: permission. Research and analysis of some of the works of the basic classical repertoire insofar as story contents. Musical and choreographic approaches are used by renowned choreographers. (Alt. F)

**G4032 Modern Dance Repertory.** Prerequisite: 2312 and permission of instructor. A practical analysis and application of the style and creative work of choreographers who have created the basic professional modern dance repertoire. (Irreg.)

**4112 Tap IV (Crosslisted with Musical Theatre 4112).** Prerequisite: 3112 or permission of instructor. May be repeated; maximum credit four hours. This advanced class furthers the tap dancer's vocabulary, refines technical skills, greatly increases assimilation ability and furthers the study of tap improvisation. (Irreg.)

**4214 Ballet Technique IV.** Prerequisite: 3214 or permission. May be repeated; maximum credit 32 hours. Continuation of 3214. (F, Sp)

**4242 Pas de Deux.** Prerequisite: 3214 or 4214 or 5224, permission. May be repeated; maximum credit four hours. Basic techniques of partnering and being a partner in ballet performance. (Irreg.)

**4442 Jazz IV (Crosslisted with Musical Theatre 4442).** Prerequisite: permission of instructor. May be repeated; maximum credit four hours. An advanced class emphasizing strong technique and assimilation skills as well as the ability to adapt to any jazz style. Continued focus is placed on flexibility, strength, dynamics, and solid performance quality. (Irreg.)

**G4612 Ballet Choreography.** Prerequisite: permission. Study and practice in the principle of ballet composition, with emphasis on romantic, classical, neoromantic and neoclassical choreography. (Irreg.)

**4723 Senior Capstone.** Prerequisite: permission of instructor. An advanced, individual project which demonstrates mastery of skills and knowledge in the student's area of interest. Taken in the senior year, the project will be selected under advisement, guided by the appropriate

faculty member(s) and include required submission of a written component. [V]

**G4812 Teaching of Ballet Technique.** Prerequisite: 12 hours of ballet or permission. Comprehensive study of the basic ballet exercises and body positions. Terminology and discussions on anatomy for the dancer. Experience in teaching of ballet. (Irreg.)

**G4821 Practical Experiences in Teaching Classical Ballet.** Prerequisite: 4812. May be repeated; maximum credit three hours. Teaching children's ballet classes of various levels. Student will teach an average of 12 classes per semester, and meet with the supervising professor following observation of teaching assignments. (F, Sp)

**4832 Methods in Teaching Dance.** Prerequisite: 2332 or equivalent, and permission of instructor. Methods of teaching through the creative approach. Progressions in teaching dance studies and techniques. (Irreg.)

**G4851 Practical Experience in Teaching Modern Dance.** Prerequisite: 4832. May be repeated; maximum credit three hours. Practical teaching experience in modern dance or creative dance for children. (F, Sp)

**4900 Professional Semester.** 3 to 12 hours. Prerequisite: permission. May be repeated; maximum credit 24 hours. Complete assignment(s) in a professional environment either performing, choreographing, teaching or in administrative work.

**4990 Special Studies.** 1 to 6 hours. Prerequisite: permission. May be repeated with change of subject matter; maximum credit six hours. (F, Sp, Su)

**G5023 Introduction to Graduate Study in Dance.** Prerequisite: graduate standing. Developing research, organizational and refined skills for scholarly writing. Establishing a foundation to analyze existing materials in the dance field for purposes of debate and theory construction. Providing clarification of MFA in Dance expectations and defining a direction/program of study which will enrich knowledge within the discipline. (Irreg.)

**G5090 Graduate Special Studies.** 1 to 6 hours. Prerequisite: permission. May be repeated; maximum credit six hours. A special creative or research project course in any phase of dance adapted to the individual student. (F, Sp)

**G5224 Graduate Ballet Technique.** Prerequisite: 12 hours of ballet, permission. May be repeated; maximum credit 16 hours. Intensive study of dance techniques for proficiency in performance and teaching. (F, Sp, Su)

**G5292 Advanced Ballet Company Class.** Prerequisite: graduate standing, permission of adviser. Continued enrollment based on performance; maximum credit 10 hours. A rehearsal situation which provides the special training required in performance. It is conducted in a practicum-laboratory situation aimed at the advanced graduate student. **Laboratory** (F, Sp)

**G5324 Graduate Modern Dance Technique.** Prerequisite: 12 hours of modern dance; permission of adviser. May be repeated; maximum credit 16 hours. Intensive practice of modern dance techniques for proficiency in performance and teaching. (F, Sp)

**G5392 Advanced Modern Dance Company Class.** Prerequisite: graduate standing, permission of adviser. Continued enrollment based on performance; maximum credit 10 hours. A rehearsal situation which provides the special training required in performance. It is conducted in a practicum-laboratory situation aimed at the graduate student. **Laboratory** (F, Sp)

**G5613 Graduate Choreography.** Prerequisite: 3632 or 4612 or permission. Practical application of principles of choreography in original production projects. (F, Sp)

**G5812 Advanced Teaching of Dance.** Prerequisite: 4812 or 4832. Theory and practical application of dance pedagogy on different levels of proficiency. (Irreg.)

**G5900 Professional Semester.** 3 to 6 hours. Prerequisite: permission. May be repeated; maximum credit six hours. Complete assignment(s) in a professional environment either performing, choreographing, teaching or in administrative work.

**G5913 Graduate Project in Dance.** Prerequisite: permission. May be repeated with change of subject matter; maximum credit six hours. Study and practice in assuming full responsibility of a project in the area of dance. (F, Sp, Su)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp, Su)

## Drama (DRAM)

**1013 Introduction to Design.** Intended to acquaint the student with the world of design—the process of selection and rearrangement in both nature and the man-made worlds. Students will examine the many elements of design at work around us as children, moving through the ways design has shaped our world and lives. Explore the processes of theatrical design in the forms of scenery, lighting, and costume. (F, Sp)

**1114 Costume Construction.** The theory and practice of the construction, finishing and handling of stage costumes. Includes practical production applications. **Laboratory** (F, Sp, Su)

**1124 Stagecraft.** The theory and practice of the construction, painting and handling of scenery and props. Includes practical production applications. **Laboratory** (F, Sp, Su)

**1133 Drawing and Rendering.** Exploring methods of using freehand drawing to communicate design ideas. Skill building course: form, shape, color, texture, light. Includes some mechanical drawing. (F, Sp)

**1134 Stage Lighting.** Acquaints the student with the technical procedures, instrumentation, equipment, organization and basic design of effective lighting. Includes practical production applications. **Laboratory** (F, Sp, Su)

**1141 Stage Management Seminar I.** A weekly forum for sharing insights and solving problems on current production assignments, as well as examining the bigger picture of stage management and theatre in America today. (F, Sp)

**1411 Makeup.** To direct and provide experience in the effective application of makeup materials in creating an impression of character. (F, Sp)

**1503 Acting for Nonmajors.** To develop a beginning understanding and appreciation of the art and skill of acting through the study of acting principles, dramatic scenes, and basic stage techniques. (F, Sp, Su)

**1513 Introduction to Acting.** To acquaint the beginning student with the fundamentals of acting and to explore the basic elements of the actor's art. Explores the physical, vocal, emotional and technical aspects of acting in a format that encourages freedom of imagination and personal growth. (F)

**1523 Character Study for the Actor.** Prerequisite: 1513. To develop and exercise basic acting skills through practical application of the fundamental elements of the actor's art. The student will become familiar with the actor's tools and learn how to utilize them on a rudimentary level. Emphasis will be placed upon characterization and beginning script analysis required for character study. (Irreg.)

**1603 Voice and Diction for Nonmajors.** Improves the student's voice, articulation, pronunciation and expressive intonation for effective communication. (Irreg.)

**1643 Voice and Diction I.** Prerequisite: 1523. Improves the student's voice, articulation, pronunciation and expressive intonation for effective communication, and performing for the stage. (Irreg.)

**1713 Understanding the Theatre.** A service course for nonmajors that covers the history and evaluation of various forms of dramatic production offered on stage. (F, Sp, Su) [IV-AF]

**1911 Rehearsal and Production.** Prerequisite: open to drama majors only. May be repeated; maximum credit four hours. Study, practice and participation in every phase of dramatic production work and management; attendance and critical discussion of plays. Kinds of service are given unit evaluations in terms of relative difficulty and time consumption. **Laboratory** (F, Sp, Su)

**2053 Computer Aided Drafting I for the Theatre.** Prerequisite: 1124 or 1133 or 1134 and sophomore standing. Teach the use of computer aided design for theatrical drafting. Drafting in Vectorworks and Spotlight. (F)

**2141 Stage Management Seminar II.** Prerequisite: 1141 or permission of instructor. A weekly forum for sharing insights and solving problems on current production assignment, as well as examining the bigger picture of stage management and theatre in America today. (F, Sp)

**2153 Scene Design.** Prerequisite: 1124 and 1133. Acquaints the student with the practical and aesthetic principles involved, and provides experience in designing scenery. (F)

**2223 Lighting Design.** Prerequisite: 2214, permission. Acquaints the student with advanced design, presentation, visual awareness and "styles" in lighting design. Includes practical production applications. (Sp)

**2233 Introduction to Technical Production.** Prerequisite: 1114, 1124, and major in drama. Survey of technical production skills in scene technology and costume technology including communications. Shop management and safety. (F)

**2243 Draping and Pattern Drafting I.** Prerequisite: 2233, permission of instructor, and sophomore standing. Topics and experiences related to draping skills and pattern drafting for the theatre. Demonstrations and hands-on experience using techniques discussed. **Laboratory** (F)

**2253 Draping and Pattern Drafting II.** Prerequisite: 2243. Continuation of 2243. Topics and experiences related to draping skills and pattern drafting for the theatre. Demonstrations and hands-on experience using techniques discussed. **Laboratory** (Sp)

**2323 Stage Movement.** Prerequisite: 1523. To give the drama student an understanding of the use of the body as an expressive instrument through development of flexibility, strength and coordination. (F)

**2343 History of Costume.** Prerequisite: permission. Acquaints the student with the costumes worn by people of dramatically significant periods and countries. (Sp)

**2513 Scene Study for the Actor.** Prerequisite: 1523, 1643 and permission. Designed to develop the actor's skill through the intensive study and performance of scenes from modern realistic world theatre. Emphasis will be placed upon building a character, milieu study, and scene structure. (F)

**2523 Performing Shakespeare.** Prerequisite: 2513 and permission. Designed to develop the actor's skill through the intensive study and performance of scenes and monologues from Shakespeare and other verse drama. Emphasis will be placed upon handling language with believable and appropriate characterization. (Sp)

**2633 Black Theatre History.** Prerequisite: Sophomore standing. Development of black theatre and drama from its beginnings in ancient Africa to the present, with the primary focus on the development of theatre by blacks in America and the contributions of black Americans to the American theatre. Lectures and class discussions, the reading of plays and at least one outside research project. (Irreg.) [IV-WC]

**2643 Voice and Diction II.** Prerequisite: 1643. Develops the actor's vocal instrument as an integrated and organic function of self and character. Focus on the expressive voice with verse texts. (Sp)

**2713 Introduction to Fine Arts.** Lectures, illustrated with slides, motion pictures, recordings and readings, surveying the development of the fine arts (architecture, drama, the visual arts and music) from prehistoric times to the present. Background material will include the religious, political and economic conditions and changes affecting the arts. (F) [IV-AF]

**2813 Stage Management.** Prerequisite: sophomore standing. Designed to give theatre students the background and skills to function as a stage manager for the theatre, dance, or opera productions. Introductory course covering the basics of scheduling, auditions, rehearsal procedures, technical rehearsals, and running the show. (Irreg.)

**3052 Illustration I: Dry Media.** Prerequisite: 1133 and sophomore standing. Studio class intended to facilitate illustration depicting theatre scenery and costume design through the use of colored pencil and pastel media. Focus on the human form clothed for theatre performance and on scenic rendering and/or vignettes. Exercises will stress the effect of light on the objects and the creation of fullness/plasticity. (F)

**3053 Computer Aided Drafting II for the Theatre.** Prerequisite: 1133 and sophomore standing. Computer aided design for the theatre. An exploration into the use of Renderworks and Spotlight as drafting and presentation tools, and Photoshop as an image manipulation tool. Covers topics of scenic renderings, lighting previsualization and costume design presentation. (Sp)

**3062 Illustration II: Wet Media.** Prerequisite: 1133 and junior standing. Studio class to build illustrative skill in communicating scenic and costume ideas for the theatre through the use of watercolor, gouache, and colored inks, as well as learning to think in terms of lighted objects. (Sp)

**3141 Stage Management Seminar III.** Prerequisite: 1141, 2141 or permission of instructor. A weekly forum for sharing insights and solving problems on current production assignments, as well as examining the bigger picture of stage management and theatre in America. (F, Sp)

**3165 Design Projects I.** Prerequisite: 1133, 2153, 2223, 3353. Provides the student experience in design for the theatre combining the areas of scene, costume and lighting design. Projects are team designed, supervised and critiqued. Production involvement also required. **Laboratory** (Sp)

**3213 Draping and Pattern Drafting III.** Prerequisite: 2243, 2253. Advanced topics and experiences related to draping skills and pattern drafting for the theatre. Demonstrations and hands-on experience using techniques discussed. **Laboratory** (F)

**3223 Costume Construction Techniques.** Prerequisite: 2233, 2243, junior standing and permission of instructor. Advanced work in the mechanics and technology of costume builder's draft including practical work in the costume shop. (F)

**3233 Tailoring for the Theatre.** Prerequisite: 2233, 2243, junior standing and permission of instructor. Intermediate and advanced dressmaking and tailoring techniques. Application of skills in costume. (Sp)

**3353 Costume Design and Construction.** Prerequisite: 1114 and 2343. Acquaints students with elementary costume design and construction, historical styles, character evaluation and design sources. (F)

**3413 Sound Design.** Prerequisite: junior standing and permission of instructor. Provides theatre students with the basic skills and concepts for designing sound as support for a theatrical production. This is a design course providing the necessary skills in script analysis, research, style, sound resources, and sound scoring. (Irreg.)

**3423 Advanced Graphic for Technical Theatre.** Prerequisite: 1133, 1134, and 2153. Increase the student's skill in the technical craft of drafting as a major communication device of scenery and lighting designers. Course will use international drafting conventions and U.S.I.T.T. standards. (Irreg.)

#### **3433 Advanced Materials for Stage Scenery and Properties.**

Prerequisite: 2233 junior standing and permission of instructor. Application of metals, plastics and non-traditional materials in scenic and properties construction. Emphasis on safety and efficacy. (Sp)

**3513 Performing Departures from Realism.** Prerequisite: 2523 and juried audition. Acquaints students with performance theory and practice for non-realistic plays and forms, exploring the material through exercises, improvisations and performances of scripted scenes. (F)

**3523 Performing New Plays.** Prerequisite: 2523 and juried audition. Provides practical experiences for the actor in working with playwrights on new, unpublished plays through performances in scenes, staged readings and through text readings in American acting traditions. (Irreg.)

**3613 Directing I.** Prerequisite: 2513, 3733 and junior standing; plus one of the following or concurrent enrollment in 2153, 2223, or 3353. Consists of lectures, demonstrations and exercises performed by members of the class. Includes, but is not limited to: stage management, dramatic and theatrical values of a play, play analysis and various techniques of directing. **Laboratory** (F)

**3623 Directing II.** Prerequisite: 3613. An intensive study for majors only of the craft and techniques involved in the directing of plays. Special emphasis is placed on script analysis; communication with actors; and practical laboratory work in employing these methods. Scenes from major dramatic works are rehearsed and prepared in class with extensive critique and "in-shop training." **Laboratory** (Irreg.)

**3643 Voice and Diction III.** Prerequisite: 2643. May be repeated; maximum credit six hours. Develops the actor's vocal instrument as an integrated function of self and character. Work on dialects. (F)

**3713 History of the Theatre I.** Prerequisite: junior standing and permission. Acquaints the student with the development of drama, theatre and production procedures through the ages from 500 B.C. to 1780. (F) [IV-WC]

**3723 History of the Theatre II.** Prerequisite: junior standing and permission. Continuation of 3713. Acquaints the student with the development of drama, theatre and production procedures through the ages from 1700 to the present. (Sp) [IV-WC]

**3733 Fundamentals of Play Structure and Analysis.** Prerequisite: six hours of freshman English. Analysis of the structure of plays of varied types and styles. Includes the reading of approximately 15 plays, with lectures and class discussions. (F)

**3820 Management Studio I.** Prerequisite: junior standing in drama. May be repeated with change of content; maximum credit six hours. Base for various units of study pertaining to the fields of theatre management and stage management. (F, Sp)

**3822 Stage Management Studio I.** Prerequisite: 2813 and junior standing. May be repeated; maximum credit four hours. Practical experience in stage management on university theatre productions. **Laboratory** (F, Sp)

**3833 Advanced Stage Management.** Prerequisite: 3813 and major in Drama. Advanced studies of stage management and production management techniques for theatre, dance, musical theatre, and opera. Topics covered include organization, communication, interpersonal relations, the production process, rehearsal and performance procedures and documentation. (Irreg.)

**3853 Theatre Management.** Prerequisite: permission of instructor. A study of the history of theatre management and a current look at trends in the industry. (F)

**3870 Management Laboratory.** Prerequisite: junior standing in drama and permission of instructor. May be repeated; maximum credit four hours. Practical experience in various areas of theatre and stage management production. (F, Sp)

**3910 Advanced Rehearsal and Production.** 1 to 2 hours. Prerequisite: one semester of 1911 and junior standing. Open to drama majors only. May be repeated; maximum credit four hours. Study and practice in an administrative or supervisory capacity of every phase of dramatic production work and management; attendance and critical discussion of plays. Kinds of service are given unit evaluation in terms of relative difficulty and time consumption. **Laboratory** (F, Sp, Su)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated with change of subject; maximum credit six hours. Consists of either reading topics or independent study designated by the instructor in keeping with the student's major program. Covers materials not usually presented in the regular courses. (F, Sp, Su)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated with change of subject; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work at a special project in the student's field. (F, Sp, Su)

**G4050 Company Workshop.** 2 to 6 hours. Prerequisite: permission. May be repeated with change of subject matter; maximum credit 12 hours. Study and practice in production, rehearsal and performance as members of a theatre company. **Laboratory** (Su)

**4073 Developing the Professional Perspective (Slashlisted with 5073).** Prerequisite: senior standing. Meant to give the artist the life tools to participate and thrive in an artistic lifestyle. No student may earn credit in both 4073 and 5073. (F)

**G4113 Scene Painting.** Prerequisite: 1114, 1124, 1133. The study and practice of traditional and new scene painting materials and techniques. Individual scene painting problems in the uses of dry pigments, casein, aniline dyes and texture materials. **Laboratory** (Sp)

**4141 Stage Management Seminar IV.** Prerequisite: 1141, 2141, 3141 or permission of instructor. A weekly forum for sharing problems on current production assignments, as well as examining the bigger picture of stage management and theatre in America today. (F, Sp)

**G4153 Theatre Architecture.** Prerequisite: 2153, 2214 or permission. A study of the history of the physical theatre; existing conditions in present day theatre; and new concepts in production and actor-audience relationship as it affects theatre structure. (Irreg.)

**G4163 Lighting Design for Dance/Musical Theatre/Opera.** Prerequisite: 2223, junior standing or permission. In-depth study and experimentations in lighting design of classical story ballets, contemporary modern dance, traditional American musical theatre and opera. The course will focus on design research, production graphics and paperwork, and design presentation. (Irreg.)

**G4165 Design Projects II.** Prerequisite: 3165. A continuation of 3165 on an intermediate level. Production involvement also required. **Laboratory** (F)

**G4175 Design Projects III.** Prerequisite: 4165. A continuation of 4165 on an advanced level. Production enrollment also required. **Laboratory** (Sp)

**G4213 Lighting Styles (Slashlisted with 5213).** The course content is based on the experimentation of lighting themes found in symbolism, constructivism, expressionism and absurdism. The course will focus on concept development, execution and presentation. The course will delve deeply into advanced lighting practices and current technology. No student may earn credit for both 4213 and 5213. (Irreg.)

**4223 Costume Fabrics.** Prerequisite: 2233, 2243, senior standing and permission of instructor. Comprehensive study of fabric materials and application to theatrical costume construction. (F)

**4233 Costume Crafts for Theatre.** Prerequisite: 2233, 2243, 2253, senior standing and permission of instructor. Study of and work with special techniques that employ dying and painting of fabrics and other materials used in costume construction; millinery (construction of headgear). Wig-making and the construction of three-dimensional costume elements such as padding to alter the actor's physical appearance. (Sp)

**4243 Costume Shop Management.** Prerequisite: 2233, senior standing and permission of instructor. Instruction and experience in shop

management including budgeting of resources, time management, personnel, and organization. (Sp)

**4253 History of Décor.** Prerequisite: majors only, junior standing and permission of instructor. Survey of interior and exterior decoration with particular emphasis on theatrical application. (F)

**4263 Advanced Crafts for the Theatre.** Prerequisite: 2233, junior standing and permission of instructor. Topics in theatrical uses of crafts such as upholstery, drapery, mold-making, sculpting and casting. (Sp)

**G4321 Advanced Stage Movement.** Prerequisite: 2323. Designed to equip the student with an extended awareness and further control of the body through the advanced development of strength, flexibility, coordination, and expressiveness. Also, familiarize the student with specific skills used in theatre movement training which may include: masking, Commedia dell'Arte, period styles, circus skills, and/or stage combat. (Irreg.)

**G4513 The Audition Process.** Prerequisite: 2523 and juried audition. Teaches the audition process including selection and preparation of audition pieces, preparation of photos and resumes, training for interviews, preparation for advanced training programs and an introduction to issues unique to the performance profession. (F)

**G4523 Acting for the Camera.** Prerequisite: 2523 and jury auditions. Designed to instruct the student in the requirements, discipline, and basic techniques of working on camera as a professional actor, with an appreciation of the full process of creating a film or television program. All work by the student will be videotaped then subsequently replayed with a critique by the instructor. (Sp)

**4643 Advanced Voice: Extended Usage.** Prerequisite: juried auditions. This work will focus on developing the voice for extended usage as in combat, laughing, crying, shouting, screaming, topping extraneous noise, and projecting in large or outdoor venues. The foundations of breath, resonance, and the free and open vocal track will be reviewed. Anatomy and care of the voice will also be stressed. Current theories of voice training will be explored through reading and discussion. The performance of monologues and short scenes will be used to practice skills. (Sp)

**4723 American Theatre History.** Prerequisite: 3733. Approaches the history of American theatre topically by exploring the interactions between the theatre and the social and cultural context in which it has developed and flourished from colonial times to the present. (Irreg.)

**4733 Dramaturgy Seminar.** Prerequisite: 3733. Designed to train students to do dramaturgy and literary management as they are currently practiced in American theatre. Develops students' skills in theatre research, writing and script analysis which may be applied to the functions of a dramaturg or other artist in the field. (Irreg.)

**4743 The Modern Theatre.** Prerequisite: 3713 and 3733 or permission. A survey of the modern western theatre from 1870 to the present emphasizing those departures in playwriting and scenography from the realistic mainstream. (Irreg.)

**G4773 Playwriting I.** Prerequisite: permission. Study and practice in playwriting. Acquaints the student with dramatic structure and technical limitations placed upon material written for dramatic production and provides experience in writing for the stage. (F, Sp)

**G4783 Playwriting II.** Prerequisite: permission. Study and practice in playwriting. Acquaints the student with dramatic structure and technical limitations placed upon material written for dramatic production and provides experience in writing for the stage. (F, Sp)

**4803 Capstone Experience.** Prerequisite: permission of instructor. Advanced, individual project which demonstrates mastery of skills and knowledge in student's area of interest, selected under advisement and guided by appropriate faculty member(s). Take in the senior year, capstone requires written document, either explanatory or evaluative, of the entire capstone project in appropriate research paper format. (F, Sp, Su) [V]

**4810 Performance Practicum.** 1 to 2 hours. Prerequisite: permission. May be repeated; maximum credit 10 hours. Study and practice in rehearsal and performance as a cast member of OU Theatre. (F, Sp)

**4820 Management Studio II.** Prerequisite: 3820 and senior standing in drama. May be repeated with change of content; maximum credit six hours. Bas for various units of study pertaining to the fields of theatre management and stage management. (F, Sp)

**4822 Stage Management Studio II.** Prerequisite: 3822 and senior standing. May be repeated; maximum credit four hours. Practical experience in stage management on university theatre productions. **Laboratory** (F, Sp)

**4843 Producing.** Prerequisite: junior standing and permission of instructor. Introduces the process and practice of theatrical producing. Includes the history of producing, as well as contemporary approaches in both the not-for-profit and commercial venues. Research papers, reports and experience with university productions are required. (Sp)

**4853 Advanced Theatre Management.** Prerequisite: 4843 and major in drama. An evaluative study of specific management applications in the field of theatre. (Sp)

**4863 Theatre Marketing.** Prerequisite: permission of instructor. A study of the methods and practices in marketing the arts in America. (Irreg.)

**4873 Management Practicum.** Prerequisite: 3871 and major in drama. An intensive laboratory experience in a specific area of theatre or stage management. (F, Sp)

**G4900 Professional Semester.** 3 to 12 hours. Prerequisite: junior or senior standing. Internship with a non-academic theatre (or theatre-related) organization which will augment the students' academic experiences. (F, Sp, Su)

**4913 Theatre Career Development.** Prerequisite: senior standing and permission of instructor. Acquaint student with myriad organizations, resources and offices available so they can be better prepared to make a successful transition to a professional career. (F)

**4940 Special Topics Theatre.** 2 to 6 hours. Prerequisite: junior standing or permission of instructor. For majors only. May be repeated with change of content; maximum credit six hours. Varying topics in the study and practice of theatre and drama not covered in regularly scheduled courses or new developments within the area of expertise. (Irreg.)

**4990 Special Studies.** 2 to 6 hours. Prerequisite: permission. May be repeated with change of subject matter; maximum credit 12 hours. A special creative or research project course on an advanced level in any phase of the theatre or drama adapted to the individual student. (F, Sp, Su)

**G5013 Introduction to Graduate Study.** Prerequisite: graduate standing. Research methods and various types of critical expression and scholarly investigation. (F)

**G5050 Company Workshop for Graduate Students.** 2 to 6 hours. Prerequisite: permission. May be repeated; maximum credit 18 hours. Study and practice in production, rehearsal and performances as members of a theatre company. **Laboratory** (Su)

**G5073 Developing the Professional Perspective (Slashlisted with 4073).** Prerequisite: Graduate standing. Meant to give the artist the life tools to participate and thrive in an artistic lifestyle. No student may earn credit in both 4073 and 5073. (F)

**G5112 Readings in Design Technology.** Prerequisite: graduate standing. Directed readings to provide knowledge of literature in the field. Titles selected from general area of design in the theatre with other titles pertinent to specific area of interest of the student. (F, Sp, Su)

**G5142 Design Apprenticeship.** Prerequisite: graduate standing and permission. Repeat one time; area may be changed on repetition. Provides professional practice for the student. Student assists designer in area of scenery, lighting or costumes in the research, drafting, rendering, model building, material selection, etc. as applicable in practical production situations. **Laboratory** (F, Sp, Su)

**G5163 Technical Production Practice.** Prerequisite: 12 hours of drama, including a course in stagecraft. Study in the theory and practice of technical production to render the student capable of assuming the full responsibility for staging a full-length play each semester. (Irreg.)

**G5165 Design Studio.** Prerequisite: graduate standing and permission. To be taken three times for total of 15 credit hours. Not open for credit toward M.A. degree. The design studio sequence provides the graduate student with experience of both practical and aesthetic nature within his/her design specialization. The student will work with both real and theoretical projects to build skill as designer and technician. **Laboratory** (F, Sp, Su)

**G5213 Lighting Styles (Slashlisted with 4213).** Prerequisite: 2223. The course content is based on the experimentation of lighting themes found in symbolism, constructivism, expressionism and absurdism. The course will focus on concept development, execution and presentation. The course will delve deeply into advanced lighting practices and current technology. No student may earn credit for both 4213 and 5213. (Irreg.)

**G5613 Graduate Directing.** Prerequisite: 12 hours of drama, including a course in acting, a course in interpretation and a course in directing. May be repeated up to three times with change of topic. A survey covering the various problems the graduate director might encounter. (F, Sp)

**G5643 Advanced Voice: Extended Usage.** Prerequisite: graduate standing. This work will focus on developing the voice for extended usage as in combat, laughing, crying, shouting, screaming, topping extraneous noise, and projecting in large or outdoor venues. The foundations of breath, resonance, and the free and open vocal track will be reviewed. Anatomy and care of the voice will also be stressed. Current theories of voice training will be explored through reading and discussion. The performance of monologues and short scenes will be used to practice skills. (Sp)

**G5723 American Theatre History.** Prerequisite: graduate standing or permission of instructor. Approaches the history of American theatre topically by exploring the interactions between live theatre and the social and cultural context in which it has developed and flourished from colonial times to the present. (Irreg.)

**G5733 Graduate Play Structure and Analysis.** Prerequisite: graduate standing or permission of instructor. Instructs students in methods of structural analysis of dramatic literature encompassing a wide range of periods, styles and genres. (Sp)

**G5743 Modern Theatre.** Prerequisite: graduate standing or permission of instructor. Survey of modern American and European theatre from the 1880s to the 1980s, beginning with Realism and following the developments of nonrealistic styles of playwriting and production, through the post-modern period. (Irreg.)

**G5753 Period Style for the Theatre.** Prerequisite: graduate standing or permission of instructor. Introduces students to the major periods in art, literary, and cultural history from the Romanesque to the Romantic era through the study of painting, sculpture, architecture, interior design, costume, manners, music, and dramatic literature. (Irreg.)

**G5763 Forces in 20th Century Design.** Prerequisite: graduate standing or permission of instructor. Familiarizes students with artistic moments and important persons that have contributed to and influenced the nature of the theatrical experience in the 20th century. (Irreg.)

**G5900 Professional Semester.** Prerequisite: graduate standing. Internship with a non-academic theatre (or theatre-related) organization which will augment the student's academic experiences. (F, Sp, Su)

**G5913 Graduate Production Project.** Prerequisite: 5163 and 5613 or permission. May be repeated with change of subject matter; maximum credit nine hours. Study and practice in assuming full responsibility for the staging of a full-length play. **Laboratory** (F, Sp, Su)

**G5924 Graduate Performance/Process Studio.** Prerequisite: graduate standing. May be repeated; maximum graduate credit 16 hours for acting students; eight hours for directing students. Concentrated exercises and projects toward the development of the total actor and the director in the context of the actor. Work toward sensitizing the standards to self and environment; work on physical self: the vocal instrument, self in space, through work on scripts and performance of scripts in studio. **Laboratory** (F, Sp)

**G5940 Special Topics in Theatre Drama.** Prerequisite: graduate standing or permission of instructor. For majors only. May be repeated with change of content; maximum credit nine hours. Varying topics in the study and practice of theatre and drama not covered in regularly scheduled courses or new developments within the area of expertise. (Irreg.)

**G5970 Graduate Seminar.** 1 to 4 hours. Prerequisite: 12 hours of drama and graduate standing or permission. May be repeated with change of subject matter; maximum credit 12 hours. (F, Sp, Su)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, six hours. (F, Sp, Su)

**G5990 Special Studies for Graduate Students.** 2 to 6 hours. Prerequisite: permission. May be repeated with change of subject matter; maximum credit each time six hours. (F, Sp, Su)

## Economics (ECON)

Courses offered through the Advanced Programs format have a two-hour credit award with a one-hour additional independent study option, and the course numbers are listed on the transcript as ending with 2 and 1. To gain the full equivalent of the content as the comparable course listed on campus, both the two-hour and one-hour enrollment must be completed.

**1003 The Economic Way of Thinking.** The fundamental framework economists use to analyze problems. Explores the ways in which the private and public sectors of the economy interact to create social wealth.

Topics include market maximization of social wealth, market imperfections, and the role of government intervention. Majors may not use this courses for major credit. (Irreg.)

**1113 Principles of Economics—Macro.** The functioning and current problems of the aggregate economy: determination and analysis of national income, employment, inflation and stabilization; money and banking, monetary and fiscal policy; and aspects of international interdependence. **Laboratory** (F, Sp, Su) [III-SS]

**1123 Principles of Economics—Micro.** Goals, incentives and allocation of resources resulting from economic behavior with applications and illustrations from current issues: operation of markets for goods, services and factors of production; the behavior of firms and industries in different types of competition and income distribution. **Laboratory** (F, Sp, Su) [III-SS]

**2523 Health Economics and Health Promotion.** Analyze basic health policy issues through the use of basic economic principles. Topics included will be the role of taxation and regulation in promotion public health, health promotion program evaluation, and health care reform. (Sp)

**2843 Elements of Statistics.** Prerequisite: Mathematics 1443 or equivalent. Basic statistical techniques emphasizing business and economic applications. Topics covered include data summary techniques, elementary probability theory, estimation, hypothesis testing, simple regression, time-series and index numbers. **Laboratory** (F, Sp, Su) [I-M]

**Unless otherwise noted, the prerequisite for economics courses numbered 3000-3999 is nine hours of economics, or 1113 and 1123 and six advanced hours of another social science, or senior standing.**

**3003 Prices and Information.** Prerequisite: junior standing. Examines how markets direct private enterprises to produce social wealth. Topics include how private markets generate wealth, when unregulated private markets are likely to fail to maximize social wealth, and under what conditions government interventions are likely to improve market outcomes. (Irreg.)

**+G3113 Intermediate Price Theory.** Fundamental economic concepts and principles; value and distribution theories under conditions of competition, monopoly and monopolistic competition. Appraisal of modern problems in terms of these theories. (F, Sp) [III-SS]

**+G3133 Intermediate Macroeconomic Theory.** National income concepts; aggregate demand by household, business, government, and foreign sectors; determination of national income, interest rate, price, output, and employment levels. (F, Sp, Su)

**3213 Environmental Economics.** Prerequisite: 1123. Economic approach to environmental protection; analysis focuses on property rights and externalities. Examines strategies for addressing externalities including command-and-control regulation, emissions taxes, and tradable discharge permits. Topics include air pollution, water pollution, waste disposal and recycling, and endangered species protection. (Irreg.)

**3233 Information Technology and The Economy.** Prerequisite: 1123. Examine the role of information and technology in the economy. Topics will include the importance of network externalities, the growth of e-commerce, and the economic analysis of standards and protocols. (Irreg.)

**3513 Labor Problems.** Problems of labor in an industrial society; wages, hours, working conditions, child labor. Conflicts between management and labor. (F)

**+G3533 Economics of Collective Bargaining.** Economic effects of collective bargaining contracts on wages, employment production and prices. Specific contracts studied. (F)

**3613 International Trade Theory and Problems.** Prerequisite: 1113, 1123. Benefits of trade, determination of the direction and level of trade, commercial policy and trade barriers, international trade problems and issues. (F, Sp)

**3633 International Finance Theory and Problems.** Prerequisite: 1113, 1123. Effects of international trade on employment, inflation, the exchange rate, effects of devaluation, types of international monetary arrangements, effects of foreign transfers, open economy macroeconomic policy. (F, Sp)

**+G3713 Governmental Relations to Business.** Analysis of economic aspects of government regulation and direction of business enterprise; controls affecting managerial discretion in the determination of prices and other basic business policies. (F, Sp, Su) [III-SS]

**3880 Directed Readings.** 1 to 3 hours. Prerequisite: permission of instructor. May be repeated; maximum credit six hours. Readings will consist of topics designated by the instructor in keeping with student's specialization within major program. Topics will cover materials not usually presented in regular courses. (F, Sp, Su)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to the Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. The topics will cover materials not usually presented in the regular courses. (F, Sp, Su)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. The projects covered will vary. The content deals with concepts not usually presented in regular coursework. (Sp)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work at a special project in the student's field. (F, Sp, Su)

**Unless otherwise noted, the prerequisite for economics courses numbered 4000–4999 is 12 hours of economics, or 1113 and 1123 and nine advanced hours of another social science, or senior standing.**

**G4223 Econometric Analysis.** Prerequisite: 1113, 1123, 2843. Classical statistical inference; means, proportions, variances, analysis of variance and covariance; regression and correlation analysis; normal, binomial, chi-square, t, F, Poisson, exponential distributions. (F, Sp) [I-M]

**G4233 Economic Forecasting.** Prerequisite: 4223. Introduces students to techniques of applied forecasting in economics. Topics include data mining, ARMA models, simulation techniques, unit roots and stochastic trends, and vector autoregression models. The course will have a strong orientation toward empirical applications. (Sp)

**4313 Industrial Organization.** Prerequisite: 2113, 2123, 2843 and permission of instructor. Examines the market structure, conduct and performance of various industries. Topics include: theory and empirical results regarding structure, conduct and performance; the structure of U.S. industry versus other countries; recent developments; and antitrust policy. (Irreg.)

**G4353 Public Finance.** Prerequisite: Finance 3403 or permission. Public expenditures, their nature, cause of the increase, and classification; sources of public revenue; methods of distributing the tax burdens; public debts and debt management; introduction to fiscal theory and policy. (F, Sp)

**4363 Market Process Economics (Slashlisted with 5363).** Prerequisite: 3113 or permission of instructor. Examines the "Austrian" economics market process theories based on the work of Ludwig von Mises and Friedrich Hayek. Topics include disequilibrium view of markets, the nature of economic knowledge, the role of entrepreneurship, and the critique of central planning. No student may earn credit for both 4363 and 5363. (Irreg.)

**4373 Regulation and Public Utility Economics.** Prerequisite: senior standing. Application of economic theory and techniques to regulated industries and public utilities. Topics include history and theoretical basis for regulation, exit and entry restrictions, theory versus empirical results, regulatory methods and principles, rate of return regulation, and public ownership. (F)

**4413 International Trade, Law, and Institutions.** Prerequisite: 1123, 3613. Explores the interface of the economics and legal professions' analysis of international trade. The class will explore some of the issues and topics of common interest from the perspective of each profession. (F)

**4453 Urban Economics.** Prerequisite: 3113. Study of economic models of urban location, including firm location and residential location models. Public policy topics of urban taxation, residential housing discrimination, urban renewal, etc. will also be discussed from an economic perspective. (Irreg.)

**G4513 The Economics of Discrimination.** Prerequisite: 1123. This course will focus on discrimination in the labor market. Topics to be covered include wage discrimination, employment discrimination, and occupational segregation. Examples will be drawn frequently from current events and public policies. (F, Sp)

**G4713 Latin American Economic Development.** Prerequisite: 1113 and 1123. Examine the major characteristics of Latin American economic development, from the evolution of economic policy in the region since independence, to the recent problems with industrialization policy, debt, inflation and stabilization, and economic reform. (F)

**4723 International Financial Institutions and Development Policies.** Prerequisite: junior standing. Examines the origins of the policies of the Bretton Woods institutions. Develops methods to evaluate the macroeconomic policies and studies the missions and structures of the institutions. (Irreg.)

**G4753 Analysis of Contemporary Economic Issues.** Prerequisite: permission of instructor. May be repeated with change of topic; maximum

credit nine hours. An application of economic analysis to contemporary problems. Specific topics to be announced each time offered. (F, Sp)

**G4823 Introduction to Comparative Economic Systems.** Prerequisite: 3113, 3133 or permission of instructor. Concerned principally with a comparative economic and institutional analysis of past and present systems. (Sp)

**4853 World Economic Development (Slashlisted with 5853).** The economics of the developing nations; a review and analysis of common problems and issues. No student may earn credit for both 4853 and 5853.

**+G4873 Economics and Law.** Prerequisite: 3113. This course is designed to exemplify the flexibility and relevance of microeconomic principles as they apply to various areas within the common law and to familiarize students with economic model-building in a manner consistent with the judicial process and "real-world" legal problems. (Sp)

**4983 Economics as Social Science.** Prerequisite: 1113, 1123, 2843, 3113, 3133 or permission of instructor. Examination of selected topics in various subdisciplines within economics e.g., international trade and finance, econometrics, energy economics, public finance, labor economics, economic history and development, etc. [V]

**Unless otherwise noted, the prerequisite for all courses numbered 5000 and above is graduate standing and permission of instructor.**

**G5023 Statistics for Decision Making.** Prerequisite: admission to Master of Business Administration program or permission of instructor. Covers basic probability density functions, the parametric estimating techniques of linear multivariate regression analysis and the elements of statistical decision making under uncertainty. (F, Sp, Su)

**G5033 Managerial Economics I.** Prerequisite: graduate standing. Practical applications of economic theory and techniques to business problems. Topics include: demand theory and estimation; production and cost theory; empirical cost analysis; pricing practices, market structure and antitrust policy; corporate strategies for dealing with risk; long-term investment decisions with emphasis on plant size, technological change and investment requirements. (F, Sp)

**G5043 Managerial Economics II.** Prerequisite: 5033, 5073. Emphasizes current topics in several areas including: regulation, business and government, antitrust economics, the economics of intellectual capital markets, and the economics of technological change. Strategies for management will also be discussed. (Irreg.)

**G5063 Quantitative Economic Methods.** Prerequisite: permission of instructor. Covers the mathematical techniques used by Ph.D-level economics courses. All MA (Theory) and Ph.D. students are required to take this course or test out of it. (F)

**G5073 Contemporary Economic Methods and Analysis.** A review of contemporary economic methodology and theory and their application to the analysis of macroeconomic questions and problems in the American economy. Techniques of economic forecasting will also be covered. (F, Sp, Su)

**G5123 Advanced Price and Welfare Theory.** Prerequisite: 3113 or equivalent, senior standing or permission. An intensive study of the static and dynamic welfare and efficiency properties of the price and market system method of social organization. Topics include: theory of markets, game theory, capital theory and intertemporal equilibrium, general equilibrium and employment, welfare theory. (Sp)

**G5153 Mathematical Economics I.** Prerequisite: 2843, 3113, 3133. Investigation of several important models of economic activity. Emphasis on methods of analysis and interpretation involving construction of mathematical models reflecting the economic substance of these models. Implications for economic policy considered.

**G5163 Advanced Macroeconomic and Growth Theory.** Prerequisite: 3113, 3133. Comparison of static macroeconomic systems; introduction to dynamic macroeconomic systems; post-Keynesian and modern theories of economic growth. (F)

**G5173 Urban and Regional Analysis (Crosslisted with Regional and City Planning 5173).** Prerequisite: Regional and City Planning 5113 or equivalent. A lecture-seminar-problems-oriented course designed to acquaint the student with the scientific techniques used to analyze urban and regional social, economic, political and environmental problems. Oriented to reflect requirements for studies leading to the preparation of goals, policies, and plans for urban and regional scale development. (Sp)

**G5213 Advanced Econometrics.** Prerequisite: graduate standing. Measurement of micro- and macro-economic relations, both static and dynamic. Comparative statics and dynamics; practical use of inference from non-experimental data. Identification and estimation problems. (Irreg.)

**G5243 Econometrics II.** Prerequisite: 5213. Systems of equations, alternative methods of estimation, including indirect least squares, limited information, two- and three-stage least squares, full information maximum likelihood, formulation and interpretation of econometric models. (F)

**G5273 Survey of International Economics.** Prerequisite: graduate standing. Examines topics in international trade and finance including and evaluation of economic policies and international institutions. Public policy topics such as the impact of tariffs, quotas and exchange rates will be discussed. (Irreg.)

**G5313 Advanced Industrial Organization.** Prerequisite: graduate standing. Examines the market structure, conduct and performance of various industries. Topics include: theory and empirical results regarding structure, conduct and performance; the structure of U.S. industry versus other countries; recent developments; and antitrust policy. (Irreg.)

**G5353 Public Finance II.** Prerequisite: 4353 or permission of instructor. Teach advanced principles of public finance. The chief topics are market failure and public goods, public choice and principles of expenditure analysis.

**G5363 Market Process Economics (Slashlisted with 4363).** Prerequisite: graduate standing. Examines the "Austrian" economics market process theories based on the work of Ludwig von Mises and Friedrich Hayek. Topics include disequilibrium view of markets, the nature of economic knowledge, the role of entrepreneurship, and the critique of central planning. No student may earn credit for both 4363 and 5363. (Irreg.)

**G5373 Advanced Regulation and Public Utility Economics.** Prerequisite: graduate standing. Application of economic theory and techniques to regulated industries and public utilities. Topics include history and theoretical basis for regulation, exit and entry restrictions, theory versus empirical results, regulatory methods and principles, rate of return regulation, and public ownership. (F)

**G5453 Advanced Urban Economics.** Prerequisite: graduate standing. Study of economic models of urban location, including firm location and residential location models. Public policy topics of urban taxation, residential housing discrimination, urban renewal, etc. will also be discussed from an economic perspective. (Irreg.)

**G5613 International Economics—Trade.** Prerequisite: 3613 and Mathematics 1743 or permission of instructor. Causes and effects of international trade; gain from trade; theory of tariff and effective protection; economic growth and trade; intermediate products; optimal trade policies; factor market imperfections; theory of integration. (Sp)

**G5633 International Economics—Finance.** Prerequisite: 3613 and Mathematics 1743 or permission of instructor. Foreign exchange rates; balance of payments; alternative international monetary systems; international reserves. (F)

**G5733 Macro/Microeconomics for MBA's.** Covers basic macro- and microeconomics needed for MBA students including international economic issues. (Sp)

**G5853 World Economic Development (Slashlisted with 4853, Crosslisted with Regional and City Planning 5853).** Prerequisite: graduate standing. The economics of the developing nations; a review and analysis of common problems and issues. No student may earn credit for both 4853 and 5853. (Irreg.)

**G5933 Economic Analysis of Energy Markets.** Prerequisite: 5033 or equivalent; graduate standing. Economic analysis of the competitive relationships in the oil, natural gas, coal and electricity markets. Special attention is given to the determinants of price and the influence of price upon the economic feasibility of energy projects. The structure and pricing of international crude oil markets. Federal and state legislative and regulatory policy; their influence upon energy production and prices. (F)

**G5940 Research in Economic Problems.** 1 to 3 hours. May be repeated; maximum credit six hours. (F, Sp, Su)

**G5960 Readings in Selected Fields of Economics.** 1 to 4 hours. May be repeated; maximum graduate credit eight hours. The only passing grade given in this course is the neutral grade of S. Directed readings under staff supervision for advanced students. A comprehensive report or examination is required. (F, Sp, Su)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp, Su)

**G5990 Special Studies.** 1 to 3 hours. May be repeated with change of topic; maximum credit 12 hours. Advanced studies in various areas of economics. Given under stated titles determined each semester by the instructor involved. (F, Sp)

**G6103 History of Economic Analysis I.** Prerequisite: 5123, 5163, permission of instructor. Preclassical and classical economic analysis, with emphasis chronologically on particular authors beginning with Plato. A study of their points of view and their relevance to contemporary analysis and problems. (Sp)

**G6123 Planning and Policy Analysis: Advanced Methods.** Prerequisite: 5123. Covers advanced data analysis techniques useful for performing policy analysis. Focus on: structural regional modeling, program evaluation and experimental design. Goal is to help students develop a broad understanding of the methodological and empirical issues needed to evaluate public policy programs. (Irreg.)

**G6213 Seminar in Price and Welfare Theory.** Prerequisite: 5123 or equivalent, graduate standing. Current theoretical issues and research developments are explored. Attention is given to externalities, social welfare functions, market and nonmarket choice mechanisms, capital theory and analysis of intertemporal adjustments, general equilibrium under dynamic growth conditions. (F)

**G6313 Seminar in Macro and Growth Theory.** Prerequisite: 5163. Detailed analysis of static and dynamic macroeconomic systems; macrostatic and macrodynamic policy issue. (Irreg.)

**G6333 Seminar in Industrial Organization.** Prerequisite: graduate standing or permission of instructor. Survey of recent industrial organization, public utility and regulation literature.

**G6343 Econometrics III.** Prerequisite: 5243. Topics and techniques in advanced econometric methods including time-series analysis and/or panel data analysis. May include applications in time-series econometrics such as ARMA models and VAR techniques; and applications in panel data econometrics including fixed effects, random effects and dynamic models. (F)

**G6373 Econometrics IV.** Prerequisite: 6343. Examines advanced topics in theoretical and applied econometrics. The course covers recent innovations in econometric techniques including general method of moments estimators, panel cointegration techniques, and other advanced topics. (Sp)

**G6613 Seminar in International Economics.** Prerequisite: 5613 or 5633. Survey of recent literature in international economics. Recent theoretical and empirical research in international trade and/or international finance will be examined. (Irreg.)

**G6693 Seminar in Economic Development.** Problems of economic development with special emphasis on the developing nations. Theoretical as well as policy issues concerning the process of economic development are examined. (Irreg.)

**G6773 Seminar in Public Economics.** Prerequisite: 5313 or permission of instructor. Survey of recent literature in the economics of public finance. Recent theoretical and empirical research will be examined. (Irreg.)

**G6980 Research for Doctor's Dissertation.** (F, Sp, Su)

## EDUCATION COURSES

### *Education (EDUC) — Professional Sequence and General Courses*

Courses offered through the Advanced Programs formatting have a two-hour credit award with a one-hour additional independent study option, and the course numbers are listed on the transcript as ending with 2 or 1. To gain the full equivalent of the content as the comparable course listed on campus, both the two-hour and one-hour enrollment must be completed.

### Professional Sequence Courses

**2400 Field Experiences in Education.** (Also listed under Professional Studies in Education.) 1 to 3 hours. Introduction to education as a profession based upon assignment to public schools and other educational agencies. Students will be expected to observe the schools in action, interact with students and professionals and participate in the instructional process. (F, Sp, Su)

**4050 Teaching Experiences in the Elementary School.** 4 to 10 hours. Prerequisite: admission to student teaching; 3012, 3032, 3042, EDSP 3053, EDFN 3003, EDPY 3483; a 2.50 grade point average; 90 credit

hours; corequisites 4003 and 4070. Enrollment for fewer than eight hours requires special recommendation by the student's counselor. Laboratory activities under competent direction and supervision: orientation, observation, and classroom teaching experiences supported by seminars and conferences which focus upon the problems of teaching. Prospective teachers receive instruction, aid, and constructive supervision in classroom management, evaluation of pupil behavior, methods of teaching, selection of teaching materials and school-home-community relations. (F, Sp)

**4060 Teaching Experiences in the Secondary School.** 4 to 10 hours. Prerequisite: admission to student teaching; 3012, 3032, 3042, EDSP 3053; EDFN 3003, EDPY 3483; a 2.50 grade point average; 90 credit hours; corequisites 4003 and 4070. Enrollment for fewer than eight hours requires special recommendation by the student's counselor. Correlation of theory and instructional practices in secondary education; supervised observation, teaching, classroom management, and evaluation; acquaintance with the administration of a school and the school program; selection and use of appropriate instructional materials; conferences with supervisors; seminar on problems of teaching; methodology, professional problems, and placement. (F, Sp)

## General Courses

These courses are used college-wide take the prefix of the particular program area; i.e., EACS, EDAH, EDFN, etc.

**2960 Individual Study.** 1 to 4 hours. Prerequisite: good standing in University; fewer than 62 total hours; approval of instructor and dean. May be repeated; maximum credit four hours. Designed to provide an introduction to the study of education through a rigorous program of readings under the direction of a member of the faculty.

**3960 Honors Reading.** Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides students with the opportunity to develop an appropriate body of reading materials on topics not covered in detail in routine coursework. Students will be obliged to assume the primary initiative in selecting the topic, compiling the bibliography and completing the reading, and will report their progress in weekly sessions to their instructor. Credit will be given only after an intensive oral examination.

**3970 Honors Seminar.** Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Covers variable subjects in education with in-depth studies of issues not covered in the standard course offerings.

**3980 Honors Research.** Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for honors students to work on a special project under the guidance of a professor in the student's major area of study.

**4960 Directed Readings in Education.** 1 to 4 hours. Prerequisite: good standing in University; permission of instructor and dean. May be repeated; maximum credit four hours. Designed for upper-division students preparing to teach who need opportunity to study a specific problem in greater depth than formal course content permits.

**4980 Practicum in Education.** 1 to 3 hours. Prerequisite: nine hours of education courses. Provides field-type experience under faculty supervision and is designed to introduce the student to the practical application of theory within an environment in which professional practice takes place.

**4990 Special Problems in Education.** 1 to 4 hours. Prerequisite: permission of instructor. May be repeated with change of title and subject. Variable as to subject and credit for areas of specialty and/or interest not otherwise provided in the standard offering of courses.

**G5910 Practicum in Education—Master's.** 1 to 4 hours. Prerequisite: graduate standing, permission of instructor and dean. May be repeated; maximum credit six hours. Variable as to title and subject profession. Provides field-type experience under faculty supervision and is designed to introduce the student to the practical application of theory within an environment in which professional practice takes place. Seminar experience is to be included.

**G5920 Internship in Education—Master's.** 1 to 6 hours. Prerequisite: 5910, permission of instructor. May be repeated; maximum credit six hours. Variable as to title and subject profession. Available to master's degree programs specifically requiring an internship in addition to thirty-two hours of other coursework as part of the degree. Introduces the student to the profession under the supervision of a practitioner whose credentials are equal to those of the graduate faculty.

**G5940 Field Studies in Education.** 1 to 4 hours. Prerequisite: 12 hours of education. May be repeated with change of subject matter; maximum

credit eight hours. Practical problems in education as defined by members of the classes. Typical topics: defining educational objectives, relating school programs to established objectives, developing teaching-learning aids, organization for participation in developing and evaluating instructional programs, using community resources for learning, improving evaluation procedure.

**G5960 Directed Readings.** 1 to 4 hours. Prerequisite: 12 hours of education, approval of instructor, adviser and dean. May be repeated; maximum undergraduate credit eight hours; maximum graduate credit four hours.

**G5972 Pre-Master's Seminar.** Prerequisite: 12 hours of education, graduate standing, permission of instructor. May be repeated; maximum credit four hours. Enrollment limited to students who are in early post-baccalaureate curricula.

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours.

**G6902 Pre-Doctoral Seminar.** Prerequisite: graduate standing. An introduction to advanced graduate scholarship in education, including a review of advanced level trends and issues in specific fields within education.

**G6910 Practicum in Education—Doctoral.** 1 to 6 hours. Prerequisite: admission to doctoral program, permission of instructor. May be repeated; maximum credit six hours. Variable as to title and subject profession. An advanced practicum for post-master's level students only. The object is to provide professional experience under faculty supervision in fields requiring a high degree of professional skill. Seminar experience is to be included.

**G6920 Internship in Education—Doctoral.** 1 to 6 hours. Prerequisite: written permission of the instructor. May be repeated; maximum credit 12 hours. Variable as to title and subject profession. An advanced internship for post-master's level students only. The object of the internship is to cultivate within the student a high degree of proficiency and professional independence. Field supervision is by a practitioner whose credentials are equal to those of the graduate faculty.

**G6930 Intensive Studies in Education.** 1 to 6 hours. Prerequisite: 12 hours of education and permission of instructor. Repeatable with change of title and subject. Opportunity offered for professional educators and others interested in education, cooperatively, to seek solutions to educational problems. Organized groups work in curriculum, guidance, instruction, administration and supervision. Competent leadership and expert consultant service provided.

**G6970 Post-Master's Seminar.** 2 to 4 hours. Prerequisite: master's degree, 24 hours of education, permission of instructor. May be repeated with change of subject matter; maximum credit twelve hours. Enrollment limited to students who hold the master's degree. (F, Sp, Su)

**G6980 Research for Doctor's Dissertation.** Maximum of 15 hours credit for the Ed.D. and 30 hours for the Ph.D.

**G6990 Individual Study in Education.** 1 to 4 hours. Prerequisite: 12 hours of education, graduate standing and permission of the instructor. May be repeated with change of subject matter; maximum credit eight hours. For advanced graduate students who need to study some problem or area not adequately covered in the organized courses, under the direction of a staff member in whose area of specialization the problem lies.

## Adult and Higher Education (EDAH)

**2963 R.A. Training.** Introduces various theories and skills that aid the student in the performance of the duties of a resident advisor. Areas of study include student development theory, community development, programming, peer counseling, and policy enforcement. The class will review current issues confronting college students. (F, Sp)

**4993 R.A. Training Special Problems in Education.** Prerequisite: junior standing. Introduces various theories and skills that aid the student in the performance of the duties of a resident advisor. Areas of study include student development theory, community development, programming, peer counseling, and policy enforcement. The class will review current issues confronting college students. Students will also be involved in University community-building programs and special events which relate to the roll of resident advisor. (F, Sp)

**G5013 The Adult Learner.** Prerequisite: graduate standing. Course content includes: (a) recent history; (b) social, technological and economic factors associated with changes in educational philosophy with consequences for lifelong learning; (c) trend data on adult enrollments by socio-economic, racial, ethnic and other factors; (d) major providers; (e) research and issues

concerning adult learning ability, adult development, stresses upon the adult learner, teaching adults, etc. (F)

**G5023 Administration of Adult and Higher Education.** Prerequisite: graduate standing. Organization and administration of adult and higher education from legislative, legal, structural-functional, power, political, bureaucratic and social perspectives. Topics considered include: governance, central office organization, administrative position analysis, faculty organization, faculty participation in policy formation and decision making, academic freedom, goals analysis, budgetary policies and methods, and decision strategies. (F)

**G5033 Critical Literature in Adult and Higher Education (Crosslisted with EDFN 5033).** Prerequisite: graduate standing. Explores twentieth-century ideas and issues in adult and higher education. The majority of the literature and discussion concern the university. (F)

**G5043 Introduction to Research in Adult and Higher Education.** Prerequisite: graduate standing. Recommend specific prior enrollment—see adviser. An introduction to data collection and analysis, research methods (experimental, quasi-experimental, qualitative), and statistics used in adult and higher education. (F, Sp, Su)

**G5103 Instructional Strategies in Adult and Higher Education.** Prerequisite: graduate standing. Encourages a rational consideration of the problems of college teaching. A problems-based course, requiring that each student be involved in an actual college teaching experience while taking it. Topics to be considered include: learning potentials of young adults; preparation of instructional objectives; evaluation of instruction; instructional techniques. (Su)

**G5123 Decision-Making in Adult and Higher Education (Crosslisted with Human Relations 5123).** Prerequisite: graduate standing. Provide students with an understanding of various forces which influence the process of decision-making in adult and higher education, as well as provide an opportunity to examine how such decisions can be reached and implemented. The student will examine realistic examples of decision-making in such areas as budgeting, trustee relations, tenure decisions, faculty development, curriculum, etc. (F, Sp)

**G5133 The American Community/Junior College.** Prerequisite: graduate standing. A study of its purposes, functions, curriculum, organization and administration; exploring this uniquely American institution as an emerging factor and significant element in the structure of higher education in America today. (Sp)

**G5143 Leadership Development in Adult and Higher Education.** Prerequisite: graduate standing. Apply concepts from the behavioral and social sciences to the development of techniques and strategies specific to leadership development in adult and higher education. (Sp)

**G5153 Legal Aspects of Higher Education.** Prerequisite: graduate standing. Survey of principles, legislation, and court rulings in such areas as employment, affirmative action, dismissal, contracts, tenure, civil rights, due process, student rights, and other issues of concern to higher education administrators. (F)

**G5163 Diversity Issues in Higher Education.** Prerequisite: graduate standing. Explores the educational participation of diverse groups in higher education. The student will gain a further understanding of issues of race, ethnicity, gender, and physical disability and their influence on colleges and universities. (F, Sp)

**G5173 Management Issues in Student Personnel Services.** Prerequisite: graduate standing. Provides students with those skills and understandings that will facilitate the assumption of managerial roles within student personnel services. Specific areas that are addressed include: an introduction to basic management skills including planning, goal setting and increasing managerial effectiveness; fiscal management and budgetary skills. Also covers managing human resources which includes interviewing techniques, motivation, group processes, and conflict management; working with key constituency groups, and ethics management. (F, Sp)

**G5213 Twentieth-Century American Higher Education.** Prerequisite: graduate standing or permission of instructor. The history of American higher education during the twentieth century, with an examination of the major issues which have shaped, and are shaping, the development of American colleges and universities. (Sp)

**G5223 Student Personnel Services in Higher Education.** Prerequisite: graduate standing. The need, function, organization and administration of student personnel services in institutions of higher learning. Critical review of trends and practices in student personnel programs in colleges and

universities. Designed for students majoring in guidance and counseling and higher education. (F)

**G5233 Research on the College Student.** Prerequisite: graduate standing. The primary aim is to introduce students to the history of college students, research methodologies employed in research on college students, and theoretical concepts and research findings related to student characteristics, college environments, choice, student development, attrition, persistence, cognitive and affective development and general outcomes. An understanding and knowledge of these topics is considered a precursor for those interested in student personnel administration and/or in advanced research on college students. (Sp)

**G5243 Financial Management in Higher Education.** Prerequisite: graduate standing. Students will be introduced to the following topics: administrative organization function and structure; financial management of sponsored programs (grants and contracts); fund accounting and basic financial statements; state coordination policies and procedures; basic budgeting concepts and techniques; cost analysis and comparisons. (Sp)

**G5253 Institutional Research in Higher Education.** Prerequisite: graduate standing. Recommend specific prior enrollment—see adviser. Covers the roles and functions of institutional research, student information systems, faculty and staff analysis, facilities analysis, capital and financial analysis, environmental scanning, assessment studies, program review, student outcomes studies, and quality assessment. (F)

**G5263 Planning in Higher Education.** Prerequisite: graduate standing. Recommend specific prior enrollment—see adviser. Covers concepts, practices, issues and problems related to planning in higher education. (F)

**G5273 Athletics in Higher Education (Crosslisted with Human Relations 5273).** Prerequisite: graduate standing. Provide students with an understanding of the history, structure and administration of intercollegiate athletics, as well as an opportunity to discuss a wide variety of related contemporary issues. (Irreg.)

**G5303 Foundations of Adult Education.** Prerequisite: graduate standing. History of adult education; societal basis of adult education; relevance of adult education to other disciplines; organization and administration of adult programs; nature and kinds of adult education programs; scope and trends of adult education. (F)

**G5333 Program Planning for the Adult Learner.** Prerequisite: graduate standing. Recommend specific prior enrollment—see adviser. Designed to develop an understanding of institutional roles and institutional differences; a knowledge of the principles of program planning in relation to the delivery of adult education. Reviews the elements of program planning to include needs assessment, program objectives, program design and delivery, and evaluation. (F)

**G5343 Gerontological Education.** Prerequisite: graduate standing. Prepares students to respond effectively to the learning needs of the elderly and those professions who serve the elderly.

**G5353 Adult Learning and Development.** Prerequisite: graduate standing. Students will engage in inquiry into the adult development process and its relationship to learning and change. Students will become acquainted with a wide range of orientations to and theories of adult development. The focus will be more closely on development that takes an "inside" view of the learner, and correspondingly participants will be encouraged to explore their own development (as learners) as an instance of growth, learning and change. (F, Sp)

**G5363 Self-Directed Learning.** Prerequisite: graduate standing. Self-directed or independent learning is an important aspect of adult education because it represents a significant portion of all learning by adults. Students will explore self-directed learning from both an academic and a personal perspective. Topics include its history and development, its research base, areas of current interest and implications for adult education practice. (F, Sp)

**G5373 Assessment in Adult and Higher Education.** Prerequisite: graduate standing. Covers the basic principles of assessment (evaluation) and strategies for ensuring that assessment activities are more effective and meaningful to educators, planners, and decision makers in adult and higher education organizations. Specifically, the course will examine conceptual and practical assessment issues related to finance, faculty or trainers, curricula or programs, students or learners, and institutions or organizations. (F, Sp)

**G5383 Contemporary Issues in Student Personnel.** Prerequisite: graduate standing. Designed to provide students an opportunity to synthesize ideas from previous coursework and practical experiences in student affairs. An integration of student development theories, current issues in the field, and analysis of case studies will be the focus of the course. (F, Sp)

**G5403 Instructional Telecommunications.** Prerequisite: graduate standing. Introduces the student to the use of telecommunications in the delivery of educational programming and includes a survey of the attributes of the predominant technologies, how these relate to the design of instruction, and the issues surrounding the management and organization of instructional telecommunications systems. (F)

**G5413 Design and Delivery of Distance Education Programs.**

Prerequisite: graduate standing. Designed to prepare student to design instruction for distance learning systems. Topics include the distance learner, facilitating learning at a distance, instructional design for distance learning systems, and assessment of learning at a distance. (Sp)

**G5423 Computer Mediated Communications in Education (Crosslisted with EIPT 5423).** Prerequisite: graduate standing. Designed to prepare students with knowledge, skills, and tools in the area of Computer-Mediated Communication, focusing specifically on web-based and web-supported instruction. Provides learners with both theoretical understanding of and practical skills for using the Internet in instructional settings. (Sp)

**G5503 Introduction to Training and Development.** Prerequisite:

graduate standing. Provides an overview of the training and development functions in business, industry, government and voluntary organizations. It is designed for those who are expected to be responsible for some aspect of training and development and for those interested in learning more about these functions. This course will cover the traditional as well as broadening role of training and development and will examine how training and development might be different in the future. (F, Sp)

**G5513 Management and Administration of the Training Function.**

Prerequisite: graduate standing. This course is designed for those preparing for or having oversight responsibilities in the training and development function. Topics will include the management function, staffing, ensuring the quality of training, legal issues, marketing and financial management. (Irreg.)

**G5523 Survey of HRD Competencies.** Prerequisite: graduate standing. Focuses on the roles and competencies required to succeed as training and development professional as identified in ASTD's human performance improvement study. Students will develop or improve their basic competencies by designing and implementing class training program on one of the core competencies. Topics include: Negotiation; leadership; group process; problem solving; delegation; cost benefit analysis; coping skills; consulting; interpersonal relationships; goal implementation; needs analysis survey design and development; and listening and questioning skills. (F, Sp)

**G5533 Advanced Training and Development Functions.** Prerequisite: graduate standing. Enables participants to appropriately apply in their organization state-of-the-art techniques in human resource development/training and development; recognize how future trends in linking strategy and training and development may impact their organization; assess current human resource development practices and formulate plans for their improvement; specify human resource issues and problem areas and identify alternative solutions to facilitate training and development processes. (Sp)

**G6023 Theory and Practice in Higher Education Finance.** Prerequisite: graduate standing. Covers important aspects of finance in American higher education. Topics covered include history of finance, politics of the budgetary process, state funding, student financial aid, internal budgeting, finance management, tuition pricing, costing, financial indicators, funding of private higher education, the "who-pays-and-who-benefits" question, and key financial terminology employed in higher education. Discussions of these topics are purposely more theoretical than hands-on and more focused at the national level than at the state or institutional levels. (F, Sp)

**G6143 Theory and Research in Training and Development.** Prerequisite: graduate standing. An overview of research in the field of training and development. The activities include the review of research journals and dissertations and interviewing of current and active training and development researchers. Bibliographies and computerized databases will be sought and reviewed. Procedures of detecting bias and research mistakes will be covered.

**G6173 Theory and Research in Distance Education.** Prerequisite: graduate standing. Examines the study of distance education throughout the globe; studies the emerging theoretical issues within the field, relating theory to practice through case studies; analyzes the current status of research in distance education with special emphasis on instructional telecommunications; and examines the role of distance education as a discipline.

**G6213 Theory and Practice of Continuing Higher Education.**

Prerequisite: graduate standing. Defines continuing higher education and traces its development in the United States from the eighteenth century.

Examines the range of institutions, kinds of programs, emerging issues, organizational structure, budgeting, administration and relationship to the larger institution in which continuing higher education operates.

**G6223 Theory and Practice of Continuing Professional Education.**

Prerequisite: graduate standing. An examination and explication of the agencies, goals, institutions, issues, outcomes, purposes and processes of the continuing education of professionals.

## **Early Childhood Education (EDEC)**

**1203 Contemporary Parenting.** An introductory course covering basic principles of child management. Parenting skills and guidance techniques that foster self-worth in children are stressed as are positive and effective methods of discipline and control.

**2203 Creative Expression for Early Childhood Programs.** Prerequisite: admission to Teacher Education program. Characteristics and processes of creativity as expressed by children from age two to eight are reviewed. Planning and production of materials that enhance creativity in self-expressive thought and play are emphasized. (Sp)

**3001 Mentoring I.** Prerequisite: admission to Teacher Education program. Fosters professional development of early childhood education students and facilitates their successful participation in the Teacher Education program. Professional opportunities in the field and professional organizations will be identified. Students will continue development of their portfolio documenting their development in the Teacher Education program. (F)

**3211 Fundamentals I Laboratory.** Corequisite: 3213. Designed to provide students with the opportunity to implement what they are learning in other courses as they interact with children in a classroom setting. Students will carry out assignments during this lab that have been assigned in EDEC 3213 as well as other specialization classes. (F)

**3213 Fundamentals of Instruction of the Preschool Child, Part I: Social/Emotional Skills.** Prerequisite: admission to Teacher Education program, and 2203; corequisite: 3001, 3211 and EDLT 3183. Links theory and research to preschool teaching. Includes materials on ways to foster social and emotional well-being and enhance creativity in children. Effective methods of discipline and a multiethnic approach to curriculum are emphasized. Includes weekly participation in an approved preschool program. (F)

**3221 Fundamentals II Laboratory.** Corequisite: 3223. Designed to provide students with the opportunity to implement what they are learning in other courses as they interact with children in a classroom setting. Students will carry out assignments during this lab that have been assigned in EDEC 3223 as well as other specialization classes. (Sp)

**3223 Fundamentals of Instruction of the Preschool Child, Part II: Language and Cognitive Processes.** Prerequisite: 3213; corequisite: 3221 and EDLT 4303. Links theory and research to practical preschool teaching. The development of mental ability and reasoning skills is stressed as are effective strategies for encouraging language development and prereading skills. Special attention is given to the needs of children from low income families. Weekly participation in an approved preschool program is required. (Sp)

**3233 Teacher, Parent, Child Relationships in Early Childhood Programs.** Prerequisite: 3213 or permission of instructor. Includes techniques for parent conferencing and referrals, planning and presenting effective parent education meetings, parent involvement in the classroom and experience in making home visits. Focuses on family needs when children are aged two to eight. To be taken concurrently with 3223. (Sp)

**3413 Early Childhood Development.** Social, physical and cognitive influences on behavior during the preschool years are described and explained. The developmental implications of changing from caregiver to peer relationships are examined. (Sp)

**4001 Mentoring II.** Prerequisite: 3001. Fosters continued professional development of early childhood education majors and facilitates their successful participation in the Teacher Education program. Professional development opportunities outside the classroom are discussed. Students continue work on a portfolio showing their continued development as future teachers. (F)

**4121 Curriculum Laboratory.** Corequisite: 4123. Designed to provide students with the opportunity to implement what they are learning in other courses as they interact with children in a classroom setting. Students will carry out assignments during this lab that have been assigned in EDEC 4123 as well as other specialization classes. (F)

**4123 Curriculum of Early Childhood Education.** Prerequisite: 3223 and EIPT 3483; corequisite: 4001 and 4121. A comprehensive study of the scope of early childhood education with specific concern for curriculum foundation and organization. (F) [V]

**4203 Program Planning and Leadership in Early Childhood Programs.** Prerequisite: 3223. Focuses on administrative aspects of early childhood programs outside the realm of the elementary school. Leadership and professional development issues are examined. Staff supervision, financial management, program policies, health and safety, and the physical environment are addressed. Unique initiatives and features of the early childhood profession are explored. (F)

**G6033 Theory and Research in Early Childhood Education.** Prerequisite: graduate standing or permission of instructor. Designed to facilitate student's understanding of various theories relevant to early childhood education. In-depth analysis of various theories will be accompanied by examination of research guided by these theoretical perspectives. Discussion will include how these theoretical views and the research associated with them influences the field. (Irreg.)

**G6203 History, Philosophy and Future Trends in Early Childhood Programs.** Prerequisite: graduate standing. A review of the history and philosophy of child care from Rousseau to the present; discussion of various early childhood education models in the United States and abroad is included. Implications of current research and policy for early childhood programs are emphasized. (Irreg.)

**G6303 Parent Involvement and Parent Education.** Prerequisite: graduate standing. This seminar explores current developments in parent involvement and parent education. Research on parent education programs and parent involvement will be discussed as well as the effects of each on children and families. Interventions designed for various populations of children and families are examined. (Irreg.)

## **Educational Administration, Curriculum and Supervision (EACS)**

**G5123 Advanced Studies in Early Childhood Curriculum.** Prerequisite: graduate standing or permission of instructor. Designed to increase the student's understanding of curriculum and instructional development in early childhood education. Various rationales and models for early childhood programs will be examined and analyzed. Definitions of curriculum and instruction will be studied along with models of both that will be compared vis-à-vis the various bases upon which they are developed. Formal evaluation of existing models will be investigated.

**G5233 The Organization of Education.** Prerequisite: graduate standing. The organization of American schools. The history, relationships, functions, present status and trends in local, state and national education agencies. The places which professional educational associations, citizen's committees and other influential groups have in relation to schools. The administrative hierarchy in schools and the special functions of each level. The multicultural aspects of schooling in America. (F, Sp, Su)

**G5253 Legal Aspects of Teaching.** Prerequisite: graduate standing or permission of instructor. Provides in-depth examination to broad educational law topics, students' rights, and teachers' rights. Study the landmark laws and court cases within these topics to apply new information and understandings to the student's position in educational settings.

**G5343 Financial Leadership in the Schools.** Prerequisite: graduate standing. Primarily for prospective building level educational leaders, and includes a comprehensive overview of the effective management of fiscal resources in public schools. (Su)

**G5363 Contemporary Curriculum Theorizing.** Prerequisite: 5543. Using contemporary theorists' work, a variety of ways to theorize within the field of curriculum studies is examined. Dominant issues, questions, and concerns raised by contemporary curriculum scholars are explored as well as the significance of their thinking in light of our prior and emerging understandings of schools and classrooms. (F)

**G5543 Curriculum Development in Elementary and Secondary Schools.** Prerequisite: graduate standing. Philosophical, social and psychological foundations related to decision-making in curriculum development at both the elementary and secondary school levels. (F, Sp, Su)

**G5553 Models of Teacher Evaluation.** Prerequisite: 5573 or equivalent. Students will investigate the literature appropriate to the systems and issues of teacher evaluation. The attributes of existing and proposed models will

be examined. The issues of individual and institutional rights and responsibilities will be reviewed. The policies of personnel recruitment, selection and staff development will be related to the policies and procedures of teacher evaluation.

**G5573 Supervision of Instruction.** Prerequisite: graduate standing. Focuses upon the clinical supervision of the classroom environment, instructional procedures and the evaluation of teaching through the processes of observation and consultation. Participants develop control of the instrumentation and procedures which enable them to gather, display and interpret data relevant to the evaluation of classroom environments. (F, Sp)

**G5583 Supervision of Special Programs, Services, and Personnel in Schools.** Prerequisite: graduate standing. Focuses on the theoretical, legal and research bases of programs and services identified as temporary systems designed to accommodate the special needs of students and special skills of professionals. A study of models linking services and resources within schools and with communities. Topics will include: special learner programs, utilization of resource centers, counseling services, health services, and organization strategies and problems with "pull out" programs. (Sp)

**G5593 Principal Leadership.** Prerequisite: graduate standing. School leadership; effective schools; elementary and secondary administration; administration characteristics and responsibilities including personnel, fiscal, facility organization governance, and evaluation. (F)

**G5613 Human Relations in Education (Crosslisted with Human Relations 5613).** Prerequisite: graduate standing. Focuses on intrapersonal, interpersonal and intergroup relations problems in the public schools. Specifically, it will deal with persistent school/classroom problems associated with multiculturalism, attempt to blend theory and practice through a lecture/discussion/problem-solving approach, and emphasize teacher self-awareness as a major aspect of the human relations approach.

**G5623 School and Staff Development Management.** Prerequisite: graduate standing. Provides preparation in the development of technical and conceptual skills applicable to principals in their establishment of professional cultures in school environment(s). Topics will include: staff development; school climate variables; school imaging problems, strategies, and improvement models; student special interest programs and recognition procedures; and involving external groups in school improvement. (F, Sp)

**G5683 The Middle School.** Prerequisite: 12 hours of education, graduate standing. Origin, history, and philosophy of the middle school. Course includes organization and development of curriculum; instructional models; student services and activities; evaluation/supervision of programs and personnel; change/implementation models. (Irreg.)

**G5693 Technology in Educational Administration.** Prerequisite: graduate standing. Provides the administrator the training in theory and application of computer concepts and the utilization of specific software programs and applications to enhance administrative decision making. (F)

**G5793 Technology Staff Development in Education.** Prerequisite: 5693 or equivalent. Technology in the form of computers and multimedia devices is becoming increasingly prevalent in classrooms. As school districts are expending more funds to purchase equipment and provide networking, it is important that educators have the training and development necessary to effectively utilize technology to improve the instruction of students. The course is designed to familiarize students with research and best practices in the area of technology staff development. (Sp)

**G6023 Applied Quantitative Research Methods in Educational Administration.** Prerequisite: graduate standing. Designed to provide advanced graduate students with research skills required of effective executive educational leaders. This course will provide students with the analytical tools necessary to become effective, critical consumers of educational research, and to enable potential educational leaders to oversee and supervise staff in the preparation, development, and dissemination of evaluative research. (F)

**G6033 Advanced Curriculum Development.** Prerequisite: graduate standing. Concepts of curriculum in K-12 education; program development; learning theories as related to curriculum; materials and media; principles of program and curriculum development; and construction of curriculum materials. (F)

**G6123 Administrative and Organizational Theory.** Prerequisite: graduate standing. An introduction to the important theoretical bases underlying the administration of organizations, particularly educational organizations; topics include bureaucracy, social systems, leadership, decision-making, properties of systems, communication and situational analysis. (F, Sp)

**G6213 Policy Evaluation.** Prerequisite: graduate standing or permission of instructor. A review of selected theoretical evaluation models; topics include techniques of evaluation, generation of performance objectives, forecasting, simulation, and gaming. (Sp)

**G6223 Policy Planning and Development in Education.** Prerequisite: graduate standing or permission of instructor. An introduction to analytical techniques applicable to the development of education policy. Includes consideration of decision theory and its application to policy making. Social, political, economic and multicultural factors in the organization and its environment will be explored as contexts within which educational policy is established. (F)

**G6233 Leadership in Post-Modern World.** Prerequisite: graduate standing. Review and analysis of existing concepts of leadership; review and analysis of contemporary school leadership styles. (F)

**G6243 Education and the Law.** Prerequisite: graduate standing. Legal framework of education in the United States; consideration of federal and state constitutional provisions, federal and state statutes, federal and state judicial decisions and rules and regulations of the various federal and state agencies which affect education. (F, Sp, Su)

**G6253 Financing Education.** Prerequisite: graduate standing, 5213, 5223, or equivalent or permission of instructor. A consideration of the roles of federal, state and local governments in the financing of education. Attention is given to the important contemporary issues related to educational financing at all three governmental levels. Also includes an introduction to the economics of education. (Sp)

**G6263 Educational and Community Relations.** Prerequisite: graduate standing or permission of instructor. Examines the field of intra/interpersonal relationships in the context of educational organizations and their constituent communities; topics include authenticity, organizational communication, leader behavior, group dynamics, and conflict management. (F)

**G6273 Personnel Administration in Education.** Prerequisite: graduate standing or permission of instructor. Emphasizes application of selected concepts from the social sciences and organization theory which relate to understanding and managing people within the organizational setting. Focus is on all aspects of the personnel function including: manpower planning, recruitment, selection, placement, evaluation, development, compensation, security and an introduction to collective negotiations. (Sp)

**G6283 Communication for Educational Renewal.** Prerequisite: graduate standing. Engage students in examining communication theory and practice involving intrapersonal, interpersonal, small group, and public communication settings within the context of educational renewal. (Su)

**G6333 Politics in Educational Administration.** Prerequisite: graduate standing. An overview of political activities at the local, state, and federal levels that will enhance the professional development of school administrators. Issues addressed include micro-politics at the school site and district offices; superintendent and school board relations; lobbying legislators and dealing with interest groups; the state political process, federal aid; and analysis of current political controversies. (F, Sp)

**G6663 Special Education Law.** Prerequisite: graduate standing. Enables students to understand the legal complexities involved in identifying and providing educational services to students with special needs. (F)

## *Educational and Counseling Psychology (EDPY)*

**2012 Career/Life Planning.** Study of career development literature including character styles, personality types, aptitudes and decision strategies using the Holland Model. Enables students to apply information learned to long-range and immediate career/life goals.

**G4413 Introduction to Counseling.** Prerequisite: senior standing or permission of instructor. Development of the counseling and guidance profession. Various approaches and techniques employed in counseling. Work of the counselor in various settings. Introduction to basic theoretical and philosophical positions in counseling and guidance.

**G5213 Group Administered Tests.** Prerequisite: admission to Community Counseling program. Survey of standardized tests of intelligence, aptitudes, interests, attitudes, and personality traits; selection, use, and interpretation of such tests. Provision for the interests of counselors and guidance workers rather than classroom teachers. (F)

**G5234 Individual Intelligence Testing.** Prerequisite: 5213, permission of instructor. Three hours of classroom experience dealing with the rationale,

purpose, and ethics involved in individual intelligence testing plus laboratory experience in the administration, scoring, and interpretation of the Stanford-Binet and Wechsler scales with an emphasis on the Wechsler scales.

**G5253 Personality Assessment.** Prerequisite: 5213 and 5234. Theories of personality testing and of personality. Students will acquire the skills requisite to administer a variety of personality tests used in community agencies ad be able to interpret and write reports on findings.

**G5410 Occupational Information—Career Development.** 3 to 6 hours. Prerequisite: graduate standing or permission of instructor. May be repeated once with change of content; maximum credit six hours. Methods of preparing informational files for student use; nature of educational and occupational information, job classification, sources of information, and occupational surveys and trends. Theories of career development; techniques of job and occupational analysis; individual experiences of reporting client career development.

**G5423 Methods and Techniques of Counseling.** Prerequisite: graduate standing and permission of instructor. Introduction to stages in the counseling process; interviewing skills; counseling objectives; appropriate strategies. Common theories of counseling and psychotherapy and ethical considerations are considered. (F)

**G5430 Theories and Techniques of Group Counseling.** 3 to 6 hours. Prerequisite: graduate standing and permission of instructor. Introduction to group dynamics with emphasis on counseling and consultation. Surveys theories and group techniques and their applicability. Experience in conducting and participating in a counseling group is included.

**G5443 Developmental Guidance in the Schools.** Prerequisite: graduate standing. Cognitive knowledge, procedures, skills and activities needed for the effective functioning of a school guidance and counseling program. Emphasis on age-related activities and factors involved in the planning of a school guidance and counseling program. (Sp)

**G5453 Intervention Strategies for School Counselors.** Prerequisite: graduate standing. Intervention strategies appropriate for an educational setting and the practical aspects of working with children. Emphasis on individual and group techniques, working with parents, collaboration, and developing effective curriculum to meet the needs of school students. (F)

**G5463 Multicultural Counseling.** Prerequisite: admission to community counseling or counseling psychology program. Consideration of the effects of cultural, ethnic, and/or language differences between counselor and counselee in the helping process. Sensitization to minority cultural values. Methods for enhancing multicultural communication.

**G5483 Behavior Disorders.** Prerequisite: admission to community counseling or counseling psychology program. Diagnostically oriented course in abnormal behavior stressing standard nosology exemplified by the Diagnostic and Statistical Manual of the American Psychiatric Association (DSM).

**G6050 Individual Research.** 1 to 4 hours. Prerequisite: admission to doctoral program in educational and counseling psychology. May be repeated; maximum credit six hours. A seminar to initiate and conduct research projects on current topics in educational and counseling psychology. Funding sources and dissemination procedures will be presented.

**G6063 Counseling Psychology Research.** Prerequisite: admission to counseling psychology program, or permission of instructor. Designed to further acquaint students with the use of measurement and statistics in research, to provide students with a basic vocabulary of experimental design, to enable them to design and evaluate research pertinent to counseling and to enable them to review and critique current research in counseling.

**G6253 Projective Personality Instruments.** Prerequisite: 5213, 5234, 5253; permission of instructor. Theory of projective testing; acquaintance with several major instruments with special emphasis on the Rorschach test.

**G6403 Issues and Ethics in Counseling Psychology.** Prerequisite: admission to counseling psychology program or permission of instructor. Orientation to counseling psychology. Focus is on professional organizations, identity and issues, with a major emphasis on professional standards, ethical principles and legal considerations.

**G6413 Theories of Counseling and Psychotherapy.** Prerequisite: admission to doctoral program in counseling psychology or permission of instructor. An advanced course covering the formal aspects of counseling theory as well as selective content of the major counseling/therapy and vocational theories. Major focus is on assisting the student to critically

compare various theoretical positions and evolve a personally meaningful approach to counseling and therapy.

**G6423 Advanced Counseling Procedures.** Prerequisite: admission to counseling psychology program or permission of instructor. Review and critique of major methods of psychological assessment. Theoretical basis, rationale and research evidence for various therapeutic techniques will be examined.

**G6433 Advanced Group Counseling and Psychotherapy.** Prerequisite: admission to counseling psychology program or permission of instructor. Designed to examine in-depth the theoretical, empirical, and applied dimensions of group counseling and psychotherapy, with an emphasis on long-term outpatient groups. (Alt. Sp)

**G6443 Advanced Counseling and Therapy: Children.** Prerequisite: admission to counseling psychology program, or permission of instructor. Focuses on specialized counseling skills needed for working with children, with particular attention to diagnosis, interventions and working with parents.

**G6453 Family Counseling.** Prerequisite: admission to Counseling Psychology program, or Community Counseling program. Examination of counseling approaches for helping distressed families with an emphasis on the family as a system. Role play practice in problem assessment and using various techniques and interventions. (Irreg.)

**G6463 Marital Therapy.** Prerequisite: admission to Counseling program or Community Counseling program or permission of instructor. Examination or functional and dysfunctional marital relationships, etiology of dysfunction, research on marital issues, approaches to marital counseling and therapy, issues of divorce. Role play practice in marital therapy techniques. (Irreg.)

**G6470 Counseling Psychology—Supervision.** 1 to 2 hours. Prerequisite: admission to counseling psychology program or permission of instructor. Develops skills and cognitive knowledge in the area of supervision. Various approaches to supervision will be considered. Practice in supervising master's level or paraprofessional counselors will be required.

**G6473 Biopsychosocial Bases of Health Psychology.** Prerequisite: admission to counseling psychology program or permission of instructor. Designed to provide an integrative framework for examining biological, psychological, and social influences on behavior and health from the applied perspective of counseling psychology. (Alt. F)

**G6483 Advanced Career Counseling.** Prerequisite: 5410 or equivalent and admission to counseling psychology program. Designed to prepare students in the area of career counseling and acquaint them with current theoretical and empirical literature as a basis for clinical practice.

**G6493 Divorce—Related Counseling.** Prerequisite: admission to counseling psychology program. Designed to prepare students for clinical work with families experiencing separation, divorce, remarriage, etc.

**G6903 Advanced Counseling—Parents.** Prerequisite: admission to counseling psychology program. Addresses issues of assessment, counseling, and consultation in working with parents and their children.

**G6913 Counseling Psychology Practicum.** Prerequisite: admission to counseling psychology program. May be repeated; maximum credit 15 hours. Designed to facilitate acquisition and development of clinical skills (diagnostic, conceptual, relationship) through combined didactic instruction, experiential training, and individual and group supervision. (F, Sp)

## Educational Studies (EDS)

**3003 Schools in American Cultures.** Prerequisite: admission to Teacher Education program. An overview of education as a profession based upon historical and philosophical principles including a treatment of current problems and affairs with specific attention given to multicultural phenomena. (F, Sp, Su)

**G5033 Critical Literature in Adult and Higher Education (Crosslisted with EDAH 5033).** Prerequisite: graduate standing. Explores twentieth-century ideas and issues in adult and higher education. The majority of the literature an discussion concern the university. (Sp)

**G5513 Comparative Education.** Prerequisite: graduate standing. Introduction to the field of comparative education. Primary objective is to develop an understanding of the field of comparative, international and development education, its primary focus and assumptions, and the intellectual frameworks, theories and paradigms it draws upon in inquiry. (F)

**G5523 Education and Poverty.** Prerequisite: graduate standing. Examination of issues at the intersection of education and poverty including theories, principles, beliefs and values underlying the existence

and analysis of poverty. Procedural and policy alternatives which may tend to ameliorate the educational consequences of poverty will be analyzed. (Sp)

**G5533 Comparative Educational Policy.** Prerequisite: graduate standing. Overview of issues in comparative policy study within education, including various basic understandings regarding the nature of policy and the manners in which beliefs and values are institutionally or organizationally codified. The student will explore a selected topic by contrasting similarities and differences as they exist across varying sociopolitical/cultural contexts. (F)

**G5543 Education and National Development.** Prerequisite: graduate standing. Through interdisciplinary readings students will develop an understanding of the possibilities and limits of education as an instrument of social change within varying national contexts. Also addresses challenges surrounding issues of gender, class, culture, race, language, ethnicity, and religion and how they are impacted by the provision, form and content of education. (Sp)

**G5703 Sociology of Education (Crosslisted with Sociology 5703).** Prerequisite: eight hours of education or permission. Social structure in the community wherein the school must operate and the nature of human relations within the school; social processes and patterns involved in the educational system relative to other aspects of our society; and the effect of the school on the behavior and personality of its participants. Lectures, class discussions, audiovisual materials and outside readings, both scientific and literary, portraying the American social scene.

**G5753 The Educational Philosophy of John Dewey.** Prerequisite: graduate standing. Close critical study of educational thought by John Dewey, his recent critics, his contemporaries, and others who influenced or were influenced by him in a multicultural, gendered, and technologically developing context. Intensive oral and written work will aim at developing continuity between theory and practice in various formal and informal educational settings. (Sp)

**G5783 Classics in Educational Thought.** Prerequisite: graduate standing or permission of instructor. Close critical study of selected "classics" in educational thought by Plato, Rousseau, DuBois, Dewey, Woolf, or others of comparable historical significance for multicultural co-education throughout the human lifespan, in a context of social inequalities. Intensive written and oral practice in basic conceptual skills and informal logic will require independent inquiries on topics of special interest to students. (F)

**G5823 Contemporary Critical Thought and Educational Studies.** Prerequisite: graduate standing or permission of instructor. Close study of contemporary critical thought that has profoundly transformed recent theorizing about education and its various social, cultural, and economic contexts. Major texts selected from philosophical movements such as analysis, existentialism, Marxism, feminism, post-structuralism, neo-pragmatism. Intensive oral and written practice in educational criticism and theory, developing case studies from primary sources. (Sp)

**G5833 Gender, Values, and Education (Crosslisted with Philosophy 5833).** Prerequisite: graduate standing or permission of instructor. May be repeated with change of topic; maximum credit six hours. Topics vary each semester, but are developed from philosophical studies in and about education, politics, ethics, aesthetics, law and religion that address the issues of gender and sexuality. Intensive oral and written theoretical inquiry. (Irreg.)

**G5913 Cultural Pluralism and Education.** Prerequisite: graduate standing or permission of instructor. Investigates the role of the schools from an interdisciplinary perspective using the philosophy, history, anthropology and sociology of education and cross-cultural analysis, in fostering a climate of ethnic, racial, and gender inclusiveness.

**G5933 Girls, Women and Educational Studies.** Prerequisite: graduate standing or permission of instructor. History, sociology, and/or philosophy of girls' and women's education in a multicultural context that includes family, work, and community life as well as coeducational public schooling and higher education in the U.S. Oral and written critical inquiry concerning selected primary sources will introduce students to the activity of interdisciplinary theorizing about gender and sexuality in education. (F)

**G5943 American Social and Education Issues in Historical Perspective.** Prerequisite: graduate standing. May be repeated; maximum credit six hours. Acquaints students with several diverse culture groups which constitute society in the United States and their placement within the historical context of American education. Educational experience of these groups will be discussed. Class members will integrate their personal narratives into an understanding of education in American culture. (F)

**G6010 Writing Educational Inquiry (Crosslisted with Philosophy 6010).** 1 to 3 hours. Prerequisite: graduate standing, enrollment in EDFN graduate course, and permission based on review of writing samples. May be repeated; maximum credit nine hours. Individual or group tutorial study of informal logic and rhetorical theory concerning academic writing as a social practice. Emphasis on contextually appropriate documentation practices, philosophical moves, and rhetorical devices; development of clarity and grace in written formulations of educational concepts and values. Address various scholarly and professional situations. Aimed toward public presentation or publication. (F, Sp)

**G6013 Gender, Knowledge and Inquiry (Crosslisted with Philosophy 6013).** Prerequisite: graduate standing and Womens' Studies 4003 or equivalent, or any graduate-level course in research methods or philosophy, or three graduate hours in EDFN. Interdisciplinary seminar introducing feminist criticisms of epistemology and exploring their possible significance for design and practices of gender sensitive inquiry in various academic fields and educational contexts. (F)

**G6033 Inquiry Design.** Prerequisite: graduate standing or permission of instructor. May be repeated; maximum credit six hours. An individual or small group tutorial focused exclusively on preparation of the dissertation or prospectus for interdisciplinary critical or theoretical inquiry in Historical, Philosophical, and Social Foundations in Education. (F)

#### **G6703 Advanced Studies in the History of Educational Thought.**

Prerequisite: 5753 and 5783, or equivalent and permission of instructor. May be repeated for credit, maximum credit 9 hours. Topical focus will vary. An individual or group tutorial in which students pursue original inquiries with close guidance and contribute to the delivery of EDFN 5753 or 5783. A final paper suitable for public presentation or publication is required. (Sp)

**G6763 Issues in Contemporary American Education.** Prerequisite: graduate standing. Backgrounds of the contemporary American social scene with such issues as extension of educational opportunity; interrelationships between church, state, and school; changing economic concepts in the age of technology; purposes of education to social policy; federal aid to education; academic freedom.

**G6793 History of American Education.** Prerequisite: graduate standing. Development of schools in American society from colonial times to the present as set against the background of intellectual movements and changes from the colonial period to the present. Attention is given to the development of the organization, administration, finance and curriculum in the American public school system. Major concepts relating to the maintenance of a school in American society are considered; historical treatment of nativism, populism, empiricism, associationism, a person's relation to spiritual and national self, as these topics relate to the development of educational ideals and practices in American society.

**G6873 Educational Futurism (Crosslisted with Instructional Psychology and Technology 6873).** Prerequisite: graduate standing. Deals with anticipated social and environmental change created by expanding technology, cybernation, computers, electronic information systems, mass media and the like. Treats impact of change on educational institutions and educational alternatives needed for human survival.

**G6903 Colloquium in Contemporary Educational Thought.** Prerequisite: 5823 and 5933, or equivalents and permission of instructor. May be repeated for credit, maximum credit nine hours. Topical focus on selected conceptual problems will vary. A colloquium in which students share and practice mutual critique of original inquiries they are pursuing with close guidance. Participation in the delivery of EDFN 5823 or 5933 and a final paper suitable for public presentation or publication are required. (F)

**G6933 Naturalistic and Qualitative Research in Education.** Prerequisite: graduate standing. Designed to familiarize graduate students in education with naturalistic research and qualitative methodologies.

**G6973 Documentary and Narrative Research.** Prerequisite: graduate standing or permission of instructor. Examines problems and methods of non-empirical research in education. Use of primary and secondary sources, evidence, generalization, interpretation, documentation, citation, and oral history are discussed. (F)

**4101 Field Experience/Mentoring III.** Corequisite: EDLT 4313, EDMA 4053, EDSC 4193, EDSS 4323, ILAC 4043. Provides advanced professional experiences with children and professional educators in common school settings, including teaching, curriculum development, and mentoring beginning elementary education university students. (F, Sp)

**G5503 Integrating Multicultural Literacy in the Elementary/Middle School Classroom.** Prerequisite: graduate standing. Using multicultural literacy in curriculum and instruction for kindergarten through eighth grade. Focus is on reviewing a wide variety of resources and developing instructional strategies for integrating multiculturalism across the curriculum. (Sp)

**G5583 The Elementary/Middle School Language Arts Curriculum.** Prerequisite: graduate standing. Understanding of theories and current issues related to literacy in elementary and middle schools. (Irreg.)

**G5593 Problems of Teaching in Elementary Schools.** Prerequisite: graduate standing. Interdisciplinary seminar focusing on critical analysis of issues related to teaching and learning in elementary schools. (Irreg.)

## **English Education (EDEN)**

**3223 Teaching Grammar and Composition in Middle/Secondary Schools.** Prerequisite: admission to Teacher Education Program. Secondary language arts students will learn different conceptions of grammar and how to teach them. Students will also study how socio-cultural factors shape language learning and usage. (F)

**4273 Creativity in Teaching Composition (Slashlisted with 5273).** Prerequisite: junior standing or permission of instructor. Features visual-verbal arts integration and teaching composition at primarily middle and secondary school levels. Students will paint, write, and otherwise practice the arts as well as consider current teaching implications. No student may earn credit for both 4273 and 5273 (Su)

**G4913 The Teaching of English (Crosslisted with English 4913).**

Prerequisite: 3222, nine hours of education, and senior standing. To be taken preferably the semester immediately preceding student teaching. Development of skills in teaching the language arts at the secondary level. Introduction to current trends, professional literature and resource materials. Practice in presenting model lessons. Written reports. [V]

**G4923 Teaching Literature in Middle and Junior High School.**

Prerequisite: admission to Teacher Education program or permission of instructor. Teaching literature in middle and junior high school, with particular emphasis on literature written for young people, current examples and related pedagogies. (Sp)

**G5203 Action Research in English Education.** Prerequisite: graduate standing; corequisite: 5920 (Internship). Nature and methodology of teacher research. Students will conduct a field research project with EDUC 5920, Internship in Education, to demonstrate understanding of fundamental field research design and practice, including writing the teacher research report. (F, Sp)

**G5213 Secondary English Curriculum.** Prerequisite: graduate standing. General principles of curriculum development and particular problems with planning literature curricula. Evaluation and revision of school curricula based on theories of curriculum planning.

**G5223 The Teaching of Composition: Theory and Practice.** Prerequisite: graduate standing. Analysis of competing theories of composition instruction. Study of issues related to planning writing activities, and consider problems related to writing about literature, informal writing, writing apprehension, teaching basic writers, and teaching syntax.

**G5233 The Teaching of Literature: Theory and Practice.** Prerequisite: graduate standing. Research and methodology important to teaching literature to young people and adults with particular focus on developing reading and responding abilities to poetry and fiction. Other emphases include reading-writing interactions, creative approaches to teaching traditional literature, uses of young adult literature, and developing middle/secondary literature curricula. (Sp)

**G5243 The Teaching of Language: Theory and Practice.** Prerequisite: graduate standing. Research and teaching methodology important to providing language instruction for young people with particular focus on oral and written language development in a culturally diverse society. Topics include grammar, usage, dialect, semantics, vocabulary instruction and curriculum design. (F)

**G5253 Research in English Education.** Prerequisite: graduate standing. Study of issues and methods involved with research in English education. May include experience in the collection and analysis of data. (Irreg.)

## **Elementary Education (EDEL)**

**3142 Creative Expression in the Elementary School.** Prerequisite: admission to Teacher Education program. An understanding of ways to promote creative expression of children in primary and intermediate grades. Emphases include basic elements of art, drama, and other forms of artistic expression related to teaching children. (F, Sp, Su)

**G5263 Special Topics in Literacy I.** Prerequisite: permission of department. Possible topics include students in and out of school, culture and literacy, socio-historical perspectives on learning, and other analysis of literate activity. (F)

**G5273 Creativity in Teaching Composition (Slashlisted with 4273).** Prerequisite: Graduate standing or permission of instructor. This course features visual-verbal arts integration and teaching composition at primarily middle and secondary school levels. Students will paint, write, and otherwise practice the arts as well as consider current teaching implications. No student may earn credit for both 4273 and 5273 (Su)

**G6263 Special Topics in Literacy II.** Prerequisite: enrollment in doctoral program. Topics explore the definition and practice of literacy, with a focus on their applicability to doctoral research. The analysis of the topics will include a stress on the relationship between research problems and research methodology. (F)

## **Instructional Leadership and Academic Curriculum (ILAC)**

**4003 Partnerships: Working with Parents and Community.** Prerequisite: admission to Teacher Education program and senior status or permission of instructor. Approaches for working with parents, guardians, and the community. Primary content for the on-campus and 30 hours field experience components includes: history of parental and community involvement in schools, interaction/communication skills, types of parental and guardian involvement, diversity of families, emerging trends, and legal implications. (F, Sp)

**4043 Teaching Diverse Populations.** Prerequisite: EDEL 4101; corequisites: EDLT 4313, EDMA 4053, EDSC 4193, and EDSS 4323, or EDEN 4913, or EDMA 4242. Open only to elementary, English, and mathematics education majors. Development of a multicultural perspective to teaching including an understanding of theoretical frameworks, methods, and experiences working with culturally diverse populations. (F, Sp)

**G5003 Models of Instruction.** Prerequisite: completion of undergraduate teacher education. Students will study teaching models and their strategies intended to improve abilities to analyze student-teacher interactions and to increase teacher effectiveness as instructor and manager in a variety of educational situations. (F, Sp)

**G5043 Analysis of Teaching and Learning.** Prerequisite: graduate standing; corequisite: EDUC 5920 (Internship). An understanding of how to analyze teaching and learning using a variety of reflective techniques including journals, oral inquiries, classroom/school studies, and theoretical analysis. (F, Sp)

**G5143 Theory and Research in Education.** Prerequisite: graduate standing or permission of instructor. An introduction to the processes and products of educational research such as stages in designing a study, introduction to research methods, identification of the components of a research-based article. Develops critical consumers of educational research. (F, Sp, Su)

**G5233 Understanding Different Cultures.** Prerequisite: graduate standing or permission of instructor. Provides information on cultural styles and characteristics of various ethnic and economic groups with emphasis on how teachers can understand and honor differences and similarities and adjust their teaching in order to be effective with a variety of students and families. (F)

**G6013 Proseminar in Instructional Leadership and Academic Curriculum.** Prerequisite: admittance to a doctoral program. Required for new ILAC doctoral students, to be taken in sequence with 6023. Intended to introduce students to interdisciplinary, cross-disciplinary, and specialization studies in the field; university educators and fellow students; and the ethos of doctoral study and the academy. (F)

**G6023 Theoretical Issues in Instructional Leadership.** Prerequisite: admittance to a doctoral program. Required for new ILAC doctoral students, to be taken in sequence with 6013. Focus on important theoretical issues which impact the research, curriculum, and practice of schools and other educational agencies. (Sp)

## **Instructional Psychology and Technology (EIPT)**

**3011 Productivity Tools for Education.** Operation in both Mac and Windows environments. Use of word processing, database, spreadsheet, and telecommunications software to solve educational information communication and management problems. **Laboratory** (F, Sp, Su)

**3043 Learning with Educational Technologies.** Prerequisite: 3011 or permission of instructor. Designed to familiarize students with alternative instructional approaches using both cognitive and hardware technologies. Development of practical skills for using technology to solve instructional problems and accomplish educational goals. **Laboratory** (F, Sp, Su)

**3113 Survey of Instructional Technology.** Prerequisite: 3043. A survey course for pre-service teachers that presents instructional uses of a variety of digital media. (Irreg.)

**3473 Educational Psychology of Childhood and Adolescence.** Prerequisite: EDFN 3003. Psychological development from the preschool years through adolescence examined from the perspective of current theory and research. Educational applications are an integral part of the class. Families, schools, and societies for the context of development are considered. (F, Sp, Su)

**3483 Cognition, Motivation and Classroom Management for Teachers.** Prerequisite: EDFN 3003. Classroom implications from the study of cognition, motivation, and classroom management are presented. Topics include various perspectives on how students learn, motivation processes in achievement settings, factors influencing individual variations in cognition and motivation, multiple perspectives on classroom management, and an introduction to the assessment of educational outcomes. (F, Sp, Su)

**G5023 Analysis of Quantitative Data I.** Prerequisite: admission to doctoral program in College of Education, admission to master's program in instructional psychology, or permission of instructor. A brief review of descriptive statistics, introduction to basic inferential statistics, and analysis of variance. Topics covered include data screening and cleaning, correlation, simple regression, one way ANOVA, factorial ANOVA, analysis of covariance, repeated-measures designs, and nonparametric techniques. Focus is on computer-based data analysis, and substantive conceptualization and interpretation of results. (F)

**G5033 Introduction to Research and Evaluation in Education.** Prerequisite: graduate standing. An introduction to major methods of scholarship and research in education. The main goal of the class is to help students develop the knowledge and skills required for critical reading of research. (F, Sp, Su)

**G5113 Educational Psychology of Human Development.** Prerequisite: graduate standing or permission of instructor for undergraduates. An introductory survey of current theory and research as it applies to human development across the lifespan. Emphases include cognitive and language development, self and social development, and contextual influences on development. (Su)

**G5133 Educational Psychology of Human Adjustment.** Prerequisite: graduate standing or permission of instructor for undergraduates. Survey of normal and effective personality functioning in the context of major adjustment issues throughout the educational cycle and the life cycle. Study of the range of human adjustment along the spectrum from dysfunction to overall balance and well-being, and examination of how individuals adjust and grow according to environmental demands, family structure, and individual self-concept. Applications will be given in the context of instructional and counseling settings. Students will also explore their own adjustment issues and personality type in order to better understand others. (Irreg.)

**G5153 Dynamics of Personal Behavior.** Prerequisite: 5133 or equivalent, graduate standing. The nature of mental health planned to help teachers, guidance personnel and other school people gain an understanding of and methods for dealing with normal as well as children with problems.

**G5163 Educational Psychology of Childhood.** Prerequisite: graduate standing. Advanced study of adolescent physical, cognitive, social, and personality development emphasizing current theory and research. Families, peer groups, and societies as contexts for development are also considered. (Sp)

**G5173 Educational Psychology of Adolescence.** Prerequisite: graduate standing. Advanced study of adolescent physical, social, and personality development emphasizing current theory and research. Families, peer groups, and societies as contexts for development are also considered. (Sp)

**G5183 Motivation and Learning in the Classroom.** Prerequisite: graduate standing. Introductory course covering contemporary theories of cognition, learning, development, and motivation as they apply to the classroom. Theories will be applied to specific content areas such as reading, writing, math, and science. The role of instructional technology is embedded throughout the semester. (Su)

**G5203 Measurement and Evaluation in Education.** Prerequisite: graduate standing. An introduction to basic concepts of educational measurement, evaluation, and testing. Includes interpretation and uses of standardized tests. Emphasizes development of effective assessment for tests. Students will also develop proficiency in the basic statistical procedures (graphic display, central tendency, variability and association) required for handling assessment data. (F, Sp)

**G5513 Teaching with Technology.** Prerequisite: 3043 or permission of instructor. A problem-based approach to integrating computers and other technologies with educational settings. Consideration of such issues as purchasing, maintaining and upgrading hardware and software, facilities renovation, legal issues, and developing technology plans. (F)

**G5533 Introduction to Instructional Technology (Crosslisted with Library and Information Studies 5533).** Prerequisite: graduate standing or permission of instructor. Examination of theoretical and critical issues regarding educational technologies. Practical application and development of skills utilizing technology tools. (F)

**G6023 Analysis of Quantitative Data II.** Prerequisite: 5023. A continuation of 5023. Topics include power analysis, multiple linear regression, analysis of variance models, and an introduction to non-parametric statistics. (Sp)

**G6033 Research Methods in Education.** Prerequisite: 5023 or 5033. Research in professional education: readings, class discussion, and some experience in the various kinds of educational research; different techniques studied and evaluated in light of their usefulness in different kinds of research. A term paper and oral reports required in the field of one's individual interests and needs. Required as a tool of research for all candidates for the degree of Doctor of Education; recommended elective for candidates for the degree of Master of Education who intend to write a thesis.

**G6043 Qualitative Research Methods.** Prerequisite: 5033 or equivalent by permission, graduate standing. Topics include qualitative research traditions, qualitative designs, data collection techniques, qualitative data analysis. Students design, conduct, and analyze their own qualitative study during the course. (F, Sp)

**G6063 Applied Multivariate Statistics in Educational Research.** Prerequisite: 5023 and 6023, or equivalent. Covers selected multivariate techniques with an emphasis on detecting and correcting violations of assumptions, applications, and interpreting results from popular computer statistics packages. (Sp)

**G6073 Program Evaluation.** Prerequisite: graduate standing. This course is designed to develop understanding and experience in systematically evaluating outcomes related to program goals and standards. Topics will include: purposes and uses of evaluation, role of concepts and constructs, planning, standard setting, selecting methods, developing measures, analyzing and interpreting outcomes, reporting findings, ethics and organization, and utilization. Prior coursework recommended: at least one prior course in research design or methods and one prior course in measurement or assessment. (F)

**G6083 Qualitative Research Methods II.** Prerequisite: 6043, or equivalent with permission. Topics include qualitative research design, data analysis, data interpretation, and theory building. Students should have qualitative data ready to analyze before enrolling in the course. (Sp)

**G6101 Propaedeutic Seminar.** Prerequisite: admission to Instructional Psychology and Technology doctoral program. Summarizes the history of the field of instructional psychology and technology and introduce research typical of field and specific to interests of program faculty. Also discusses expectations for scholarship in the program and field and how students meet those expectations. (F)

**G6113 Educational Psychology of Human Learning.** Prerequisite: graduate standing or permission of instructor. Survey and analysis of representative theories of learning and current research related to the learning process.

**G6133 Planned Educational Change.** Prerequisite: graduate standing. An overview of the process of planned change in education with special reference to research on change from behavioral sciences and organizational development. Topics include: the roles of the change agent, models of the change process, place of resistance in the change process and resolution of conflict among change-affected client groups.

**G6143 Instructional Development.** Prerequisite: graduate standing. This course is designed to develop understanding and experience in systematically designing and developing instruction and instructional systems. Topics will include: task, context, and learner analysis, assessment design, principles of educational psychology, instructional design principles and strategies, development and production techniques, formative and summative evaluation methods, and flexibly adaptive approaches to implementation. (F)

**G6153 Motivation in Education.** Prerequisite: graduate standing or permission of instructor. Survey and analysis of historically significant and current theories of motivation. Basic and applied issues related to achievement and motivation to learn are examined.

**G6163 Instructional Design.** Prerequisite: 6143. This course is designed to develop understanding and experience in systematically designing instruction, building on the principles, processes and skills of EIPT 6143. Topics will include: strategies of instruction for specific learning outcomes, formative and summative evaluation, learning assessment design, designing jobs aids and performance support systems, rapid application development and knowledge management. (Sp)

**G6173 Management of Instructional Technology Programs.** Prerequisite: 6513 or equivalent by permission; graduate standing. This course is designed to introduce the core principles of project management, and develop understanding of how those principles and practices are subject to adaptation. Topics will include: defining the field, contexts and influences, strategic analysis, managing risk, managing people, managing time, managing budget and other resources, managing evaluation, problem-solving, and project reporting.

**G6183 Cognition and Instruction.** Prerequisite: graduate standing. Examines the contributions of cognitive psychology to issues of instruction. Surveys basic issues in cognition and examines applied issues in greater depth. (Sp)

**G6203 Norm and Criterion Measurement.** Prerequisite: 5203 or permission of instructor. Advanced measurement for instructional designer, evaluators, and instructional researchers. A balanced description of principles and procedures for developing reliable, valid and practical measurement instruments. Includes item response theory and development of computer adaptive tests.

**G6213 Affective Instrument Development.** Prerequisite: concurrent enrollment in 5023 and 6023. Methods and procedures in affective instrument (Likert, Semantic, differential) development for use as a self-report (classroom, survey) or observational (performance-based) assessment. Topics include scaling techniques, methods of obtaining score reliability, use of human subjects, manuscript preparation, and current methodological advances. (Irreg.)

**G6313 Multimedia Design and Development for Learning and Instruction.** Prerequisite: graduate standing. Introduces multi-design phases of developing instructional multimedia computer programs, including planning, analysis, designing, development, and evaluation, through hands-on experience of working on different multimedia design projects and authoring instructional programs using Macromedia Director. (F)

**G6333 Theory and Practice in Computer-Supported Learning Environments.** Prerequisite: 6183, 6313. Explores various topics on computers as cognitive tools and traces the evolution of the role of technology, which is paralleled with the paradigm shifts in education. Relevant literature on computers as cognitive tools will be reviewed and critiqued. Students have an opportunity to design a set of cognitive tools or a learning system for a specific target audience and a specific learning or training context. (Sp)

**G6343 Instructional Strategies and Models for Multimedia Development.** Prerequisite: 6313, 6523. Examines a number of instructional design models, which will be applied to design and develop computer or web-based multimedia learning environments to support various types of learning outcomes. In addition, various multimedia methods will also be compared and examined to enhance the interactivity and the effectiveness of instructional strategies. Authorware will be introduced as another authoring software to extend multimedia development skills. (Sp)

**G6423 Web-Based Instruction.** Prerequisite: 5533, 6143. Designed to prepare students with knowledge, skills, and tools in the areas of web-based and web-supported instruction. Provides learners with both theoretical understanding of and practical skills for using the Internet in instructional settings. (Sp)

**G6503 Development of Text-Based Instruction.** Prerequisite: graduate standing. Development of prose, text-based instruction, including considerations of readability, organization, layout, and typography for instructional purposes. Effective use of graphics in instruction. Production of print-based instruction, including desktop publishing. (F)

**G6523 Production of Educational Media.** Prerequisite: 6313 or 6513. For teachers and instructional technology professionals to increase knowledge and skills in producing instructional materials for a variety of media. Topics include visual communication, and the development and manipulation of graphics, sound, animation, and video. (Sp)

**G6533 Designing and Developing Open-ended Learning Environments.** Prerequisite: 6313 and 6343. Overviews major components and key principles of constructivist or open-ended learning environments (OELES). Various constructivist assumptions, methods, or models for design and instruction will be explored. Students will be engaged in various hands-on multimedia instructional projects to develop constructivist learning environments and create cognitive tools to facilitate meaning making and knowledge construction. Macromedia Flash will be introduced as an additional authoring application to create OELES. (Sp)

**G6553 Instructional Television.** Prerequisite: 6523 or equivalent (permission on equivalent), graduate standing. Focus is on production and utilization of television in instruction for education and training settings. Topics developed include: television production planning, personnel functions in television production and use, equipment characteristics, television equipment operation, program development, directing and varieties of utilization.

**G6613 Research Issues in Instructional Technology.** Prerequisite: doctoral standing. May be repeated with change of content; maximum credit 12 hours. Examine specified research issues in the field of instructional technology. Students will read and critique existing research, as well as identify directions for new and continuing research. (Irreg.)

**G6713 Research Issues in Instructional Psychology.** Prerequisite: doctoral standing. May be repeated with change of content; maximum credit of 12 hours. Examine specified research issues in the field of instructional psychology. Students will read and critique existing research, as well as identify directions for new and continuing research. (Irreg.)

**G6873 Educational Futurism (Crosslisted with Social Foundations of Education6873).** Prerequisite: graduate standing. Deals with anticipated social and environmental change created by expanding technology, cybernation, computers, electronic information systems, mass media and the like. Treats impact of change on educational institutions and educational alternatives needed for human survival.

## Literacy Education (EDLT)

**3183 Theories of Literacy Development for Young Children.** Prerequisite: admission to Teacher Education program; 3253 or concurrent enrollment. Introduction to the essential concepts of language and literacy learning and teaching from birth through third grade. Topics include theories of language and literacy development, components of a literacy-rich environment, and evaluation of literacy activity. (F)

**3253 Understanding and Teaching Children's Literature.** Prerequisite: admission to Teacher Education program. Introduction to children's literature from infancy to middle school, elements of literature, and how to encourage children's responses to literature. Topics include understanding literary genre, the history of children's literature, book selection, literary response theory, and the development of a literature curriculum. (F, Sp, Su)

**3711 Language and Literacy Practicum I.** Prerequisite: 3253 or concurrent enrollment; corequisite: 3713. Support preservice teachers in making connections between theories of language and literacy development/assessment and children's actual literacy learning processes and products. (F, Sp, Su)

**3713 Foundations of Language and Literacy Development and Assessment.** Prerequisite: admission to Teacher Education program; 3253 or concurrent enrollment; corequisite: 3711. Introduce theoretical and practical information related to language acquisition and development. Develop foundational knowledge about literacy assessment. (F, Sp, Su)

**4201 Language and Literacy Practicum II.** Prerequisite: 3713; corequisite: 4203. Support preservice teachers in making connections between theories of language and literacy evaluation/instruction and children's actual literacy learning processes and products. (F, Sp, Su)

**4203 Language and Literacy Evaluation and Instruction.** Prerequisite: 3253, 3713; corequisite: 4201. Evaluating literate activity in various settings, interpret assessment findings and select instructional strategies to promote literacy development. Explore factors related to language and literacy evaluation and instruction. (F, Sp)

**4303 Methods, Materials, and Organization of Literacy Programs for Young Children.** Prerequisite: 3183. Focuses on supporting literacy learning in a variety of learning environments for children from birth through third grade. Emphasis includes developmentally appropriate teaching strategies and activities, instructional planning, organizing and managing instruction, planning the overall literacy program, integration of literacy across the curriculum, and evaluating literacy materials. (Sp)

**4313 Language and Literacy in Elementary/Middle School Classrooms.** Prerequisite: 4203, EDEL 4101; corequisites: EDMA 4053, EDSC 4193, EDSS 4323, ILAC 4043. Explore issues related to planning, organizing, and implementing an integrated literacy program in elementary/middle schools. Reflect on field experiences that lead to informed, dynamic teaching and learning. (F, Sp) [V]

## Mathematics Education (EDMA)

**3001 Mathematics Education Field Experience Mentoring II.** Prerequisite: admission to Teacher Education program, EDFN 3003; corequisite: EIPT 3483. Mentoring course providing access to and support from mathematics education faculty for students during their second level field experience. Students meet with the mathematics education faculty for seminars, discussions, and demonstrations. (F, Sp)

**3053 Problem-Centered Learning Environments.** Prerequisite: admission to Teacher Education program; MATH 1473 and 2213. Designed to engage the prospective teacher in examining various facets which contribute to decision making with regard to a learning environment best adapted to the abilities and needs of each students as a mathematics learner. (F, Sp)

**3153 Early Mathematics Concepts.** Prerequisite: 3053, Mathematics 2213, 3213. Students will engage in mathematics activities as a basis for reflecting on and analyzing the learning and teaching of mathematics appropriate to primary education in order to make decisions with regard to meeting the needs of young children as mathematics learners. (F, Sp)

**4001 Mathematics Education Field Experience Mentoring III.** Corequisite: 4242. Mentoring course providing access to and support from mathematics education faculty for students during their third level field experience. Students meet once per month with the mathematics education faculty for seminars, discussions, and demonstrations. (Sp)

**4053 Elementary Mathematics Curriculum.** Prerequisite: 3153, EDEL 4101; corequisite: EDLT 4313, EDSC 4193, EDSS 4323, ILAC 4043. Designed to offer the student means for planning, implementing, and evaluating mathematics instruction. Examination of the elementary curriculum will provide the basis for understanding and developing specific strategies and materials for teaching elementary mathematics. (F, Sp)

**+G4242 Fundamental Concepts and Methods of Teaching Secondary Mathematics.** Prerequisite: nine hours of education, senior standing; corequisite: 4001. Math 4232 is recommended. Fundamental concepts of mathematics relevant to the secondary school mathematics curriculum; an overview of the secondary mathematics curriculum, its development and appropriate instructional methods; current issues in mathematics education pertinent to the secondary teachers. For major credit only for those in teacher certification programs. (F)

**G5153 Problem-Centered Learning in Mathematics.** Prerequisite: graduate standing. Intended for mathematics teachers at any level, the course is designed so participants can engage in non-routine problem solving as a basis for examining and reflecting on such an approach to the teaching and learning of mathematics. (Irreg.)

**G5523 Elementary School Mathematics Curriculum.** Prerequisite: graduate standing. Analysis of research, trends, and issues in elementary mathematics teaching. Special attention is given to the research and theoretical bases underpinning curricula. (Irreg.)

**G5533 Middle School/High School Mathematics Curriculum.** Prerequisite: graduate standing. Analysis of research, trends, and issues in middle school and high school mathematics teaching. Special attention is given to the research and theoretical bases underpinning curricula. (Irreg.)

**G5753 Theory and Research in Mathematics Education.** Prerequisite: graduate standing. Designed to enhance appreciation for and understanding of research methods and findings in mathematics education. Students explore the history of research in mathematics education, discuss various theories of mathematics learning and understanding, evaluate, synthesize, and critique mathematics education research, understand a variety of research methodologies, and conduct original research. (Irreg.)

**G5763 History of Mathematics for Educators.** Prerequisite: graduate standing. Designed to offer a sense of the rich history of mathematics as an intellectual pursuit as well as for its practical significance. Will include presentation of methods and materials historical in nature that can be utilized by practicing classroom teachers to motivate and understand of and appreciation for mathematics. (Irreg.)

**G5973 Use of Technology in Teaching Mathematics.** Prerequisite: graduate standing. Examination of relevant technologies and their uses in and implications for the teaching and learning of mathematics. Special attention is given to developing critical reflective practice and providing perspectives on current trends and issues in mathematics education research. (Irreg.)

**G6163 Systems Theory and Learning Organizations.** Prerequisite: graduate standing, permission of instructor. Examines system theories, including the development and significance of complex adaptive systems, complexity analyses, and paradigms associated with new science, especially related to the educational context. (Irreg.)

## Professional Studies in Education (EDPR)

**3373 Education Decision Making—Personalized.** Prerequisite: junior standing. A study of the forces and factors underlying the decision-making behavior of the individual in certain and uncertain occupational and lifestyle situations. A study will be made of "futurism" and its relationship to decision making. Location and qualification of sources for data for working with alternatives will be stressed. Developing educationally to cope with anticipated future activities.

**3643 Curriculum Design and Development.** Psychological, social and Philosophical foundations, patterns of curriculum organization; identification and selection of educational directions; principles and procedures for selecting experiences for instructional programs; basic concepts of curriculum improvement, evaluation and revision; contemporary trends; pressures affecting curriculum; selection and development of curricular materials.

## Reading Education (EDRG)

**0112 Reading Improvement.** Designed to improve the ability of individual students to read and comprehend college-level material. Each student is tested to permit instruction to begin at the appropriate levels. Not acceptable for credit at the University of Oklahoma. (F, Sp, Su)

**0122 College Reading Strategies.** A continuation of EDRG 0112. The course focuses on the development of reading strategies for college textbooks. Strategies include comprehension monitoring and how to construct a coherent interpretation of a passage. Not acceptable for credit at the University of Oklahoma. (F, Sp, Su)

**G5553 Issues and Research in Reading/Literacy.** Prerequisite: graduate standing. Exploration of current issues in reading and literacy. Examination and critique of different paradigms of research. Students will plan and conduct a research project on one of the issues using one of the research paradigms. (Irreg.)

**G5613 Developmental Reading (Pre-K to College).** Prerequisite: graduate standing. Study of reading development from birth through the life span. Includes understanding of factors leading to reading difficulties, relationship of reading to other language processes, and implications of this process for curriculum and instruction. (F)

**G5713 Understanding Reading: The Processes and the Curriculum.** Prerequisite: graduate standing. An overview of the many cognitive, linguistic, motivational, and environmental factors that can affect the reading process. The application of theory as it affects classroom learning, designing the educational setting, and assessing individual readers and curriculum materials will be the focus. (F)

**G5803 Theories of Reading and Literacy.** Prerequisite: graduate standing, 5613. Explores the theoretical basis of the reading, writing, and learning process. Topics to be discussed include the importance of language, social content, and culture; the meaning construction process; the role of perception, word recognition, metacognition, and affect on literacy and learning; and, how different models of the reading/writing process suggest different classroom learning environments. (Sp)

**G5812 Evaluating Literacy Processes: Formal, Informal, and Alternative.** Prerequisite: 5613; corequisite: 5821. Exploration of the changing meanings and theoretical underpinnings of literacy evaluation as well as the practical aspects of diagnosing and assessing literate activity in a

classroom setting. Content includes administration and interpretation of standardized, criterion-referenced, and classroom-based instruments and evaluation activities, and how to integrate assessment into instruction and instructional decision-making. (F)

**G5821 Clinic: Diagnostic Case Study.** Prerequisite: 5813; corequisite: 5812. Practice administering and interpreting a variety of assessments. Assessment of a student with reading difficulties, and writing a case study. (F)

**G5903 School-Wide Literacy Programs: Development and Supervision.** Prerequisite: graduate standing. Principles of effective reading programs. Evaluating and choosing reading programs, materials, curriculum. Methods for supervising, interacting with, and/or involving paraprofessionals, other professionals, parents, and community groups in students' reading development, including supporting staff development for self and others. (Irreg.)

**G5912 Developing Strategic Reader: Instructional Strategies.** Prerequisite: 5613, graduate standing; corequisite: 5921. Survey of best practices for supporting learners' development as strategic, engaged readers. Discussion of classroom environments, materials, specific teaching strategies and activities, and models/approaches to instruction that support learning of multiple word recognition strategies, increasing conceptual vocabulary, and constructing meaning with diverse types of texts. (Sp)

**G5913 Alternative Diagnosis and Assessment of Literacy.** Prerequisite: 5713. Theory, demonstration and practice in alternative assessments of literacy in a classroom setting. Practical application of portfolios, oral reading records, interviews, journals and think alouds will be emphasized. Decision making, record keeping, and reporting will also be stressed. May be taken concurrently with EDRG 5813.

**G5921 Clinic: Correcting Reading Problems.** Prerequisite: graduate standing, 5613; corequisite: 5912. Practice implementing teaching strategies to promote strategic engaged readers with a small group of students having difficulty reading. (Sp)

## Science Education (EDSC)

**4093 Inquiry-Based Science Teaching.** Prerequisite: admission to Teacher Education program. Elementary education students will be introduced to the nature of science and to concepts fundamental to science education at all grade levels including the central purpose of American education, developmental model of learning, and the teaching procedure known as the learning cycle. (F, Sp)

**G4193 Teaching Science in Elementary Schools.** Prerequisite: 4093, EDEL 4101; corequisites: EDMA 4053, EDLT 4313, EDSS 4323, ILAC 4043. Experiences are provided, following the position that science is the quest for knowledge, and that this position is compatible with modern educational theory. (F, Sp)

**4513 Teaching Science in Secondary Schools (Slashlisted with 5513).** Prerequisite: nine hours of education, senior standing. Review of the purpose of education, the nature and structure of science, review of the characteristics of the secondary school-age learner, elements of inquiry, learning in an inquiry-centered laboratory, analysis of curricula, evaluation of inquiry teaching and learning, and organization of a science laboratory for inquiry teaching. No student may earn credit for both 4513 and 5513. (F, Sp)

**G5513 Teaching Science in Secondary Schools (Slashlisted with 4513).** Prerequisite: nine hours of education, a teaching field in science. Review of the purpose of education; the nature and structure of science; review of the characteristics of the secondary school learner; elements of inquiry, learning in an inquiry-centered laboratory; analysis of curricula; evaluation of inquiry teaching and learning, organization of secondary science laboratory for inquiry teaching. No student may earn credit for both 4513 and 5513. (F, Sp)

**G5514 Research and Development of Science Curricula.** Prerequisite: 5513. Provides the following experiences: teaching existing learning cycles to peer groups; developing new learning cycles; and teach these newly developed learning cycles to peers and/or secondary school students. (Sp)

**G5523 The Science of Learning Theories.** Prerequisite: 12 hours of education or permission of instructor. The mental functioning model of Piaget is developed through experience. The characteristics of persons at each stage of development are identified and compared. A teaching theory is drawn from the functioning model and a curriculum organization and planning theory are derived from the stage model. These theories are put into practice. (Irreg.)

**G5543 The Elementary School Science Curriculum.** Prerequisite: 12 hours of education, graduate standing. Elementary school science curricula are examined from a theory-based perspective which includes: the nature of science, purpose of schools, developmental learning theory, and the teaching procedure known as the learning cycle. Students trace the development of American science education from 1700 to present. (Alt. F)

**G6532 Paradigms for Scientific Investigations.** Prerequisite: admission to graduate standing. Current research paradigms in science education will be constructed through readings, discussions and presentations. A thorough review of the literature will include the use of professional journals, theses and dissertations from that area to develop a sound understanding of research paradigms and the formal reporting of research. (Irreg.)

**G6533 Understanding Classroom-based Research.** Prerequisite: EIPT 5023 and graduate standing. Develops understanding of the complex nature of classroom research. Students will design and analyze classroom-based investigations which involve: formulating research questions, designing studies on teaching and learning, interpreting results of data, and determining educational/practical implications of research findings. (Alt. Sp)

## Secondary Education (EDSE)

**G5653 Problems of Teaching in Secondary Schools.** Prerequisite: twelve hours of education, graduate standing. Place of the teacher with reference to teacher-pupil, teacher-teacher, teacher-administrator, and teacher-community relations. Problems of teaching related to criticisms of present-day secondary education; the task of secondary schools; the adolescent learner; planning for learning; appraising learning and growth; human relations; guidance; the teacher and school organization; trends in teaching. (Sp)

## Social Studies Education (EDSS)

**3553 Foundations to Social Studies Education.** Prerequisite: admission to Teacher Education program. Designed as a way to view social studies as an integrated body of knowledge while focusing on the various subject matter areas. (F, Sp)

**4323 Teaching Social Studies in Elementary/Middle Schools.** Prerequisite: 3553, EDEL 4101; corequisite: EDLT 4313, EDMA 4053, EDSC 4193, ILAC 4043. Designed to develop the basic pedagogical knowledge and skills required for effective planning, implementation and evaluation of social studies instruction in the elementary and middle school curriculum. Emphasizes application and analysis of systematic instructional design procedures, content and process objectives, and deductive, inductive, inquiry and values education strategies. (F, Sp)

**4551 Mentoring and Field Experience in Social Studies.** Corequisite: 4563. Students are assigned to social studies classrooms where they observe, participate, and teach lessons. Students are asked to audio/video tape their lessons and analyze them based on set criteria. (F, Sp)

**G4563 Teaching Secondary School Social Studies.** Prerequisite: nine hours of education, senior standing; corequisite: 4551. Curriculum and instructional strategies for teaching secondary school social studies with a focus on (a) appropriate methodologies, and (b) matching these methods to content and learners. The students will study a variety of classroom techniques and the assessment of such techniques on social studies teaching. (F, Sp) [V]

**G5313 Research in Social Studies.** Prerequisite: admission to Teacher Education program. Pre-service teachers and teacher practitioners will be given the opportunity to participate and/or conduct a major investigation into the problems, techniques, history, philosophy and other special issues of social studies.

**G5323 Micro-teaching Practicum in Social Studies.** Prerequisite: 5313. Pre-service teachers and teacher practitioners will be given the opportunity to strengthen their classroom techniques through the use of micro-teaching media (videotaped, reviewed, assessed presentations).

**G5333 Seminar in Social Studies.** Prerequisite: admission to Teacher Education program. Attend to particular and special problems associated with teaching social studies, as defined by pre-service teachers. Working with a problem-solving conceptualization, students will become engaged in the attempt to resolve difficulties encountered in the classroom.

**G5342 Mentoring in Social Studies.** Prerequisite: graduate standing or permission of instructor. Involves the fifth-year social studies student as

mentor to the first-year social studies student. The fifth-year student will provide an orientation to the social studies program, assist first-year students with the synthesis of social studies materials, as well as engage first-year students in actual teaching.

**G5503 Social Studies Curriculum.** Prerequisite: twelve hours of education, graduate standing. Analysis of criteria for organizing the elementary and middle school social studies curriculum, analysis and application of selected information processing, social and personal models of teaching designed to achieve the knowledge, skills, values and social participation objectives of the social studies curriculum. (Irreg.)

## Special Education (EDSP)

**3053 Education of Exceptional Learners.** Prerequisite: admission to Teacher Education program. A comprehensive overview of learners with exceptionailities-including the student who is physically/health impaired, visually impaired, hearing impaired, speech/language impaired, mentally retarded, learning disabled, gifted, emotionally disturbed or multiple disabled. Lectures/discussions on how differences can influence learning/teaching and what teachers can do to help. (F, Sp)

**3054 Understanding and Accommodating Students with Exceptionalities.** Prerequisite: admission to Teacher Education program. Introduces pre-service educators to the federally-mandated policies and procedures for educating children and youth with exceptionailities. (F, Sp)

**3257 Mental Retardation Block.** Prerequisite: 3617. Encompasses the introduction to the lifespan development of persons who are mentally retarded, as well as incorporating procedures for working with them as part of practicum experience in the field.

**3611 Team Mentoring.** Prerequisite: 3054. Covers what mentoring involves, demonstrates what mentoring is, and involves a one-on-one project with assigned mentoring.

**3612 Teacher Self Understanding.** Prerequisite: 3054. Explores need to understand self and others in order to teach effectively. Touches on self concept, emotional development, what makes a good teacher, and exploration of own teaching strengths and weaknesses.

**3617 Learning Disabilities Block.** Prerequisite: 3612. Encompasses the introduction to the lifespan development of persons with learning disabilities, procedures for working with them, and practicum experience in the field.

**3753 Working with Parents of Exceptional Individuals.** Prerequisite: 3054. Examines how to work effectively with parents of exceptional individuals in order to better help those individuals reach their fullest potential. Explores effective interpersonal skills, needs of those parents, and the best ways to positively influence them are considered. (F)

**+G3890 Introductory Practicum in Special Education.** 1 to 6 hours. Prerequisite: eight hours of education. May be repeated with change of content; maximum credit six hours. Gives undergraduate students direct experiences with children referred to the special education laboratory for testing and evaluation. These referrals are related directly to public school problems.

**G4203 Technological Adaptations for Exceptional Learners.** Prerequisite: EIPT 4203. Trains teachers to be aware of the needs of exceptional learners and how technological advances can help them better reach their potential. (Sp)

**G4413 Management in Special Education.** Prerequisite: 3054, 4623, 4743. An overview of management theories and interventions applied to special education populations. (Irreg.)

**G4513 Assessment for Eligibility and Program Planning.** Prerequisite: 3054, 4612, 4713; permission of instructor. Study of assessment instruments, interpretation, and their use eligibility, placement, and program planning for individuals with mild to moderate disabilities. (F)

**G4613 Introduction to Students with Learning Disabilities.** Prerequisite: 3054. Theories of learning disabilities; characteristics and diagnosis of individuals with learning disabilities; counseling of parents of learning disabled children. (Sp)

**G4623 Curriculum and Techniques for Students with Mild-Moderate Disabilities.** Prerequisite: 3054, 4743. Methods and techniques of remediation of skills in academic curriculum for students with mild-moderate disabilities. (Sp)

**G4633 Language and Communication Strategies for Individuals with Disabilities.** Prerequisite: 3054. Considers the methods and techniques of remediation of language and communication disorders including areas of oral expression, listening comprehension, reading and written expression. (Sp)

**G4713 Introduction to Students with Mental Retardation.** Prerequisite: 12 hours of education, including 3054 and EIPT 3483 or equivalent, graduate standing. Causes and nature of mental retardation and education of students with mental retardation.

**G4723 Teaching Techniques in a Functional Curriculum.** Prerequisite: EDFN 3003, EDSP 4743 and 4623. Presents a functional scope and sequence and the teaching techniques most effective for students with disabilities. (Sp, Su)

**4717 Emotionally Disturbed Block.** Prerequisite: 3257. Introduction to the lifespan development of persons who are emotionally disturbed, procedures for working with them, and practicum experience in the field.

**tG4723 Teaching Techniques in a Functional Curriculum.** Prerequisite: 4623, 4743, EDFN 3003. Presents a functional scope and sequence and the teaching techniques most effective for students with disabilities. (F)

**G4743 Introduction to Mild-Moderate Disabilities.** Prerequisite: 3054. An in-depth study of the theoretical considerations of individuals with mild to moderate disabilities including etiology, assessment, interventions, and service delivery. (F)

**G4753 Individuals with Multiple Disabilities.** Prerequisite: 3054. Deals with definitions, traits, characteristics, needs, research on procedures for working with multi-handicapped individuals. (Irreg.)

**G4823 Transition and Self-Determination.** Prerequisite: 4743. Assessment, planning and instruction to facilitate educational and employment post-school outcomes with information on laws and resources. (F)

**4890 Advanced Practicum.** Prerequisite: 3890; corequisite: 4723. The final field experience before students earn the bachelor's degree. Students complete a minimum of 160 hours of observation and participation in a special education classroom. (F) [V]

#### **G5133 Introduction to Students with Emotional Disturbance.**

Prerequisite: 3054. Provides an overview of various theoretical and practical considerations of emotional disturbance including etiology, assessment, intervention and service delivery. (F)

**G5143 Enhancement of Social and Task-Related Behavior.** Prerequisite: 4753. Various theoretical approaches to teaching social competency; increasing and improving pro-social behavior of students with disabilities and their peers; and improving learning behavior. (F)

#### **G5153 Instructional Modifications for Students with Disabilities.**

Prerequisite: 4623, 4743. Develop instructional skills necessary to teach students with mild/moderate disabilities in varied instructional settings. Topics will include effective instructional techniques, strategies for modifying and adapting general education curriculum, and models for improving student academic performance. (Sp)

**G5173 Collaboration for Lifelong Integration.** Prerequisite: graduate standing. Explores collaborative approaches to working with families, general educators, related service providers, and personnel in other agencies to facilitate the integration of individuals with disabilities from birth through adulthood. (F)

#### **G5183 Advanced Assessment and Remediation Procedures.**

Prerequisite: 5173 or equivalent. Focus will be on innovative approaches to assessment and remediation of mild to moderate learning and/or behavior problems. Techniques, methods and materials will be presented within a career/ecological framework and will be research based.

**G5303 Applied Research in Special Education.** Prerequisite: graduate standing. Involves cooperative planning of research project (with mentors) to be designed, implemented, evaluated and written. (F)

**G5403 Exceptional Infant/Toddler.** Prerequisite: graduate standing. Examines the infant/toddler who is at risk/developmentally delayed—possible problems, complications and need for multidisciplinary intervention and procedures.

**G5412 Theories in the Education of Exceptional Children.** Prerequisite: graduate standing. Surveys all types of disabilities with special attention to causes, diagnosis and educational planning. Legislation related to special education is overviewed. Designed for teachers, supervisors and administrators.

**G5953 Teaching Procedures for Students with Emotional Disturbance.** Prerequisite: graduate standing. Theories of behavior are related to identification, diagnosis and educational planning for students with emotional disturbance. An examination of methodologies for teaching students with emotional disturbance with problems in language, reading, written expression, mathematics and social skills which have emerged from various theoretical perspectives is presented.

**G5982 Directed Project in Special Education.** Prerequisite: graduate standing. Under the direct supervision of the student's adviser, the student conducts an applied project on a topic or challenge in special education related to the student's interest. (F, Sp, Su)

**G6003 Attitudes Toward Individuals with Disabilities.** Prerequisite: graduate standing. Focuses on the attitudes of parents, peers and professionals toward individuals with disabilities, and on measurement of attitudes and procedures which may be used to increase acceptance.

#### **G6023 Antecedent Applied Behavior Analysis and Research Design.**

Prerequisite: graduate standing. Examines applied behavior analysis principles and techniques, including observational analysis data based instruction, and antecedent strategies. ABA research design, APA writing style, ethics, human subjects approval process will also be included. (Irreg.)

**G6033 Self-Determination Seminar.** Prerequisite: graduate standing. Examines self-determination assessment, instruction, and infusion into secondary IEPS as a method to improve post-school outcomes for students with disabilities and those at high risk of school failure. Implementation issues and effective practice will be examined in light of efficacy research. (Irreg.)

**G6043 Secondary Education and Transition Seminar.** Prerequisite: graduate standing. Examines the status of secondary education for students with disabilities and those at high risk for school failure. Focus will be upon transition assessment, planning, and instructional issues and strategies to improve post-secondary outcomes, especially transition into post-secondary education. (Irreg.)

**G6053 Post-Secondary Education Seminar.** Prerequisite: graduate standing. Examines the status of post-secondary education for students with disabilities and those at high risk for school failure. Focus will be upon transition into and success strategies to maximize post-school success. Transition from school to work or advanced study will be discussed. (Irreg.)

**G6103 Consultation in Special Education.** Prerequisite: graduate standing. Students will develop a variety of consultation skills. Topics include models of consultation; interpersonal communication skills; problem-solving approaches; strategies for effective interactions with professionals, paraprofessionals, and parents; and planning and conducting inservice training.

**G6113 Program Development.** Prerequisite: graduate standing and permission of instructor. May be repeated; maximum credit six hours. Examine educational media; models of information; producing and consuming applied research; grant writing; dissemination; program, design, development and evaluation for advanced masters or doctoral students. (Sp)

**G6123 Contemporary Issues/Research.** Prerequisite: 5173, graduate standing, and permission of instructor. Examines critical issues influencing the field of special education and services for persons with disabilities. (Sp)

**G6202 Practicum in Special Education Consultation.** Prerequisite: 4422, 6103. Students will rehearse consultation skills in a field setting. Emphasis is placed on establishing consultation programs; entering, maintaining, and terminating consultative relationships; evaluating intervention effectiveness; conducting inservice training; and utilizing observational data as a basis for implementing change.

**G6203 Professional Seminar I.** Prerequisite: graduate standing or permission of instructor. Designed for post-master's student who has been accepted into the Ph.D. program. Covers review and synthesis of a current research area, professional writing and dissemination. (F)

## *Electrical and Computer Engineering (ECE)*

**2213 Introduction to Digital Design.** Prerequisite: Mathematics 2423. Number systems, Boolean algebra, minimization procedures, combinational logic functions, introduction to sequential logic design, finite state machines and clocked (synchronous) sequential circuits. Analysis, synthesis and implementation are appropriately emphasized. (F, Sp)

**2214 Digital Design.** Prerequisite: Mathematics 2423. Number systems, Boolean algebra, minimization procedures, combinational logic functions, introduction to sequential logic design, finite state machines and clocked (synchronous) sequential circuits. Analysis, synthesis and implementation are appropriately emphasized. (F, Sp)

**2281 Engineering Co-Op Program (Crosslisted with AME, CH E, C E, C S, ENGR, EPHY, E S, G E, I E, P E 2281).** Prerequisite: student participation

in the program. The Co-Op program provides student placement in jobs outside the University, but in a position related to the student's major. On completion of a semester work period, the student submits a brief written report. One hour of credit (elective) granted for each work period, with a maximum credit of six hours. (F, Sp, Su)

**2713 Digital Signals and Filtering.** Prerequisite: Engineering 1410 and 1420, or Engineering 1112, and Mathematics 2423. Digital signals and filters, discrete Fourier and Z transforms, sampling. (F)

**2723 Electrical Circuits I.** Prerequisite: 2713, Mathematics 2423, Physics 2524. Introduction to circuit elements and the laws of electrical science. Loop and nodal analysis solution methods. Thevenin and Norton equivalent circuits. Superposition and source transformation methods. Laplace transform analysis of electrical circuits. Guest Lectures introducing advanced topics. (Sp)

**2772 Electrical Engineering Laboratory I.** Prerequisite: Engineering 2613 or concurrent enrollment in Engineering 2613. Principles of instrumentation and data analysis and the development of methods of experimental analysis for testing theories and hypotheses. **Laboratory** (F, Sp)

**+G3113 Energy Conversion I.** Prerequisite: 3613, Engineering 2613. Survey of methods of energy conversion; field-energy force relationships, equations of motion, incremental motion transducers, transformer theory; introduction to rotating machines. (Sp)

**3223 Microprocessor System Design.** Prerequisite: 2213 or 2214. Review of clocked sequential circuits; MSI/LSI devices and applications, including registers, busing, combinational functions; use of microprocessors and logic design using microprocessors. Emphasizes assembly of full functional units into workable systems. (Sp)

**+G3323 Introduction to Solid State Electronic Devices.** Prerequisite: 3613. Introduction to quantum mechanics, crystal properties and growth of semiconductors, energy bands in solids, charge carriers in semiconductors, excess carriers in semiconductors, and introduction to diodes and transistors. (F)

**3613 Electromagnetic Fields I.** Prerequisite: Mathematics 3113. Electrostatic and magnetostatic fields and sources, boundary conditions; introduction to Laplace's and Poisson's equations; quasi-stationary and time-varying fields; Maxwell's equations and circuit concepts. (F)

**+G3623 Electromagnetic Fields II.** Prerequisite: 3613. Guided waves, radiation and energy relations in electromagnetic fields; distributed parameter systems, resonance; elementary electrodynamics. (F)

**+G3713 Circuit Analysis II.** Prerequisite: Engineering 2613, Mathematics 3113 or enrollment in Mathematics 3113. Descriptions of signal waveforms, circuit differential equations and their solutions, convolution and impulse response, phasors and impedance, resonance, network topology, and formulation of loop, node and state equations. (Irreg.)

**+G3723 Electrical Circuits II.** Prerequisite: 2713, 2723; corequisite: Mathematics 3113. Analysis of electrical circuits in both the time and the frequency domains. Continuation of AC circuit theory, use of two port network theorems, impulse response, convolution, and differential equations. Laplace and Fourier transform analysis of electrical circuits. (F, Sp)

**3772 Electrical Engineering Laboratory II.** Prerequisite: 2772. Principles of instrumentation and data analysis and the development of methods of experimental analysis for testing theories and hypotheses. **Laboratory** (F, Sp)

**3773 Electrical and Computer Engineering Circuits Laboratory.**

Prerequisite: 2214 or 2213 and either 3723 or enrollment in 3723. Electrical laboratory procedures, circuit construction, debug and experimental confirmation of the principles of circuit theory. Introduction to use of laboratory instrumentation, including skills in the use of the oscilloscope in the evaluation of DC and AC circuits. Use and application of diodes, operational amplifiers and programmable logic devices. (F, Sp)

**+G 3793 Signals and Systems.** Prerequisite: 2713, 2723 or Engineering 2613 and Mathematics 3113 and Mathematics 3333. Use of transforms in analysis and design, state-space methods, feedback and communication systems, introduction to stochastic processes. (F, Sp)

**+G3813 Introductory Electronics.** Prerequisite: Engineering 2613. Small and large signal characteristics and models of electronic devices; analysis and design of elementary electronic circuits. (F, Sp)

**3872 Electrical Engineering Laboratory III.** Prerequisite: 3772, 3813. Principles of instrumentation and data analysis and the development of methods of experimental analysis for testing theories and hypotheses. **Laboratory** (F, Sp)

**3873 Electrical and Computer Engineering Electronics Laboratory.** Prerequisite: 3773 or 3772, 3813, Engineering 2003. Electronic analog

circuit design, simulation, construction, debugging and measurement of circuit performance quantities using advanced instrumentation techniques; circuit reliability theory; independent design skills development and technical writing. (F, Sp)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. Cover materials not usually presented in the regular courses. (F, Sp, Su)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Projects covered will vary. Deal with concepts not usually presented in regular coursework.

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work on a special project in the student's field. (F, Sp, Su)

**G4113 Analysis of Electrical Transmission.** Prerequisite: 3113. Transmission and distribution of electrical energy, particularly addressing electrical transmission systems in the competitive energy market. (F)

**4213 Digital Signal Processing (Slashlisted with 5213).** Prerequisite: 3793. Discrete-time linear systems, finite duration impulse response digital filters, infinite impulse response digital filters, finite word length effects, spectral analysis, fast Fourier-transforms, two-dimensional signal processing and applications. No student may earn credit for both 4213 and 5213. (F)

**+G4273 Digital Design Laboratory.** Prerequisite: 3223, 3872. Design of digital systems with integrated circuits and MSI/LSI and microprocessor interfacing. **Laboratory** (F, Sp)

**4383 Integrated Circuit Fabrication Technology (Slashlisted with 5383).** Prerequisite: 3323. A treatment of the theory and processes involved in the fabrication of integrated circuits. No student may earn credit for both 4383 and 5383. (F)

**G4413 Introduction to Control System Engineering.** Prerequisite: 3793. Analysis and synthesis of control systems; control systems performance and applications. (F)

**G4523 Introduction to Communication Theory.** Prerequisite: 3793. An introductory treatment of statistical communication theory; description of a random process by auto-correlation and power spectral density functions, sources and properties of electrical noise, the effects of modulation, detection and filtering on signal information content, bandwidth and signal-to-noise ratio. (Sp)

**G4613 Computer Architecture (Crosslisted with Computer Science 4613).** Prerequisite: 3223 or Computer Science 2613. Covers basic concepts of computer system design and communication between components, along with current and historical examples of computer architecture. (F, Sp)

**4623 Computer Hardware Design (Slashlisted with 5623).** Prerequisite: 3223. Design of modern digital computing circuits, computer arithmetic, number systems, state machines, control units, data transfer, bus interfacing, VHDL language elements and usage, circuit simulation. No student may earn credit for both 4623 and 5623. (F)

**4663 Radar Engineering (Slashlisted with 5663; Crosslisted with Meteorology 4663).** Prerequisite: Grade of C or better in Electrical and Computer Sciences 3613, or permission. Introduction to radar system designs and applications with emphasis on weather radar; radar system architecture and their functionalities and limitations of subsystems. Theories of radar detection and estimation in a noisy and cluttered environment; existing technologies and advanced techniques to improve radar performance. No student may earn credit in both 4663 and 5663. (F)

**G4773 Laboratory (Special Projects).** Prerequisite: 4273 or enrollment in 4273. Individually supervised special engineering problems of experimental nature. **Laboratory** (F, Sp) [V]

**G4813 Electronics.** Prerequisite: 3813. Analysis and design of electronic circuits such as multi-stage amplifiers, feedback amplifiers, oscillators and power amplifiers. (Sp)

**G4823 Engineering Principles of the Human Body.** Prerequisite: Physics 2514, Mathematics, 2423, and Engineering 2613. Introduction establishing the foundational engineering approach of analyzing the human body's anatomy and physiological function. Topics to include muscle and forces, aerodynamics of the lung and cardiovascular system, electrical signal from the body, and optics of the eye and vision. (Sp)

**4973 Special Topics.** Prerequisite: varies with course content. May be repeated with change of subject; maximum credit six hours in combination

with 4990. Devoted to special topics in Electrical and Computer Engineering not covered in the current curriculum. (F, Sp, Su)

**4990 Special Studies.** 1 to 3 hours. Prerequisite: senior standing and permission. May be repeated with change of subject matter; maximum credit six hours in combination with 4973. Devoted to supervised, individual studies of special topics (S/U graded) in Electrical and Computer Engineering. (F, Sp, Su)

**G5033 Neural Networks.** Prerequisite: graduate standing. Prerequisite: graduate standing. In-depth engineering approach to the field of artificial neural networks. Different types of network architectures and applications, and their properties and behavior. Particular emphasis on general concepts of network topology. (F)

**G5043 Fuzzy Logic.** Prerequisite: Math 3113 or 3333; graduate standing. In-depth study of fuzzy logic and fuzzy sets, their operations and related theorems. Application of these principles in practical areas such as pattern recognition, controllers, and image processing. (Sp)

**G5063 Computer Vision.** Prerequisite: Mathematics 2433, 3333, Engineering 3293 or Mathematics 4753, and graduate standing. Covers the theory, methods and applications of computer vision. Topics include binary machine vision, multiscale vision, color vision, low-level and high-level vision, 2-D and 3-D vision with both static images and dynamic scenes. (F)

**G5113 Analysis of Faulted Power Systems.** Prerequisite: 4113.

Computation of phase and sequence impedances for transmission lines, machines and transformers. Sequence capacitance of transmission lines. Analysis of simultaneous faults by two port network theory and matrix transformations. Analytical simplification for shunt faults, series faults. Solution of the generalized fault diagrams. Computer solution methods using the admittance and impedance matrices. (Sp)

**G5123 Wireless Communications (Crosslisted with Telecommunications 5123).** Prerequisite: 3793 or permission. Wireless communications principles, multiple access techniques, wireless networking, and systems and standards. (F)

**G5143 Internship in Electric Energy Resource Analysis.** Prerequisite: permission of instructor. May be repeated; maximum credit six hours. Required technical training in the "Electrical Energy Production and Risk Management" M.S. area of concentration. A written report, to be graded by a member of the graduate faculty, is required. Twelve credit hours required in this area of concentration prior to an internship. (Su)

**G5163 Generation Resource Scheduling and Portfolio Optimization.**

Prerequisite: 4113 and Engineering 3293. Optimum generation scheduling, including economic dispatch and unit commitment; various financial transactions such as forward contracts, futures and options; optimum portfolios consisting of these possible transactions and generating units. Uncertainty models and methods of describing "risk" are introduced. (Sp)

**G5173 Generation Resource Planning for Energy Systems.** Prerequisite: 5163, Engineering 3293 and 4223. Introduction to, and expansion of, decision analysis to binomial models where market information (prices of futures and options) can be used to establish probabilities in the decision models. Price forecasting and forward price curves will be explained and used to evaluate proposed generation assets. (F)

**G5213 Digital Signal Processing (Slashlisted with 4213).** Prerequisite: 3793. Discrete-time linear systems, finite duration impulse response digital filters, infinite impulse response digital filters, finite word length effects, spectral analysis, fast Fourier-transforms, two-dimensional signal processing and applications. No student may earn credit for both 4213 and 5213. (F)

**G5223 Stochastic Signal Processing.** Prerequisite: 4213 or 5213. Stochastic processes, estimation, spectral analysis, optimal filtering and applications. (Sp)

**G5243 Digital Logic and Systems: Design and Applications.**

Prerequisite: Mathematics 3113 or 3333, and graduate standing. Boolean algebra, Boolean differential calculus, fault detection and location in logic circuits, non-binary algebras, ternary logic design, multi-valued logic design, fuzzy logic design. Fundamentals of intelligent digital systems. Methods for creating machine intelligence. Design of an intelligent robot, Industrial applications of intelligent digital systems and robots. (Sp)

**G5253 Digital Systems Interfaces.** Prerequisite: 3223. Provides formal background in asynchronous sequential circuit design (fundamental mode circuits, races, hazards and pulse mode design), followed by a treatment of standard interface conventions for data transmission and reception and a discussion of priority interrupt systems. Finally, the use of A/D and D/A converters is presented. (Sp)

**G5263 Computer Arithmetic.** Prerequisite: 4613 or Computer Science 4613 or permission of instructor. Design of computer arithmetic units including fast adders, fast multipliers, dividers and floating point arithmetic units. (Irreg.)

**G5273 Digital Image Processing.** Prerequisite: 3793 or permission of instructor. This course covers the theory, methods, and applications of image enhancement, image restoration, image compression, image segmentation, image representation and description, and image recognition and interpretation. (Sp)

**G5283 Special Topics in Digital Signal/Image Processing.** Prerequisite: 4213/5213 or 5273 or permission. May be repeated with change of content; maximum credit 12 hours. Selected topics in current research interest not covered by regularly scheduled course work. (Irreg.)

**G5303 Solid State Electronics I.** Prerequisite: 3323. Principles and applications of electronic properties of solids for devices with particular emphasis on semiconductor junction, bulk and field effect devices. (F)

**G5313 Solid State Electronics II.** Prerequisite: 5303. Fundamentals of solid state electronic materials processing and characterization with particular emphasis on the thermodynamic stability of materials. (Sp)

**G5323 Quantum Electronic Devices.** Prerequisite: 3323 or Engineering 2313. Introduction to phenomenological and quantum mechanical theory of solids; introduction to lasers and masers with particular emphasis on the physical mechanisms underlying interactions between electromagnetic radiation and atomic systems. (F, Sp)

**G5343 Opto-Electronics.** Prerequisite: 3323. Theory and application of masers, lasers and other quantum electronic devices; solid state and gaseous simulated emission devices, nonlinear optics, and other selected topics in quantum electronics. (Sp)

**G5353 Fiber Optics.** Prerequisite: 3793 and 3813. Principles of optical fiber wave-guiding and losses; sources and detectors; receivers; transmission system design; fiber-based broadband networks. (Sp)

**G5383 Integrated Circuit Fabrication Technology (Slashlisted with 4383).** Prerequisite: 3323. A treatment of the theory and processes involved in the fabrication of integrated circuits. No student may earn credit for both 4383 and 5383. (F)

**G5413 Control Theory.** Prerequisite: 4413. Stability, controllability and observability; nonlinear and optimal control; process identification and control applications. (Sp)

**G5513 Communication Theory.** Prerequisite: 4523. Probability theory, stochastic processes, detection, extraction and predictions of signals in noise. (F)

**G5523 Random Signals.** Prerequisite: 3793, Engineering 3293. Review of random variables; random vectors. Introduction to random processes; stationarity; ergodicity. Random signals into linear systems. Special processes; ARMA, Markov, Point, Gaussian. Review of parameter estimation. Estimation of random signal parameters. (F, Sp)

**G5623 Computer Hardware Design (Slashlisted with 4623).** Prerequisite: 3223. Design of modern digital computing circuits, computer arithmetic, number systems, state machines, control units, data transfer, bus interfacing, VHDL language elements and usage, circuit simulation. No student may earn credit for both 4623 and 5623. (F)

**G5633 Reconfigurable Computing.** Prerequisite: 4623 or 5623. Study and design of modern configurable hardware devices and systems. Internal operation and application of field programmable gate arrays (FPGAs) for computing hardware using VHDL. Static and dynamic reconfiguration. Spacial vs. temporal computing. (Sp)

**G5683 Weather Radar Applications (Crosslisted with Meteorology 5683).**

Prerequisite: graduate standing and a grade of C or better in 5673 or Meteorology 5673, or permission of instructor. Continuation of concepts presented in 5673. Interpretation of meteorological structures using weather radar. Introduces interactions of electromagnetic waves in geophysical media and scatter from hydrometeors and refractive index variations. Presentation of quantitative precipitation estimation methods based on the radar reflectivity factor, attenuation, and dual-polarization observations. Also includes the fundamental concepts of clear-air echoes and the estimation of winds under non-precipitation conditions. Implements the processing of algorithms using both simulated and actual Doppler radar data. (Sp)

**G5813 Introduction to Biomedical Engineering.** Prerequisite: 3793 or Fourier transforms, Zoology 3103, or permission. Introduction and overview of biomedical engineering. Materials are interdisciplinary and include physiology, bioelectric phenomena, biosensors, bioinstrumentation,

biosignal processing, physiological modeling, biomechanics, biomaterials, tissue engineering, biomedical imaging. (F)

**G5823 Bioinstrumentation.** Prerequisite: 3793 and 4273, or permission. Principles, applications, and design of medical instruments commonly used in hospitals. Emphasis is placed on general design concepts, rather than details of specific models. Materials cover principles of sensors, biopotentials, electrodes, flow measurements, and imaging systems. (F)

**G5833 VLSI Digital System Design.** Prerequisite: upper-division courses in digital logic and digital electronic circuit design, or their equivalents, or permission of instructor; UNIX experience desired. Design of special purpose digital systems using VLSI technology. Inside-chip, rather than between-chip design. CMOS technology emphasized. Project oriented. (Sp)

**G5843 Medical Imaging Systems.** Prerequisite: 3793 or Fourier transforms, or permission. Fundamental principles of medical image formation, image acquisition and image quality evaluation, Major medical imaging modalities, such as radiography, fluoroscopy, computed tomography, ultrasound, MRI, and nuclear medicine will be introduced. Clinical applications and limitations of each modality will also be analyzed. (Sp)

**G5883 Professional Project.** Prerequisite: 12 credit hours in core courses. Technical training in electrical and computer engineering, as part of M.S. non-thesis industrial internship track. A written report submitted to the student's master's committee and a two-hour oral examination are required. Maximum of two internships and examinations allowed; grade equivalent to B or better ("S") required. (F, Sp, Su)

**G5973 Special Topics in Electrical Engineering.** Prerequisite: permission of instructor. May be repeated with change of content; maximum credit 12 hours. Selected topics of current research interest not covered by regularly scheduled coursework. (F, Sp, Su)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; credit required for degree, six hours. (F, Sp, Su)

**G5990 Special Studies.** 1 to 3 hours. Prerequisite: graduate standing or permission. May be repeated with change of subject matter; maximum credit nine hours. Devoted to special topics in electrical engineering not covered in the regular curriculum or to supervised individual study. (F, Sp, Su)

**G6213 Optical Information Processing.** Prerequisite: 5213 and 5353.

Application of Fourier transforms, linear systems, and diffraction theory to the analysis of optical systems. Emphasis is on the use of optical systems for information processing, including image enhancement, pattern recognition, data processing, optical switching, and computing. (F)

**G6283 Advanced Topics in Digital Signal/Image Processing.** Prerequisite: 5223 or permission. May be repeated with change of content; maximum credit 12 hours. Selected topics at the Ph.D. level of current research interest not covered by regularly scheduled course work. (Irreg.)

**G6613 Wave Interactions with Geophysical Media (Crosslisted with Meteorology 6613).** Prerequisite: 5673 or Meteorology 5673 or permission of instructor. Provides fundamentals and principles for radar remote sensing through understanding wave scattering and propagation in geophysical media subjected to turbulent mixing and filled with hydrometers and other objects. The relations between radar observables and physical parameters will be established. (Sp)

**G6813 Advanced Topics in Biomedical Engineering.** Prerequisite: 5813, 5823, or 5843. May be repeated with change of content; maximum credit twelve hours. In-depth studies in biomedical engineering. Focus will be on advanced optoelectronic biomedical technologies, such as bioinstrumentation, biomedical imaging modalities. Students will learn the knowledge behind current technology and also R&D methods of applying future technology to clinical and biomedical applications. (Sp)

**G6973 Advanced Topics in Electrical Engineering.** Prerequisite: permission of instructor. May be repeated with change of content; maximum credit 12 hours. Selected topics of current faculty research interest at the Ph.D. level not covered by regularly scheduled coursework. (Irreg.)

**G6980 Research for Doctoral Dissertation.** (F, Sp, Su)

contemporary issues shaping the industry such as deregulation and emergence of new energy markets. (F, Sp)

**3001 Practical Issues in Energy Management.** Prerequisite: student must be a declared Energy Management major and have been approved for degree candidacy by Price College . Designed to give students interested in the energy industry an understanding of and appreciation for the history and dynamics of the OU Energy Management program and the energy industry. Provides opportunity for developing presentation skills. Includes industry lecturers and on-site operation visits. (Sp)

**+G3413 Petroleum Industry.** Prerequisite: Management 3013 and permission; for other than business students, three hours of economics and senior or graduate standing in geology or engineering, or permission. Major emphasis on the economics of domestic and international oil exploration for both major companies and independents. Management problems in refining, transportation, and marketing of oil and oil products. (Sp)

**3713 Energy Management.** Prerequisite: Accounting 2113, 2123, Management Information Systems 2003, Business Communication 2813, and junior standing, or permission. An examination of the transportation, refining, and marketing of oil and gas. Topics include the history of the petroleum industry, how hydrocarbons exist in underground reservoirs, exploring and drilling for oil and gas, acquiring oil and gas leases and producing properties, and current environmental issues affecting the energy industry. (Sp)

**4800 Current Issues in Energy Management.** 1 to 3 hours. Prerequisite: 3713, junior standing and permission of department. May be repeated with change of content; maximum credit six hours. An advanced seminar dealing with current issues affecting the energy industry. (F)

**4900 Readings in Energy Management.** 1 to 3 hours. Prerequisite: 3713, junior standing, and permission. May be repeated once with change of content. Provides an opportunity for the student to study materials not usually presented in regular courses. (F, Sp, Su)

## Engineering (ENGR)

**1001 Engineering Computing.** Prerequisite: Mathematics 1823 or concurrent enrollment. Introduction to computer programming and University computing facilities; program design and development; computer application exercises in engineering. (F, Sp, Su)

**1112 Introduction to Engineering.** Prerequisite: Mathematics 1523. Engineering fundamentals/problem solving, (principles of mechanics, energy balances, simple circuits), graphics, specifications, ethics, contracts, introduction to the engineering library. (F, Sp, Su)

**1410 Freshman Engineering Orientation I.** Prerequisite: declared major in engineering. All entering freshmen with a declared engineering major are required to enroll. One hour of this seminar a week is in a large group setting where all students meet and cover details on all engineering disciplines. Additional topics would be continuums of majors, success in the College of Engineering, success at the University of Oklahoma, study abroad programs, advising issues, graduate school opportunities, career planning, and information related to technical/honor societies and participation. A second hour a week is a required small group session with an upper-class mentor from the College of Engineering Dean's Leadership Council. This second hour will focus on basic enrollment and retention strategies such as adding and dropping classes and choosing electives in addition to a weekly topic area. (F)

**1420 Freshman Engineering Orientation II.** Prerequisite: declared major in engineering. All entering freshmen with a declared engineering major are required to enroll in this spring continuation course. One hour of this seminar a week is in a large group setting where all students meet and cover details on all engineering disciplines. Additional topics would be continuums of majors, success in the College of Engineering, success at the University of Oklahoma, study abroad programs, advising issues, graduate school opportunities, career planning, and information related to technical/honor societies and participation. A second hour a week is a required small group session with an upper-class mentor from the College of Engineering Dean's Leadership Council. This second hour will focus on basic enrollment and retention strategies such as adding and dropping classes and choosing electives in addition to a weekly topic area. (Sp)

**1510 Selected Topics.** 0 to 3 hours. Selected topics on current or special topics relating to engineering to be structured for students in engineering and other areas. (F, Sp, Su)

## Energy Management (EMGT)

**3113 Energy Production and Markets.** Prerequisite: student must be approved for degree candidacy by Price College . Survey of the energy landscape and introduction to local, regional, national and international energy issues from a management perspective. Provides comprehensive coverage of all facets of energy production and use. Introduces students to

**2003 Engineering Practice I.** Prerequisite: 1410, 1420, and English 1213. Introduction to basic principles of successful engineering enterprise. (F, Sp)

**2113 Rigid Body Mechanics.** Prerequisite: 1112, Physics 2514 and Mathematics 2433 or concurrent enrollment in 2433. Vector representation of forces and moments; general three-dimensional theorems of statics; free bodies; two- and three-dimensional statically determinate frames; centroids and moments of inertia of areas. Absolute motion of a particle; motion of rigid bodies; rotating axes and the Coriolis component of acceleration; Newton's laws applied to translating and rotating rigid bodies; principles of work and energy and impulse and momentum in translation and rotation; moments of inertia of masses. (F, Sp)

**2153 Strength of Materials.** Prerequisite: 2113. Elementary elasticity and Hooke's law; Poisson's ratio; solution of elementary one- and two-dimensional statically indeterminate problems; stresses and strains due to temperature changes; stresses induced by direct loading, bending and shear; deflection of beams; area-moment and moment distribution; combined stresses; structural members of two materials; columns. (F, Sp)

**2213 Thermodynamics.** Prerequisite: 1112, Mathematics 2433 and Physics 2524 or concurrent enrollment. First and second laws of thermodynamics are developed and applied to the solution of problems from a variety of engineering fields. Extensive use is made of partial differential calculus to interrelate the thermodynamic functions. (F, Sp, Su)

**2281 Engineering Co-Op Program (Crosslisted with AME, CH E, C E, C S, ECE, EPHY, E S, G E, I E, P E 2281).** Prerequisite: student participation in the program. The Co-Op program provides student placement in jobs outside the University, but in a position related to the student's major. On completion of a semester work period, the student submits a brief written report. One hour credit (elective) granted for each work period, with a maximum credit of six hours. (F, Sp, Su)

**2313 Structure and Properties of Materials.** Prerequisite: 1112, Chemistry 1315 and concurrent enrollment in Physics 2524. The behavior of materials under various conditions and environments is correlated to atomic and molecular structure and bonding. (F, Sp)

**2411 Statics.** Prerequisite: Physics 2514 and Mathematics 233 or concurrent enrollment in 2433. Introduction to basic principles of engineering computing. Topics include forces, moments and resultants, equilibrium, trusses and frames, friction, properties of plane areas, and properties of masses and volumes. (Sp)

**2421 Dynamics.** Prerequisite: Physics 2514 and Mathematics 2433 or concurrent enrollment in Mathematics 2433. Introduction to basic principles of engineering computing. Topics include kinematics (rectilinear motion, angular motion, curvilinear motion and rigid body motion), kinetics, work and energy, and impulse and momentum. (Sp)

**2431 Electrical Circuits.** Prerequisite: Mathematics 2423 and Physics 2524 or concurrent enrollment. Introduction to basic principles of electrical circuits. Topics include circuits (DC circuits, AC circuits, resonance, AC transients, DC transients) static electrical fields, static magnetic fields, and electronics (diodes, operational amplifiers). (F, Sp)

**2441 Structures.** Prerequisites: Chemistry 1315 and concurrent enrollment in Physics 2524. Introduction to basic principles of engineering structures. Topics include equilibrium phase diagrams, atomic bonding and solid types, electronic structure of atoms, ionic bonding, covalent bonding, metallic bonding, electrical properties (insulators, conductors, energy band, semiconductors), crystalline state and crystallography (unit cell and lattice parameters, seven crystal systems, bravais lattice and atom positions, simple cubic lattice, body centered cubic lattice (BCC), face centered cubic lattice (FCC), hexagonal close packed lattice (HCP), Miller indices of planes and directions, primitive cell, number of atoms per unit cell, interplaner spacing DHKL, close packing of atoms and packing factor, x-ray crystallography), atomic mobility, solid state diffusion and atomic scale defects. (Sp)

**2451 Strengths.** Prerequisite: 2411. Introduction to basic principles of engineering strengths. Topics include mechanical properties of metals and alloys (nature of plastic flow, compressive strength, hardness of materials, fatigue test, toughness and impact testing, creep at high temperature, sound velocity in solids and damping capacity, metallurgical variables in material response to stresses), stress and strain, elastic behavior, torsion, beam theory, combined stress, and composite bars and beams, columns. (Sp)

**2461 Thermodynamics.** Prerequisite: Mathematics 2433 and Physics 2524 or concurrent enrollment. Introduction to basic principles of thermodynamics. Topics include density, pressure, and temperature, the first law of thermodynamics for a system, the first law of thermodynamics for a control volume, the second law of thermodynamics, and psychometrics. (F)

**2471 Engineering Ethics.** Introduction to basic principles of engineering ethics. Topics include the nature of ethics (the subject matter, normative ethics, conflicts in ethics, descriptive ethics), the nature of engineering ethics, and the issues and topics of engineering ethics (the preamble, the engineer's obligation to society, the engineer's obligation to employers and clients, the engineer's obligations to other engineers). (Sp)

**2531 Electrical Circuits II.** Prerequisite: 2431. Introduction to intermediate principles of electrical circuits. Topics include amplifiers, filters, signal conditioning, A/D and D/A conversion, and common digital and analog circuits. (Sp)

**2613 Electrical Science.** Prerequisite: 1112, Mathematics 2423, Physics 2524 or concurrent enrollment. Formulation and solution of circuit equations, network theorems, sinusoidal steady-state analysis, simple transients. (F, Sp, Su)

**3223 Fluid Mechanics.** Prerequisite: 2213, Mathematics 2433; concurrent enrollment in 2113 and Mathematics 3113. Coverage of the fundamentals of fluid statics and dynamics. Formulation of the equation of fluid flow, i.e., Navier-Stokes Equations, Eulers Equations, Bernoulli Equations, etc. and their application. Examples of ideal fluid flow and viscous fluid flow, such as flow in open and closed conduits. (F, Sp, Su)

**+G3293 Applied Engineering Statistics.** Prerequisite: 1112, 1001 or Computer Science 1313 or 1323; Mathematics 2433. Introduction to probability, one and higher dimensional random variates, functions of random variables, expectation, discrete and continuous distributions, sampling and descriptive statistics, parameter estimation, use of statistical packages. Not available for graduate credit for students in engineering disciplines. (F, Sp, Su)

**3401 Engineering Economics.** Prerequisite: Mathematics 1823. Introduction to basic principles of engineering economics. Topics include value and interest, cash flow diagrams, cash flow patterns, equivalence of cash flow patterns, unusual cash flows and interest periods, evaluating alternatives (annual equivalent cost comparisons, present equivalent cost comparisons, incremental approach, rate of return comparisons, benefit/cost comparisons, MARR, replacement problems, always ignore the past, break-even analysis), income tax and depreciation, and inflation. (F)

**3410 Engineering Orientation for Transfer Students.** Prerequisite: junior standing or higher. Required for all new transfer students in the College of Engineering. Two-hour seminar meets weekly as orientation to the College and University. One hour focuses on specific disciplines, career planning, advising, academic planning, and other topics. One hour students meet with mentors to promote college involvement and assist in retention and success strategies. Should be taken in the first semester of College of Engineering enrollment. Open to students with interest or declared major in engineering. (F, Sp)

**3411 Numerical Methods.** Prerequisite: approved Computer Science course (CS, 1313, 1323) and Mathematics 3113. Introduction to basic principles of engineering economics. Topics include roots of non-linear equations, simultaneous linear equations, least squares curve fits, numerical integration, numerical solution to ordinary differential equations. Methods covered: bisection and Newton's method; Gauss-Jordan elimination; polynomial least squares fits; trapezoid rule and Simpson's rule; Euler's method and 4th order Runge Kutta method. (Sp)

**3421 Engineering Statistics.** Prerequisite: Mathematics 2433. Introduction to basic principles of engineering statistics. Topics include combinations and permutations, sample statistics, population models — probability distributions, estimation and hypothesis testing. (F)

**3431 Electromechanical Systems.** Prerequisite: 2431 and 2531. Introduction to basic principles of electromechanical systems. Topics include physical principles of sensing and actuation, types of sensors and actuators, and interfacing and communication protocols. (Sp)

**3441 Fluid Mechanics.** Prerequisite: Mathematics 2433. Introduction to basic principles of fluid mechanics. Topics include fluid properties, fluid statics, dimensionless parameters and similitude, control volume equations, open channel flow, and external flow. (F)

**3510 Selected Topics.** 0 to 3 hours. Prerequisite: upper-division standing. Selected topics on current or special topics relating to the field of engineering. (F, Sp, Su)

**+G3723 Numerical Methods for Engineering Computation.** Prerequisite: 1112, 1001 or Computer Science 1313 or 1323, and Mathematics 3113. Basic methods for obtaining numerical solutions with a digital computer. Included are methods for the solution of algebraic and transcendental equations, simultaneous linear equations, ordinary and partial differential

equations, and curve fitting techniques. The methods are compared with respect to computational efficiency and accuracy. (F, Sp, Su)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. Cover materials not usually presented in the regular courses. (Sp)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Projects covered will vary. Deal with concepts not usually presented in regular coursework.

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work on a special project in the student's field.

**G4223 Fundamentals of Engineering Economy.** Prerequisite: permission. Introduction to concepts of economic analysis to optimize benefits utilizing multivariate, multistaged mathematical models. Topics include cost and worth comparison, capital costs and sources, time value of money, replacement economics, taxes, economic efficiency of alternate designs, minimum costs and maximum benefits, risk and uncertainty, and economics of work schedules. (Sp, Su)

**G4510 Selected Topics.** 1 to 6 hours. Prerequisite: upper-division or graduate standing. Selected topics on current or special topics relating to engineering. May be structured for students in other areas. (Sp)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp, Su)

**G6980 Research for Doctoral Dissertation.** (F, Sp, Su)

## Engineering Physics (EPHY)

**2281 Engineering Co-Op Program (Crosslisted with AME, CH E, C E, C S, ECE, ENGR, E S, G E, I E, P E 2281).** Prerequisite: student participation in the program. The Co-Op program provides student placement in jobs outside the University, but in a position related to the student's major. On completion of a semester work period, the student submits a brief written report. One hour of credit (elective) granted for each work period, with a maximum credit of six hours. (F, Sp, Su)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. Cover materials not usually presented in the regular courses. (F, Sp, Su)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Projects covered will vary. Deal with concepts not usually presented in regular coursework.

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work on a special project in the student's field. (F, Sp, Su)

**G4232 Laboratory Glassblowing (Crosslisted with Chemistry 4232).** Prerequisite: permission. Discussion of materials and techniques with demonstrations of procedures. Exercises will be performed in the laboratory with special emphasis upon the different types of seals required in the construction of glass apparatus. One hour of lecture and three hours of laboratory will be scheduled each week. **Laboratory** (F, Sp)

**tG4990 Special Studies.** 1 to 3 hours. Prerequisite: Physics 2424 or 2524, integral calculus, permission. May be repeated with change of subject matter; maximum credit six hours. (F, Sp, Su)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp, Su)

**G5990 Special Problems.** Prerequisite: permission. May be repeated with change of subject matter; maximum credit four hours for the master's degree, or 10 hours for the doctoral degree. (F, Sp, Su)

**G6970 Seminar.** 1 to 3 hours. Prerequisite: permission. May be repeated with change of subject matter; maximum credit four hours for the master's degree, or 10 hours for the doctoral degree. (F, Sp)

**G6980 Research for Doctoral Dissertation.** (F, Sp, Su)

## English (ENGL)

**0113 Introduction to College Writing.** Course prepares students, who are judged at risk by secondary assessment, for "Principles of English Composition" (ENGL 1113). Course addresses issues of focus, development, expression, sentence structure, and editing skills. This course does not count for college credit at the University of Oklahoma. (F, Sp)

**1013 English for Exchange Students.** Designed to meet the needs of international students who are studying at OU for a semester or a year. Review all English skills including pronunciation, vocabulary, listening, writing, and grammar as well as expand students' knowledge of American cultures. (F, Sp)

**1113 Principles of English Composition.** Systematic analysis of the components of effective writing, with regular practice and close individual assistance. Study of expository prose models. (F, Sp, Su) [I-ENGL]

**1213 Principles of English Composition.** Prerequisite: 1113. Systematic analysis of effective argumentative discourse with regular practice and close individual assistance. Study of argumentative prose models. Library research paper required. (F, Sp, Su) [I-ENGL]

**1913 Writing for the Health Professions.** Prerequisite: 1213. Prepares pre-professionals in the health professions for writing they will do in later coursework and in practice. (F, Sp)

**2003 Introduction to World Literature.** Prerequisite: 1113. Introduction to idea and practice of comparative literature study. Focus will be on a particular body of literature (e.g., Italian post-WWII fiction, French-Canadian poetry of the nineteenth century, etc.) as shaped by other cultures and literature. Texts will be in original language and translation. (Irreg.) [IV-WC]

**2023 Thematic Approaches to Literature I.** May be repeated with change of subject matter; maximum credit six hours. Examination of a selected theme in important literary works from classical times to our own. Close attention to the cultural context of each work and to the degree of constancy and change in the treatment of the theme from age to age. (Irreg.)

**2033 Special Topics in Women in Literature.** Prerequisite: 1113, 1213. May be repeated with change of topic; maximum credit six hours. The study of a particular aspect of women in literature; topics to be examined include: women writing on women's condition; portraits of women artists; women's private experience and public statements in literature; social, intellectual and sexual restrictions experienced by women. (Irreg.)

**2113 Intermediate Writing.** Prerequisite: 1213, application and departmental permission. Writing of non-fiction prose in a workshop setting. Reading and analysis of prose models for analysis. (Irreg.)

**2123 Creative Writing.** Prerequisite: 1213, application and departmental permission. Introduction to imaginative writing, especially short stories and poems; some analysis of literary models, but major emphasis on student writing. (F, Sp)

**2133 Autobiographical Writing.** Prerequisite: 1213, application and departmental permission. Writing essays from personal experience. Reading and analysis of journals, diaries, letters and autobiographies as models for writing. (Irreg.)

**2213 Fiction.** Introduces fiction as a historical genre in literature. Covered will be sub-genres such as the novel, short story, memoir, travel sketch, etc. Discussion will cover such topics as character, plot and myth in narrative. The emphasis will be on close reading in light of the possibilities of fiction as a genre. (Irreg.) [IV-AF]

**2223 Poetry.** Gives an introduction to the elements and rhetoric of verse. The focus will be on the canon of American and British verse. (Irreg.) [IV-AF]

**2233 Drama.** A study of major Western plays (from Aeschylus to contemporary playwrights) with emphasis on literary dimensions: design, language, characterization, individual forms (such as tragedy, comedy and pastoral). May include consideration of social and literary contexts as well as acting and theatrical conventions. (Irreg.) [IV-AF]

**2243 Film Narrative.** Introduction to basic visual terminology, filmmaking concerns, film theory and aesthetics. Survey of different approaches to narrative filmmaking (for example, genre or auteur). Also discussion of film and society in regards to how one influences the other. (Irreg.) [IV-AF]

**2313 Introduction to Critical Reading and Writing.** Prerequisite: 1213. Focuses on close reading of literary texts using key literary terms and involving some introduction to larger issues such as authorship, textuality, and reception. (F, Sp)

**2413 Introduction to Literature.** Concentrates on close readings of masterpieces in fiction, drama and poetry. The readings are drawn from

periods ancient to modern and may be American, British or Continental. (Irreg.) [IV-AF]

**2433 World Literature to 1700.** A reading of literary works, by types, from classical antiquity to 1700. (F) [IV-WC]

**2443 World Literature, 1700 to Present.** Masterpieces of world literature from 1700 to the modern period. (Sp) [IV-WC]

**2513 Introduction to Shakespeare.** Study of the best-known plays, with emphasis upon the sources of their modern appeal. (Irreg.)

**2543 English Literature from 1375 to 1700.** A survey of major writers and literary movements from Chaucer through Dryden. (F) [IV-WC]

**2653 English Literature from 1700 to the Present.** A survey of major writers and literary movements from Pope to the present. (Sp) [IV-WC]

**2713 Introduction to Black Literature in the United States.** Prerequisite: 1213 or equivalent. An introduction to Black writing produced in the United States. Introduces students to important texts and their major concerns. Attention is given to the struggle between literature that criticizes racial injustice and literature that celebrates Black cultural identity. (Irreg.)

**2733 American Indian Literature: Early and Traditional.** Prerequisite: 1113, 1213 and one course in American literature, history or anthropology. A study of earliest forms of American Indian expression in the oral tradition and beginnings of its literature as written in English up to 1945. Special emphasis on understanding particular tribal world-views in order to appreciate the literature and problems inherent in translating from native languages. (Irreg.)

**2743 American Indian Literature: Modern and Contemporary.**

Prerequisite: 1113, 1213 and one course in American literature or history. Features the literature of American Indians written since 1945. Attention is directed to early writers such as Will Rogers and D'Arcy McNickle and to the recent renaissance of contemporary Indian writings by N. Scott Momaday, Leslie Marmon Silko, James Welch and others. (Irreg.)

**2773 American Literature.** A survey of major American writers and literary movements from the colonial period to the Civil War. (F) [IV-WC]

**2883 American Literature.** A survey of major American writers and literary movements from the Civil War to present. (Sp) [IV-WC]

**Unless otherwise noted, the prerequisite for courses in English numbered 3000-4999 is 1213 or the equivalent.**

**3013 Interdisciplinary Approaches to Literature.** May be repeated with change of subject matter; maximum credit six hours. The study of two or more disciplines, focusing on a narrow historical period, a single major author and other discipline, or a circumscribed topic. (Irreg.)

**3023 Thematic Approaches to Literature II.** May be repeated with change of subject matter; maximum credit six hours. Close study of a major theme or preoccupation of a literary period in important works of the period. Attention to the relationship of the theme to relevant philosophical, sociological, political, religious and/or scientific thought. (Irreg.)

**3033 British Women Writers.** A study of themes, literary traditions, and reception of works by British women writers from one or several periods. Considers relevant issues of female authorship, socio-historical contexts, generic conventions and feminist theory. (Irreg.)

**3043 Twentieth Century British Women Novelists.** Prerequisite: 1213. Introduces students to some of the major Twentieth century English and Scottish women novelists, and to the regional, social and cultural contexts of their work. (Irreg.)

**3103 Topics in Advanced Composition.** Prerequisite: twelve hours of English, application and departmental permission. May be repeated with change of subject matter; maximum credit six hours. Practice in writing with emphasis on style and strategies of composition. Focus varies: practice in various literary genres; study of rhetoric, practice in various modes; argumentative writing; advanced expository writing. (Irreg.) [II-ENGL]

**3113 Theory of English Grammar (Crosslisted with EDEN 3113).**

Reviews traditional English grammar briefly and then introduces theoretical models for studying language, especially transformational grammar. (F)

**3123 Fiction Writing.** Prerequisite: 2123, application and departmental permission. Intensive writing of short stories, with class attention to writing process, style, technique, revision and contemporary developments in the genre. (Irreg.)

**3133 Poetry Writing.** Prerequisite: 2123, application and departmental permission. Conducted in workshop format; emphasizes the preparation of a coherent, chapbook-length manuscript of poems. Students are also

required to formulate a personal poetics and to complete selected exercises in translation or adaptation. (Irreg.)

**3143 Studies in Literacy and Rhetoric.** Prerequisite: 1213. Introduces students to current and historical knowledge about literacy and rhetoric and their places in modern society. Students also explore the forces (political, economic, racial, cultural) that shape the way literacy and rhetoric function in society. (Irreg.) [IV-WC]

**3153 Technical Writing.** Prerequisite: 1213 and Engineering or hard science majors only. For students of the pure and applied sciences. Focuses on the forms of report writing most frequently encountered in research and industry. (F, Sp, Su)

**3163 Writing, Rhetoric and Histories of Technology.** Prerequisite: twelve hours of English, application and departmental permission. An advanced writing course for any major that focuses on the relationship between current and historical technological change and students' writing practices. Workshop format privileges student writing and redrafting while concurrently studying selected histories of Western rhetoric. (Irreg.)

**3173 Histories of Writing, Rhetoric and Technology.** Prerequisite: twelve hours of English, application and departmental permission. Investigates how computers and other digital technologies have changed the ways we write and think. How video and television have changes the ways we write and think; and how aspects of the history of written communication, visual rhetoric, and other forces change the ways we write and think. (Irreg.)

**3183 Authoring in the Information Age.** Prerequisite: 1213, application and departmental permission. Covers authoring information in traditional paper documents, Power Point presentations, and web sites with emphasis on delivery, arrangement/architecture, and design for communicating through language and graphics. Topics include the impact of rhetoric contexts, accessibility and retrieval of information, and usability testing. (Irreg.)

**3213 Special Topics in Fiction.** May be repeated with change of subject matter; maximum credit six hours. Presents a fictional type or problem in fiction for extensive study within a specified historical period: works by a single author in a special genre (e.g., Henry James' fantastic stories), works by several authors in a genre (e.g., violence in post-World War II novels), topics such as myth in a period of fiction and the consideration of recent developments in novel writing. (Irreg.)

**3223 Oklahoma Writers/Writing Oklahoma.** Prerequisite: 1213. An introduction to regional writing about Oklahoma. Focus on Oklahoma culture as a source of literature, and the creative work of course participants. (Irreg.) [IV-WC]

**3233 Special Topics in Drama.** May be repeated with change of subject matter; maximum credit six hours. A study of a particular literary aspect of drama. This may include the pursuit of a particular theme through several periods, or concentrate on a particular age or focus on the dramatic works of single or related playwrights. (Irreg.)

**3243 Special Topics in Film.** May be repeated with change of subject matter; maximum credit six hours. Sophisticated concerns involving film: the works of specific directors (Bergmann, Fellini, Kubrick, etc.); the relationship of film to literature; the writings of notable film theorists (Bazin, Eisenstein, etc.) or critics (Mast, Kael, Sarris). (Irreg.)

**3253 Special Topics in American Indian Literature.** May be repeated twice with change in subject matter. Explores a major literary or cultural aspect of American Indian literature such as the Five Civilized Tribes, Eastern Tribes, the Literature of Massacre, autobiographical writing, fiction and poetry. (Irreg.)

**3263 Women and Film.** Prerequisite: 1213. Focus on the representation of women on screen and the role of women behind the camera from the late 19<sup>th</sup> century through the present day. Readings will include major essays in feminist theory including sociological, psychoanalytic, semiological, and cultural approaches. (Irreg.)

**3273 Comic Theory and Practice Through Film.** Prerequisite: 1213. Through readings in comic theory and film, an examination of the comic response to life, celebrating our capacity to endure rather than to aspire and suffer. Forms of comedy to be examined include satire, black humor, farce, romantic comedy, festive comedy, comedy of manners, burlesque, the carnivalesque, and women's laughter. (Irreg.)

**3283 Tribally Specific Approaches to Native American Literatures.**

Prerequisite: 1213. May be repeated once with change of content; maximum credit six hours. Literary oeuvre of a single American Indian tribe or examines the aesthetics of tribal nationalism as they apply to native-authored literary works. (Irreg.)

**3313 Introduction to Literary and Cultural Studies.** Prerequisite: 2313. Focuses on relationships among different genres and media and between different forms and "levels" of culture, and on issues of cultural and multicultural interpretation. (F, Sp)

**3323 Gender and Culture Texts.** Considers gender to be a critical term in the study of culture. Readings consists of two groups of texts: theoretical and critical writings about gender and other texts (literary, cinematic, popular/mass cultural) in which, or by means of which, gender plays a role. (Irreg.) [IV-WC]

**3333 Literature and Psychological Criticism.** Using the methods of discursive analysis, examines the cultural situation in which particular psychological perspectives emerge in relation to experience and understanding, with an emphasis on the psychological schools appearing in the late nineteenth and early twentieth centuries. Explore the assumptions central to a psychological theory and the characteristic language in which it is set forth. Content may include the application of one or more psychological perspectives (theories) to the understanding of both literary works and or cultural phenomena in general. (Irreg.)

**3343 Literature of Empire.** Survey of literary and nonliterary discourse about and relating to European colonies since the Renaissance. Study of colonial and postcolonial fiction, poetry, drama and criticism from Asia, Africa, the Americas, Australasia and Europe, concentrating on English-language sources. (Irreg.)

**3353 American Indian Nonfiction Writing.** Examines the various forms of recorded oratory, nonfiction writing by American Indians. Includes autobiography, political and social writing, newspaper reportage, philosophy, anthropological and historical writings, humor and other kinds of writings by early and present-day American Indians. (Irreg.)

**3363 Films and Context.** Explores film within a particular period or milieu. Attention is given to production styles, prominent actors and studio influence within a definable setting such as American films in the 1930s. (Irreg.)

**3373 Television: A Critical Approach.** A critical investigation of commercial television as a medium of popular culture. Explores various genres of TV, the history of the medium and the forces that shape its techniques and direction. (Irreg.)

**3383 Politics and Literature.** Explore political theories of literature as well as political contexts and functions of literary works. May focus on a politically well-defined period, one or more specifically political genres, politics of particular literary movements, or on individual authors. (Irreg.)

**3403 The Graphic Novel.** Study of the works of Spiegelman, Pekar, Moore/Gibbons, Gaiman/McKean, Crumb and other graphic novel authors. Comparison with prose fictions having a strong visual element and possibly with films. (Irreg.) [IV-AF]

**3413 Science and Culture Texts.** Using the methods of discursive analysis, examine the interrelationship between scientific disciplines and cultural texts and contexts with emphasis on the dynamic interplay between literary and scientific texts. (Irreg.)

**3423 Film and Other Expressive Forms.** Examines from practical and theoretical perspectives the relationship between film and another area of creative expression such as the novel, theatre, painting and photography. (Irreg.)

**3433 Foundations of Indic Culture and Civilization.** Introduction to central religious, philosophical and literary writings of India from the Rg Veda through Bhagavad Gita. (Irreg.) [IV-NW]

**3453 Afro-Caribbean Literature and Cultural Consciousness: From Alienation to Voice.** Prerequisite: 1213. Explores select Afro-Caribbean writings by male and female writers through the historical and cultural influences that have shaped the production of this literature. Attention will be given to the literary style of the writers who represent various aspects of Caribbean experience. (Irreg.)

**3463 American Fiction.** Prerequisite: 1213. Historical survey of major American fiction, both novels and shorter fictional forms, from the Federal period to the present. Special attention is given to the uniqueness and diversity of themes and forms during the nineteenth and twentieth centuries when fiction came to dominate American literary production and consumption. (Irreg.) [IV-WC]

**3473 American Nonfiction.** Prerequisite: 1213. Historical survey of many modes of literary nonfiction writing in the U.S., including autobiography, letters, journalism, political essays, speeches, and other forms, from the Colonial period to the present. Questions in rhetoric, form and audience in nonfiction writing will be addressed. (Irreg.) [IV-WC]

**3483 Native American Writers.** Prerequisite: 1213. May be repeated once with change of content; maximum credit six hours. Investigates the ways native American writers reflect their cultural histories and thought systems through their writing. By focusing on the emergence of native literature over the past three decades or on native writers of Oklahoma, students will learn how native traditions have been translated into literature. (Irreg.) [IV-NW]

**3513 Medieval English Literature.** Intensive study of some of the major literary works of medieval England with attention to the relation between the literature and its social, intellectual and cultural contexts. Readings in various genres will include such works as *Gawain and the Green Knight*, *Everyman*, *Piers Plowman*, *Morte d'Arthur*, and *The Canterbury Tales*. (Irreg.) [IV-WC]

**3523 Sixteenth-Century English Literature.** Intensive study of some of the major literary works of sixteenth-century England with attention to the relation between the literature and its social, intellectual and cultural contexts. Readings will include works in various genres by such writers as Spenser, Sidney, Shakespeare, Marlowe, More. (Irreg.)

**3533 Seventeenth-Century English Literature.** Intensive study of some of the major literary works of seventeenth-century England with attention to the relation between the literature and its social, intellectual and cultural contexts. Readings will include works in various genres by such writers as Donne, Herbert, Milton, Marvell, Bacon, Jonson and Webster. (Irreg.) [IV-WC]

**3543 Eighteenth-Century English Literature.** Traces the literary history of English literature from the end of the Renaissance to the rise of romanticism, showing in diverse genres the appeal of a return to classical standards at the start of the period and a disintegration of this impulse at its end. Through major selected texts, it will investigate the problems and processes of literary change. (Irreg.) [IV-WC]

**3553 Transatlantic Literature.** Prerequisite: 1213 and 2313. Explores links between British and American Literature and culture from the seventeenth to the nineteenth centuries. Themes include migration and the sea, issues of servitude, letter writing, interlocking uses of print, pen and voice to fashion local and transatlantic family, social, economics and political identities. (Irreg.)

**3573 Arthurian Legend and Literature (Crosslisted with Modern Languages and Literatures 3573).** Examination of the legend of King Arthur in European literature. Concentrate on the historical Arthur, followed by major portion of semester on medieval and modern literary texts concerning Arthur and the Round Table. All texts read in English. (Irreg.) [IV-WC]

**3613 Nineteenth-Century English Literature.** Intensive study of the major literary works of nineteenth-century English-the Romantic and Victorian periods-with attention to the relation between literature and its social, intellectual and cultural contexts. Readings will include work in various genres by such writers as Wordsworth, Austen, Dickens, Browning, Eliot, Carlyle and others. (Irreg.) [IV-WC]

**3623 Twentieth-Century English Literature.** Intensive study of some of the major literary works of twentieth-century England with attention to the relation between the literature and its social, intellectual and cultural contexts. Readings will include works in various genres by such writers as Conrad, Yeats, Eliot, Joyce, Woolf, Synge, Shaw, Auden, Waugh, Ford, etc. (Irreg.) [IV-WC]

**3643 Special Topics in Non-Western Literature and Culture.** Prerequisite: 1213. Examines a broad range of potential topics, including particular practices in the context of global cultures and/or minority groups in the West. Course readings draw on a variety of critical or theoretical work regarding culture, discourse, history, or institutions. (Irreg.)

**3653 The Bible as Literature.** Interpreting the Bible as literature. Although much class time will be spent developing readings of individual books, a number of critical issues that affect the ways to approach the project of understanding the Bible will also be considered. (Irreg.)

**3713 Introduction to American Studies.** An introduction to the main currents in American thought as exemplified by literary and nonliterary works (emphasis on the latter). Readings may include works from history, philosophy, art, science and other areas. (Irreg.) [IV-WC]

**3723 Mysteries and Case Histories.** Through a discussion of detective fiction and Freudian case histories, the rise of secular interpretations of the universe and human nature in the 19th century will be investigated. How detective fiction teaches us to read the universe in an age after Darwin will be explored. (Irreg.) [IV-WC]

**3813 Science Fiction.** Prerequisite: 1213. An introduction to a major genre of popular culture. Focuses on the philosophical, social, and creative values of science as a central constituent of modern life. Students explore

the social, moral, and political issues at stake in science fiction's critique and occasional celebration of scientific culture. (Irreg.) [IV-WC]

**3833 Introduction to American Drama.** Prerequisite: 1213. A survey of major American plays and playwrights, dramatic theory and the theatrical institutions that supported and disseminated them from the Federal period to the present. Special emphasis on the changing social context of the theater. (Irreg.) [IV-WC]

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Will consist of topics designated by the instructor in keeping with the student's major program. The topics will cover materials not usually presented in the regular classes. (Irreg.)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. The projects covered will vary. The content will deal with concepts not usually presented in regular coursework. (Irreg.)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Will provide an opportunity for the gifted honors candidate to work at a special project in the student's field. (Irreg.)

**4003 Movements in World Literature (Crosslisted with Modern Languages, Literatures, and Linguistics 4003).** Prerequisite: junior standing. May be repeated with change of subject matter; maximum credit nine hours. Focuses on texts within a literary movement (literature other than canonical American or British). Also attention to critical and theoretical questions about concepts such as genre, nation, national building, national identity, etc. (Irreg.) [IV-WC]

**G4013 Major Figure (with subtitle).** May be repeated with change of subject matter; maximum credit six hours. The major figure designated in the subtitle is studied in depth: a major portion of his/her works are covered; significant critical approaches will be presented. (Irreg.)

**G4023 Literary Movements.** May be repeated with change of subject matter; maximum credit six hours. A course on literary movements or groups of authors who are related through their particular interests in certain distinct or philosophical ideas: the Metaphysical Poets, the Fugitive Writers, etc. (Irreg.)

**4033 Indigenous Political Writing.** Prerequisite: 2733 or 2743 or permission of the instructor. Examines key issues of American Indian politics and literature, exploring how they continue to shape the American Indian world in the present. Also considers how North American Indian politics relate to broader discussions of indigenous peoples and literatures around the world. (Irreg.)

**G4133 History of the English Language.** Traces the development of the English language from its Indo-European origins through its present state. Special attention will be paid to changes in grammar and vocabulary. (Irreg.)

**G4203 Special Topics in Literary Forms.** May be repeated with change of subject matter; maximum credit six hours. Generic approach to literary forms; exact subject material (eighteenth-century satire, Western novel, gothic fiction) will vary from course to course. (Irreg.)

**G4233 Major Figures in Theory.** Intensive exploration of the work and influence of one or a small number of literary or cultural theorists. Texts typically will encompass primary reading in a theorist or group of theorists and ancillary readings in the work of writers or other theorists who show the theorist(s). (Irreg.)

**G4243 Issues in Cultural Studies.** Isolate significant issues in the theoretical working out and practice of cultural studies, using the methods of discursive analysis. focus on recent attempts in the humanities to define culture, formulate post-colonial critiques of culture, and other such issues in feminism and cultural theory that are part of the working out of discourses about culture and society. (Irreg.)

**G4253 Introduction to Film Theory.** Introduction to basic issues of film theory as seen by classical and contemporary film theorists. (Irreg.)

**G4273 Women Writers.** Prerequisite: 1213. May be repeated twice with change of content; maximum credit nine hours. A study of women's writings from one or several periods. Approach may be thematic, generic, regional, historical, etc., and will incorporate critical approaches including feminist theory and criticism. (Irreg.)

**G4303 Special Topics in Criticism.** May be repeated with change of subject matter; maximum credit six hours. Selected studies in literary criticism, including the criticism of film. The exact subject matter will vary from instructor to instructor. (Irreg.)

**4323 The Harlem Renaissance.** Prerequisite: 1213. Examines the literature, culture, and politics of the Harlem renaissance. In addition to texts of the 1920s, the course considers the contexts out of which the movement emerged, as well as its effects in the U.S. and abroad. (Irreg.)

**G4343 The Indian in American Popular Culture.** Prerequisite: 1213 or equivalent. Explores the various appearances and roles, stereotyped or otherwise, American Indians have traditionally been pigeon-holed into throughout America's five centuries of recorded history. Covers Captain John Smith, Colonial era, Romantic period of Cooper and Longfellow, and modern writers Waters and Berger. (Irreg.) [IV-NW]

**4373 Black Literary Form and Cultural Expression.** Prerequisite: 1213. Compare and contrast the relationship between literary form and cultural expression by analyzing Black literature produced in two different contexts: the United States and the Caribbean. Examine writing from the literary movements known as the "Harlem Renaissance," "Negritude," and the "Black Arts." (Irreg.)

**4383 Civilization and Diaspora.** Prerequisite: 1213. Examines literary and cultural forms from the African Diaspora (the Black population outside of continental Africa) offering alternative definitions of civilization, literary and progress. Define and explore what is called Diaspora literacy: linguistic, philosophical and cultural ways of knowing that come out of African Diaspora experience. (Irreg.) [IV-NW]

**G4403 Special Topics in Comparative Literature.** May be repeated with change of subject matter; maximum credit six hours. Topics will vary. Literature studied may include combinations of foreign (in translation) and English and/or American literature. Instructor's approach may be thematic, regional, historical, generic, etc., but the course will include intensive cross-cultural explorations of literature. (Irreg.)

**G4423 Modern European Novel.** Consideration of the works of five major European novelists of the last one hundred years. Course will be comparative and founded upon such themes as loss of self, alienation and the artist's search for new techniques and structure. (Irreg.) [IV-WC]

**G4433 Modern British and European Drama.** A survey of British and European drama from Ibsen and Shaw to the present day. (Irreg.)

**G4443 Contemporary Literature.** Intensive study of major literary works since World War II in English, American and outside the Anglo-American tradition. Readings will include works in various genres by such writers as Barthelme, Fowles, Marquez, Larkin, Merrill, Solzhenitsyn, Grass, Sartre, etc. (Irreg.)

**G4453 Literature and Landscape.** Exploration of writers, gardeners, farmers and painters who translated nature into art. Texts range from ancient to modern world and may include classical, Renaissance, Romantic, and American works in which engagement in landscape is an important topic. (Irreg.)

**G4463 Linguistics and Semiotics.** Trace the study of synchronic linguistics in phonology, syntactics and semiotics in the twentieth century and examine the field of semiotics based on this development. (Irreg.)

**G4503 Backgrounds of the Renaissance.** Prerequisite: 1213. A study of classical and continental authors esteemed in the English Renaissance. Focus on Homer, Virgil, Ovid, Petrarch, Erasmus, and Machiavelli in the contexts of their cultures as well as their contributions to culture. (Irreg.) [IV-WC]

**G4513 Chaucer.** Examines the poetry of The Canterbury Tales and one or two of Chaucer's earlier narrative poems. Special emphasis will be given to the social, literary and cultural backgrounds to Chaucer's work. (Irreg.)

**G4523 Shakespeare Comedies.** Prerequisite: junior or senior standing. Close reading and analysis of Shakespeare's comedies and histories. Selected criticism, 1600 to the present. Historical background and Shakespeare's theatre. Dramatic traditions, movie interpretations, performance theory and acting. Emphases and reading lists vary from year to year. (Irreg.) [IV-WC]

**G4533 Shakespeare Tragedies.** Prerequisite: junior or senior standing. Close reading and analysis of Shakespeare's tragedies and lyric poetry. Selected criticism, 1600 to the present. Historical background and Shakespeare's theatre. Dramatic traditions, movie interpretations, performance theory and acting. Emphases and reading lists vary from year to year. (Irreg.) [IV-WC]

**G4543 Tudor and Stuart Drama.** Intensive study of the drama of Shakespeare's contemporaries, with emphasis on the plays of Christopher Marlowe and Ben Jonson. Attention to dramatic forms, social issues, cultural context, language and performance. Readings will include plays by Marlowe, Jonson, Webster, Heywood, Fletcher, Ford. (Irreg.)

**G4553 Milton.** Close reading and analysis of selected poetry and prose, with emphasis on Paradise Lost. Study of literary forms, cultural myths,

theology, ethics. Themes of loss, guilt, free will, male-female relationships. (Irreg.)

**G4563 Drama of the Restoration and Eighteenth Century.** Changes in the theatre, the audience and critical theory; foreign and native models; moral reform and political censorship; such genres as heroic, tragedy, wit, comedy and sentimental drama; such playwrights as Dryden, Otway, Congreve, Farquhar, Rowe, Steele and Sheridan. (Irreg.)

**G4573 Eighteenth-Century English Novel.** Sources, early reputation and emerging critical theories; economic, moral, feminine influences; realistic, psychological, sentimental, gothic and satiric directions; technical developments in structure and point of view; works by such novelists as Richardson, Fielding, Smollett, Sterne and Jane Austen. (Irreg.)

**G4583 Major Authors in Eighteenth-Century British Literature.** Prerequisite: 1213. May be repeated with change of subject; maximum credit six hours. Examines the works of major writers from the long 18<sup>th</sup> century (ca.

1660-1832), including poets, dramatists, novelists, or essayists such as Aphra Behn, John Dryden, Eliza Haywood, Jonathan Swift, Alexander Pope, Henry Fielding, Samuel Johnson, Jane Austen, or Mary Wollstonecraft. (Irreg.)

**G4613 Nineteenth-Century English Novel.** Historical and aesthetic study of the novel in relation to main developments in English literary history during the period. Emphasis, however, is on the intrinsic literary values in the novels read. (Irreg.) [IV-WC]

**G4623 English Romantic Poetry.** Prerequisite: 1213 or equivalent. May be repeated once with change of content; maximum credit six hours. Intensive study of the most important poems and criticism of early Romantic poets and later Romantic poets. (Irreg.)

**G4643 Twentieth-Century English Novel.** Intensive study of the major British novels of the twentieth century with attention to the relation between the novel and its social, intellectual and cultural contexts. Readings will include the work of Conrad, Joyce, Lawrence, Woolf, Waugh, Huxley, etc. (Irreg.) [IV-WC]

**G4653 Twentieth-Century English Poetry.** A survey with emphasis on Yeats, Pound, Eliot, Lawrence, Graves, Auden, and Dylan Thomas. (Irreg.)

**G4713 Major Authors in Nineteenth-Century American Literature.**

Prerequisite: 1213. May be repeated with change of subject; maximum credit six hours. Intensive study of one or more major 19<sup>th</sup> century American authors such as James Fenimore Cooper, Catharine Maria Sedgwick, Frederick Douglass, Walt Whitman, Nathaniel Hawthorne, Ralph Waldo Emerson, Harriet Beecher Stowe, Emily Dickinson, or Mark Twain. (Irreg.)

**G4723 Issues in Nineteenth-Century American Literature.** Prerequisites: 1213. May be repeated with a change of subject; maximum credit six hours. Intensive study of 19th century American texts in a specific literary or historical context, such as the Civil War and Reconstruction, the women's rights movement, transcendentalism, regionalism or sentimentalism. (Irreg.)

**G4733 American Naturalism and Realism.** Major American novelists from the Civil War to the end of World War I, including Howells, James, Twain, Crane, Dreiser, Norris and Wharton. (Irreg.)

**G4813 American Drama.** An examination of representative American plays ranging from naturalistic tragedy to farce. Emphasis is on the period since 1918. (Irreg.)

**G4823 American Novel Since 1920.** Major authors and schools in American fiction including Fitzgerald, Hemingway, Faulkner, Steinbeck and others selected by the instructor. (Irreg.)

**G4833 Twentieth-Century American Poetry.** A survey from Frost to the present with emphasis on major figures in each of three generations. (Irreg.)

**4853 The English Capstone Course.** Prerequisite: 1113, 1213, and 2433 and 2443 or 2543 and 2653 or 2773 and 2883, plus twelve hours. Combine English majors from diverse tracks to work on a topic involving major cultural issues, artifacts and texts. Projects include a significant amount of writing demonstrating the students' accomplishments in analyzing literature. (F, Sp) [V]

**G4913 The Teaching of English (Crosslisted with EDEN 4913).**

Prerequisite: 3222, nine hours of education, and senior standing. To be taken preferably the semester immediately preceding student teaching. Development of skills in teaching the language arts at the secondary level. Introduction to current trends, professional literature and resource materials. Practice in presenting model lessons. Written reports. (Sp)

**4923 Advanced Fiction Writing (Slashlisted with 5923).** Prerequisite: six hours of creative writing, application and departmental permission. May be repeated; maximum credit six hours. Work at an advanced level for qualified students. Intensive writing, peer criticism, revision, and reading in

current markets with the goal of producing publishable work. No student may earn credit for both 4923 and 5923. (Irreg.)

**4933 Advanced Poetry Writing (Slashlisted with 5933).** Prerequisite: six hours of creative, application and departmental permission. May be repeated; maximum credit six hours. Intensive writing, peer criticism, revision, and reading in current markets with the goal of producing publishable work. No student may earn credit for both 4933 and 5933. (Irreg.)

**4943 Advanced Creative Nonfiction Writing (Slashlisted with 5943).** Prerequisite: six hours of 2000-3000-level writing courses, application and departmental permission. May be repeated; maximum credit six hours. Intensive writing, peer criticism, revision, and reading in current markets with the goal of producing publishable creative nonfiction. No student may earn credit for both 4943 and 5943. (Irreg.)

**4970 Special Topics in World Literature Today.** 1 to 3 hours. Prerequisite: 1213 and permission of instructor. May be repeated with a change of topic, maximum credit six hours. In-depth study of selected contemporary international writers/jurors who visit campus as part of the Neustadt and/or Puterbaugh symposiums for World Literature Today. (Irreg.)

**4990 Independent Study.** 1 to 3 hours. Prerequisite: three courses in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topics not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**Courses in English numbered 5000 and above are primarily for graduate students who have had eighteen hours of English, or the equivalent, but are open by permission to seniors.**

**G5003 Seminar-Special Topics in English, American or Comparative Literature.** Prerequisite: graduate standing. May be repeated with change of subject matter. Topics in theoretical and historical problems of English, American or comparative literature in different periods. (Irreg.)

**G5113 Teaching College Composition and Literature.** Prerequisite: graduate standing. In a workshop format, students will apply readings in composition and literary theory to such practical concerns of freshman English teaching as course planning, assignment preparation, grading and discussion techniques. (F)

**G5133 Teaching Technical Writing.** Prerequisite: graduate standing. Introduction to the types of writing professional engineers and scientists are expected to do and methods of teaching these forms of writing. In addition, students will attend classes being taught by the professor and have the opportunity to design and teach some workshops as well as evaluate the undergraduates' work. (Irreg.)

**G5223 Seminar-Film.** Prerequisite: graduate standing. Will involve reading and analyzing the works of the more sophisticated film theorists and critics as well as studying approaches to the teaching of film (the *auteur* theory; film history; film genres; visual literacy; film and society; film as narrative; non-narrative forms). (Irreg.)

**G5243 Women Writers.** Prerequisite: graduate standing. May be repeated twice with change of content; maximum credit nine hours. Topics vary. Focus is on women's achievements, the context of the ages in which they wrote, and on critical approaches including feminist theory and criticism. (Irreg.)

**G5253 Transatlantic Women Writers.** Prerequisite: Graduate standing. Explores work of eighteenth and early nineteenth century women writers who were "transatlantic" in different ways: some were born and/or lived in America and published in England; some wrote novels which crossed the Atlantic or were set on both sides; some corresponded and wrote in tandem. (Irreg.)

**G5313 Literary Criticism.** Prerequisite: graduate standing. May be repeated with change of content; maximum credit nine hours. A comprehensive history of literary criticism, the study of a particular movement or related movements in literary criticism; or a study of a particular issue or related issues in literary criticism. (Sp)

**G5323 Contemporary Cultural Studies.** Prerequisite: graduate standing. May be repeated once with change of topic; maximum credit six hours. Addresses variable topics and issues in cultural studies such as popular culture, mass media, subcultures, gender codes, visual media, minority literatures, global cultural, and post-modernization. (Irreg.)

**G5333 Native American Women Writers.** Prerequisite: graduate standing. Reading or viewing poetry, fiction, autobiography, and film by Native American women. Examining traditional Indian societies' conceptions of gender, and the relationship between Western feminism and Native women's political experiences. (Irreg.)

**G5343 Native American Fiction.** Prerequisite: graduate standing. May be repeated twice with change of subject matter; maximum credit nine hours. Study of fiction written by Native American authors in the nineteenth and twentieth century. The course may include native authors from throughout the Americas and study the cultural contexts of Native American fiction. This course may also focus on particular themes and authors. (Irreg.)

**G5353 Native American Poetry.** Prerequisite: graduate standing. May be repeated twice with change of subject matter; maximum credit nine hours. Study of poetry written by Native American authors in twentieth century. Course may include native authors from throughout the Americas (including poetry in indigenous languages) and study the cultural contexts of Native American poetry. This course may also focus on particular themes and authors. (Irreg.)

**G5363 Native American Non-Fiction and Criticism.** Prerequisite: graduate standing. May be repeated twice with change of subject matter; maximum credit nine hours. Study of Native American cultures by means of non-fiction and scholarly-critical writings. Course may focus on issues of methodology, theory, and cultural studies. Course may also focus on particular themes and authors. (Irreg.)

**G5373 Graduate Topics in Native American Literature.** Prerequisite: graduate standing. May be repeated with change of subject matter; maximum credit twelve hours. Special topics focusing on Native American cultures, including literature, drama, philosophy, and thematic approaches to the subject. Course may also focus on particular themes, movements, and authors. (Irreg.)

**G5403 Issues in Composition, Rhetoric and Literacy.** Prerequisite: graduate standing. An overview of contemporary research and theory in the study of written composition, with emphasis on rhetorical theory, the interrelationship of writing and reading, and the politics of defining literacy. (Irreg.)

**G5413 History of Modern Composition Studies.** Prerequisite: graduate standing. A survey of twentieth century scholarship on composition theory, including composing process theory and discourse theory. (Irreg.)

**G5423 Classical Rhetorical Theory.** Prerequisite: graduate standing. Historicizing of rhetoric from ancient Egyptians to Greek sophists, Plato, Aristotle to Rome and Augustine. Includes examination of the ways "history" and cultural studies comprise the area. (Irreg.)

**G5433 Eighteenth and Nineteenth-Century Rhetoric and Composition Theory.** Prerequisite: graduate standing. An introduction to the rhetorical thought of eighteenth and nineteenth-century Britain and America, focusing on the development of rhetorical theories within the contexts of (1) eighteenth-century Scottish moral philosophy, (2) English romanticism, and (3) the emergence and development of higher education in nineteenth-century America. (Irreg.)

**G5443 Twentieth-Century Rhetoric and Composition Theory.** Prerequisite: graduate standing. A survey of twentieth-century scholarship on rhetoric and composition theory, beginning with the rhetorical theories of Kenneth Burke, with emphasis on the mid-century revival of rhetoric and composition through current changes brought about by technology and feminism. (Irreg.)

**G5453 Special Topics in Rhetoric, Composition, and Literacy.** Prerequisite: graduate standing. May be repeated three times with change of content; maximum credit nine hours. Addresses topical issues being debated within the profession. (Irreg.)

**G5463 Rhetoric and Technology.** Prerequisite: graduate standing. A graduate seminar designed to explore the impact of computer technology on rhetorical theory. Examines electronic literacy in terms of the following themes: history and writing technologies; the politics of writing instruction in computer-mediated classrooms; rhetoric and issues of difference; and intellectual property in a computer age. (Irreg.)

**G5473 Women's Rhetorics and Writing Practices.** Prerequisite: graduate standing. Analysis of selected historical and current work by women according to histories and theories of written composition theory, rhetorical theory, and literacy practices. These issues are studied by analyzing how women interact with different forms of communication (e.g., speaking, print, film, video, computer graphics). (Irreg.)

**G5483 Rhetorical Perspectives on Literacy.** Prerequisite: graduate standing. Inquiry into the meaning of "literacy" in the electronic age where text, graphics, and video "interanimate" each other. It asks: what are the boundaries of literacy? What academic fields does its study encompass? What is the current benchmark for illiteracy? How have different societies defined functional literacy? (Irreg.)

**G5523 Seminar-Medieval Language and Literature.** Prerequisite: graduate standing. May be repeated once with change of subject matter.

Topics vary. Special studies in Chaucer's contemporaries and successors. Medieval drama, romance and lyric poetry. (Irreg.)

**G5533 Seminar-Sixteenth-Century English Literature.** Prerequisite: graduate standing. May be repeated twice with change of subject matter. Special studies in major figures, genres, themes and movements of the sixteenth century. (Irreg.)

**G5543 Seminar-Seventeenth-Century English Literature.** May be repeated twice with change of subject matter. Special studies in major figures, genres, themes and movements of the seventeenth century. (Irreg.)

**G5553 Postcolonial Theory and Writing.** Prerequisite: graduate standing. Theories of postcolonialism as they have emerged from poststructuralist theory in the west, and from various political-literary movements in the non-Western world. Also focuses on the literatures of postcolonial cultures in Asia, Africa, Latin American, the Caribbean, Australia, and North America. (Irreg.)

**G5603 Seminar-EIGHTEENTH-CENTURY English Literature.** Prerequisite: graduate standing. May be repeated twice with change of subject matter. Special studies in major figures, genres, themes and movements of the eighteenth century. (Irreg.)

**G5613 Seminar-Nineteenth-Century English Literature.** May be repeated twice with change of subject matter. Special studies in the Romantic and Victorian periods designed to promote original research and criticism. (Irreg.)

**G5623 Seminar-Twentieth-Century English Literature.** May be repeated twice with change of subject matter. Topics vary. Special studies in authors, literary types and literary movements. (Irreg.)

**G5703 Seminar – Special Topics in American Literature.** Prerequisite: graduate standing. May be repeated with change of subject matter; maximum credit 9 hours. Intensive study of a major theme, issue, genre or figure in American literature and culture that is not limited to any single historical period. (Irreg.)

**G5723 Late Nineteenth Century and Early Twentieth Century American Literature.** Prerequisite: graduate standing. Examination of late nineteenth and early twentieth century fictional accounts of the relation between class and literary culture. Discussion includes writers' relation to literary market, writers' sense of the capacity of literature to transform society, and the writers' relation to nationalism, imperialism, and/or cosmopolitanism. Provides a broad survey of high and middlebrow literary culture in the U.S. at the turn of the century. (Irreg.)

**G5803 Seminar-Twentieth-Century American Literature.** Prerequisite: graduate standing. May be repeated twice with change of subject matter. Topics vary. Special studies in American authors, ideas and literary types. (Irreg.)

**G5813 Blackness, Coloniality, Gender.** Prerequisite: graduate standing. Taking an historical and cultural approach to Black U.S. and Caribbean female writing, explore the struggle between the "official" cultural contexts and the spaces of counter-cultural resistance. Analyze the terminology "colonial" and "postcolonial" and the current theoretical landscape in which these terms are used. (Irreg.)

**G5903 Methods of Graduate Study.** Prerequisite: graduate standing. Required of all Ph.D. candidates. An introduction to the use of library resources as relevant to the various aspects of the discipline. Students will pursue individual research projects in their concentrations: literary study, criticism, rhetoric, composition or other areas. (Irreg.)

**G5923 Advanced Fiction Writing (Slashlisted with 4923).** Prerequisite: graduate standing, six hours of creative writing, application and departmental permission. May be repeated; maximum credit six hours. Work at an advanced level for qualified students. Intensive writing, peer criticism, revision, and reading in current markets with the goal of producing publishable work. No student may earn credit for both 4923 and 5923. (Irreg.)

**G5933 Advanced Poetry Writing (Slashlisted with 4933).** Prerequisite: graduate standing, six hours of creative writing, application and departmental permission. May be repeated; maximum credit six hours. Intensive writing, peer criticism, revision, and reading in current markets with the goal of producing publishable work. No student may earn credit for both 4933 and 5933. (Irreg.)

**G5943 Advanced Creative Nonfiction Writing (Slashlisted with 4943).** Prerequisite: graduate standing, six hours of 2000-3000-level writing courses, application and departmental permissions. May be repeated; maximum credit six hours. Intensive writing, peer criticism, revision, and reading in current markets with the goal of producing publishable creative nonfiction. No student may earn credit for both 4943 and 5943. (Irreg.)

**G5960 Directed Readings in Research.** 1 to 4 hours. Prerequisite: graduate standing. May be repeated with change of content; M.A. thesis option maximum credit three hours; M.A. non-thesis option maximum credit six hours; Ph.D. maximum credit nine hours. An individual course, which may not duplicate regular course offerings, of intensive research. Area and problem to be determined by student and directing professor. (Irreg.)

**G5980 Research for Master's Thesis.** 2 to 9 hours. Variable enrollment; maximum credit applicable toward degree, six hours. (F, Sp, Su)

**G6013 Research Seminars in Composition, Rhetoric or Literacy.** Prerequisite: graduate standing. Topics vary. Issues of the historical/philosophical in composition and rhetorical studies; issues of empirical research in composition/rhetorical studies; issues of literacy in composition/rhetorical studies. (Irreg.)

**G6103 Introduction to Research Methods in Rhetoric and Composition.** Prerequisite: by permission. Topics vary. A survey of the literature in composition research from 1900 to the present; directed research of an empirical, historical or theoretical nature. (Irreg.)

**G6113 Issues in Contemporary Theory and Cultural Studies.**

Prerequisite: graduate standing. Explores issues in theory and cultural studies during recent decades, focusing on influential figures, major texts, innovative schools and movements, and new problems in the field. (Irreg.)

**G6213 Research Seminar on Women Writers.** Prerequisite: permission of instructor. May be repeated twice with change of content; maximum credit nine hours. Detailed research on women writers and the contexts in which they write, as well as criticism and theory. (Irreg.)

**G6503 Research Seminar in Medieval Literature.** Prerequisite: by permission. Involves detailed research in medieval literature; limited to students working on the M.A. and Ph.D. who have taken the proseminar in medieval literature. (Irreg.)

**G6523 Seminar in the Renaissance.** Prerequisite: graduate standing. May be repeated once with change of subject matter; maximum credit six hours. Closely studies texts (e.g. More, Campion, Shakespeare, Milton) and topics (e.g. the Baroque, Colonialism, rhetoric) in English literature, 1485-1700. (Irreg.)

**G6703 Research Seminar in American Literature Before 1900.**

Prerequisite: by permission. Involves detailed research in American literature before 1900; limited to students working on the M.A. and Ph.D. who have taken the proseminal in American literature before 1900. (Irreg.)

**G6803 Research Seminar in American Literature After 1900.** Prerequisite: by permission. Involves detailed research in American literature since 1900; limited to students working on the M.A. and Ph.D. who have taken the proseminal in American literature since 1900. (Irreg.)

**G6980 Research for Doctor's Dissertation.** (F, Sp, Su)

of these ideas leads to a feasibility analysis. Examines the development of a sales and distribution structure (including franchising, distributorship, and licensing and alliances), understanding segmentation, targeting, and niching. (Irreg.)

**3513 Market Development.** Prerequisite: Student must be approved for degree candidacy by Price College, 3413 or permission. This class deals with the issues an entrepreneur might face during the launch phase of their new venture and/or new product. The case-based curriculum teaches students the critical questions that must be answered in order to turn products and ideas into sales and revenue. Issues to be covered are opportunity identification, manufacturing, pricing, marketing segmentation, advertising, promotions, public relations, branding, sales, negotiations, channels, services franchising, competition and strategy. (F, Sp)

**3880 Directed Readings.** Prerequisite: Student must be approved for degree candidacy by Price College, permission. Directed readings and problems under staff supervision for advanced students. A comprehensive report and/or examination is required. (Irreg.)

**3980 Honors Research.** Prerequisite: Admission to Honors College. May be repeated, maximum credit six hours. Provides an opportunity for the gifted honors candidate to work at a special project in the student's field. (Irreg.)

**4103 Entrepreneurial Field Studies.** Prerequisite: Student must be approved for degree candidacy by Price College, all 3000-level Business core courses, and Finance 3513 or concurrent enrollment. A practicum course that provides student with opportunities to apply concepts mastered in previous business courses. Students work with entrepreneurs to develop comprehensive business plans for new ventures or to assist business persons with problems related to market research, financial management, managerial issues, and other business requirements such as planning expansion or new product development. (F, Sp)

**4303 Entrepreneurial Practicum.** Prerequisite: 3113, Marketing 3413 and Finance 3513. Provides an opportunity for entrepreneurship students to learn the strategies of start-ups and venture capital. An approved practicum experience with new and expansion phase business and venture capital firms provided. The intent is to provide students with "hands-on" experiences with practicing entrepreneurs. (F, Sp, Su)

**4603 Business Plan.** Prerequisite: Student must be approved for degree candidacy by Price College, all 3000-level Business core courses, 4103 or concurrent enrollment. Capstone course of the Entrepreneurship major. The focus is on designing and writing a business plan that can be presented to the OU Business Plan competition. (Sp)

**4710 Topics in Entrepreneurship.** Prerequisite: Student must be approved for degree candidacy by Price College, all 3000-level Business core courses, 3113 or concurrent enrollment. May be repeated with change of topic; maximum credit six hours. (F, Sp, Su)

**G5053 The Entrepreneurial Process.** Prerequisite : Graduate standing. Explore the entire life cycle of an entrepreneurial business in a single semester. An overview of each of the distinct cycle phases: opportunity identification and analysis, gathering resources and launch and managing growth and harvesting the business. Special emphasis is placed on learning how to learn how to make money, and how to live a life of meaning, along with the ethics, morality, and the philosophy of entrepreneurship and life planning. (F)

**G5083 Entrepreneurial Field Studies.** Prerequisite: Graduate standing. A practicum course that provides students with opportunities to apply concepts mastered in previous business courses. Students work with entrepreneurs and with the University of Oklahoma Intellectual Property Office to assist with the development of new business and business expansions opportunities. Issues to be addressed include market feasibility, market research, financial projections and feasibility and the management of new venture (F)

**G5113 Entrepreneurial Strategies and the Business Plan.** Prerequisite: 5053, 5083 or concurrent enrollment. The capstone course of the entrepreneurship concentration. The primary focus is on strategically designing and writing a quality business plan. The developed business plans will be of sufficient quality that they can be presented to potential financiers that can be presented to the OU plan competition or other regional and national business plan competitions. Also covers the topics of stages of financing, business models, growth models and strategic positioning of the early stage venture (Sp)

## Entrepreneurship (ENT)

**3003 Introduction to Entrepreneurship.** Prerequisite: Student must be approved for degree candidacy by Price College. The course focuses on the early development of independent ventures as well as those within established organizations. Individual and organizational level issues will be addressed. Entrepreneurial thinking will explore the thought processes that challenge existing norms and pave the way for novel solutions to problems in any field. The venture life-cycle of opportunity-launch-growth-harvest is highlighted. The course will also address start-up team issues, legal issues with new firms and innovations and organizational form. Not for entrepreneurship major credit. (Irreg.)

**3113 Starting and Managing the Entrepreneurial Venture.** Prerequisite: Student must be approved for degree candidacy by Price College, Entrepreneurship majors and minors or permission. Focuses on the early development of independent ventures as well as those within established organizations. Individual and organizational level issues will be addressed. Entrepreneurial thinking will explore the thought processes that challenge existing norms and pave the way for novel solutions to problems in any field. Also addresses start-up team issues, legal issues with new firms and innovations and organizational form. Concepts are illustrated through field and case studies and guest speakers. (F)

**3413 New Product Development (Crosslisted with Marketing 3413).** Prerequisite: 3113 or concurrent enrollment in 3113. Focuses on the development of ideas for new or established organizations, creating an environment conducive to innovation, recognizing business opportunities, assessing the market, customer and competitor situation. The development

## Environmental Design (EN D)

**1133 Graphics I.** Prerequisite: 1011, 1511; corequisite: 1524. Introduction to visual communications for the design professions, including technical drawing, empirical perspective, freehand drawing, and an introduction to computer graphics. (Sp, Su)

**1511 Studies in Visual Acuity.** Corequisite for majors: 1011. An introduction to formal design principles applied to the built environment: architecture, interiors, and landscapes. Attention is given to definitions with emphasis on illustrations to explore a range of applications across cultures, time, and disciplines. Stressed is the use of principles, concepts and techniques to create and communicate relationships among function, technology and context. (F)

## Expository Writing Program (EXPO)

**1213 Expository Writing.** Prerequisite: ENGL 1113 or equivalent or faculty permission. Students will study and practice the craft of writing through four series of sequenced writing assignments that are attuned to selected readings in the topic around which the course is organized. (Each section explores a particular topic area). Entering freshmen who have been exempted from the requirement of a 1200-level writing course may sign up for EXPO 1223, which signifies that the student will receive lower division western civilization and culture credit. (F, Sp) [I-ENGL]

**1223 Expository Writing.** Prerequisite: ENGL 1113 or equivalent or faculty permission. Students will study and practice the craft of writing through four series of sequenced writing assignments that are attuned to selected readings in the topic around which the course is organized. (Each section explores a particular topic area). This course is for entering freshmen who have been exempted from the requirement of a 1200-level writing course. This course code signifies that the student will receive lower division western civilization and culture credit. (F, Sp) [IV-WC]

## Film and Video Studies (FVS)

**1013 Introduction to Film and Video.** An examination of the history, role, impact, nature and delivery systems of film and video media in the United States and the international community. (F, Sp, Su) [IV-AF]

**2013 Film and Video History and Criticism to 1945.** Prerequisite: 1013. Survey of world film and video history and approaches to critical analysis of the moving image up to the end of World War II. Emphasizes an understanding of the role of cinema and video on aesthetic, economic, and social developments of life in the twentieth century. (F)

**2023 Film and Video History and Criticism 1945 to the Present.** Prerequisite: 1013. Survey of Hollywood, independent, and world film and video making since World War II and critical approaches to these media. A study of the aesthetic, economic, and social dimensions of film and video during the twentieth and twenty-first centuries. (Sp)

**2033 Writing about Film: Analysis, Criticism, and the Industry.** Prerequisite: 1013, English 1213 or Expository Writing 1213. This course teaches specialized writing skills for writing about film. Topics covered will include the vocabulary of film writing, basic cinema research skills and techniques to write for academic and general audiences. (F, Sp)

**2123 Acting for the Camera.** Prerequisite: 2033. Covers the requirements, techniques and discipline of working on camera for film and/or television as a professional actor. (F, Sp)

**3213 Media Theories and Methodologies.** Prerequisite: 2013 or 2023. Familiarize students with classical film theory that evolved during the early days of cinema up through contemporary film and media theory, as a foundation for understanding and analyzing the way media shape and reflect culture. (F, Sp)

**3223 Topics in Film Genre.** Prerequisite: 1013. May be repeated once with different genres; maximum credit six hours. Offers students a systematic in-depth study of one or two specific genres such as westerns, romantic comedy, horror, film noir, and melodrama. (Irreg.)

**3233 Filmmakers Up Close.** Prerequisite: 1013. May be repeated once with change of filmmakers; maximum credit six hours. An in-depth study of one or two filmmakers through the study of their films. Filmmakers

include directors, screenwriters, actors, and others who have a significant role in making movies. (Irreg.)

**3243 Hispanic Cinema.** Prerequisite: 1013. Analytical study of exemplary motion pictures from the Hispanic world: Spain, Mexico, Cuba, Brazil, and Argentina. (Irreg.)

**3313 Guerilla Film and Video Production.** Prerequisite: 2033. Film and video production with narrative structure. Student will learn to handle equipment and edit in-camera. (F, Sp)

**3413 Asian Cinema.** Prerequisite: 1013. A survey of major Asian films, exploring aesthetic and narrative traditions from Japan, China, and India as its major concern. Films from other Asian cultures will be offered as availability permits. Students will refine critical, written and verbal skills. (Irreg.)

**3800 Internship.** 1 to 3 hours. Prerequisite: 1013, junior standing, and permission of instructor. May be repeated with change of internship; maximum credit four hours. Participation in supervised internship with submission of journals describing work performed, regular reports, on-site supervisor evaluation, assigned readings, and final assessment of experience. (F, Sp, Su)

**3810 Variable Topics in Film and Video.** 1 to 3 hours. Prerequisite: 1013 or permission of instructor. May be repeated with change of content; maximum credit six hours. Varied projects concerning particular aspects of film and video history, genre, and methods of film or video production. (Irreg.)

**3833 Masterpieces of World Cinema.** Prerequisite: 1013. May be repeated with change of content; maximum credit six hours. Survey of world film and the principles underlying historical and critical approaches to the cinema, emphasizing an appreciation of international cinema as an aesthetic, economic, and social factor in the twentieth century. (Irreg.)

**3843 Topics in National Cinemas.** Prerequisite: 1013. May be repeated with change of content; maximum credit six hours. Analytical study of exemplary motion pictures in terms of major periods, themes, and formal parameters in relation to national cultural histories, such as the French New Wave, Film Noir or American silent film. (Irreg.)

**3853 Feature Screenwriting.** Prerequisite: 1013 and permission of instructor. An introduction to writing for the screen, including a variety of assignments leading up to developing and writing a feature screenplay. (F, Sp)

**3960 Honors Reading.** Prerequisite: 1013, permission of the Honors Program. Independent study in film and video history, theory, and production for students enrolled in the Honors Program. In-depth analysis of specialized topics. (F, Sp, Su)

**3980 Honors Research.** Prerequisite: 1013, permission of the Honors Program. Open only to students enrolled in the Honors Program. Individualized research with a Film and Video Studies faculty member leading toward work for the Honors thesis. In-depth research of specialized topic in film and video theory, history, or production. (F, Sp, Su)

**4013 Senior Seminar in Film and Video.** Prerequisite: 24 hours of major credit. Development of an academic/professional project in film or video; critical analyses of film and video programming/papers/projects. (F, Sp) [VI]

**4990 Independent Study.** Prerequisite: 1013, permission of the instructor. Specialized study in film and video history, theory, and production, or other topic mutually agreed upon by the student and the instructor. The course enables the student to pursue in-depth analysis of special interest topics in Film and Video Studies. (F, Sp, Su)

## Finance (FIN)

**3123 Financial Planning.** Prerequisite: Student must be approved for degree candidacy by Price College. Development of financial planning principles and their application to the design of insurance, savings, and investment programs for individuals. Topics covered include property, health, life insurance; deposit-based and marketable savings alternatives; fixed income and equity investment alternatives including mutual funds. (F)

**3133 International Financial Management for Non-Majors.** Prerequisite: Student must be approved for degree candidacy by Price College, 3303. This class will study the fundamentals of international finance including the international monetary system, the balance of payments, and the market for foreign exchange. The course examines international financial markets, and the opportunities they provide for investment and risk management. The financial instruments used for these purposes will also be emphasized including currency options, forwards, futures, and swaps as well as bonds and equities. This class is strictly for non-finance majors. (F, Sp)

**3303 Business Finance.** Prerequisite: Accounting 2113, 2123, and Economics 1113, 1123 and 2843. An introductory course in financial administration of the firm. Topics include the finance function, concepts of sources and uses of funds, analysis and estimation of need for funds (short- and long-term), short-term sources, working capital management policy, long-term sources, capital structure policy and implementation, capital budgeting and the cost of capital. (F, Sp, Su)

**3403 Financial Intermediaries and Markets.** Prerequisite: Economics 1113 and 1123. Investigates the determination of the level of domestic rates of interest and their implications for international currency markets. Describes the important financial institutions in U.S. financial markets. Details the structure of interest rates. Analyzes the behavior of fixed income prices. Discusses techniques of domestic and international institutions to immunize portfolios. (F, Sp, Su)

**3513 Entrepreneurial Finance.** Prerequisite: student must be approved for degree candidacy by Price College, completion of all 3000-level Business core courses, Entrepreneurship 3113. Not open to Finance majors. This course will cover various aspects of financing entrepreneurial ventures. Topics will include methods of financing, techniques for valuing new businesses and financial structure. Funding sources examined will include commercial banks, small business investment companies, SBIC, business angels and venture capital companies. These processes are often referred to as sourcing, diligence and valuation. (Irreg.)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to study materials not usually presented in regular courses. (F, Sp, Su)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program; junior standing. May be repeated; maximum credit six hours. Independent research on special projects. (F, Sp, Su)

**4103 Investments.** Prerequisite: 3303. Topics covered include the structure and operation of securities markets, introduction to portfolio management and capital market theory, the valuation of common stocks and fundamental analysis, determinants of option prices, the determinants of future prices, portfolio performance measurement and risk management, international portfolio management and international investing. Computer exercises are required. (F, Sp, Su)

**4113 Derivative Securities and Markets (Slashlisted with 5113).** Prerequisite: 4103 and permission of division. Uses of futures, option, and swap contracts in investments, banking, business finance, and foreign trade. Topics include valuation, trading mechanics and strategies, and applications. Hedging foreign currencies is included. The course is math and computer intensive. No student may earn credit for both 4113 and 5113. (Sp)

**4133 International Financial Management.** Prerequisite: Student must be approved for degree candidacy by Price College, all 3000-level Business core courses, 4103. Provides the student with the analytical tools needed to evaluate and provide solutions for problems that are commonly encountered in international financial management. Emphasizes basic theoretical models of exchange rate determination and hedging exchange rate risk, international financial transactions, the link between a nation's macroeconomic accounts and its balance of payments accounts, privatization of state-owned enterprises, and international banking. (Irreg.)

**4303 Advanced Business Finance.** Prerequisite: 3303. Development of theory and applications of financial management of the firm with both domestic and international investment decisions, structure and cost of capital, working capital management, dividend policy, long term financial planning and forecasting. The course emphasizes the development of problem solving skills and the use of computerized financial modeling. (F, Sp)

**G4413 Commercial Banking.** Prerequisite: 3303 and 3403. Financial management of the banking firm including analysis of bank financial performance, bond portfolio analysis, interest rate risk management, capital management, cost of funds, and loan administration. Regulation of the banking system is discussed as is competition from foreign banks. A computerized bank simulation game is used and international aspects of financial markets are discussed. (F, Sp)

**4513 Financial and Energy Risk Management.** Prerequisite: 4113. Emphasizes financial and commodity derivative securities and their use as risk management tools. Emphasis on the commodity side is given to energy related products. A financial market simulator will be used to develop students' trading and valuation skills. (Sp)

**4523 Real Estate Finance and Investment Analysis.** Prerequisite: 3303 and 3403. Real estate lending and investment in the United States; sources

of mortgage funds in primary and secondary markets; role of government programs and institutions in the real estate sector; fundamentals of real estate investment analysis; computer applications in case analysis; fundamentals of valuation and appraisal for real estate investments. (F)

**4613 Student Investment Fund (Slashlisted with 5613).** Prerequisite: 4103 or 4303. May be repeated once; maximum credit six hours. The management of a real dollar portfolio of common stocks using the value style approach. Emphasis is on the application of fundamental analysis. Frequent class presentations are required. No student may earn credit for both 4613 and 5613. (F, Sp)

**4700 Internship in Finance.** 1 to 3 hours. Prerequisite: 3303 and permission of division. Academic projects in the business world applied to practical on-the-job situations. (F, Su)

**4713 Fixed Income Fund Management (Slashlisted with 5713).** Prerequisite: 3403, 4103. Students are involved in the management of a fixed income (bond) portfolio. Emphasis is given to the analytics of fixed income security valuation, and the analysis of investment opportunities. Frequent class presentations are required. No student may earn credit for both 4713 and 5713. (F)

**G4990 Special Studies.** 1 to 3 hours. Prerequisite: permission, three or more courses in finance as determined by the nature of the program of study selected. The only passing grade given is the neutral grade of S. (F, Sp, Su)

**G5043 Financial Administration of the Firm.** Prerequisite: graduate standing, permission. Theoretical and procedural considerations in the administration of the finance function in the individual business firm; planning, fund raising, controlling of firm finances; specific emphasis is given to working capital management, capital budgeting, and cost of capital. (F)

**G5103 Investments and Portfolio Management.** Prerequisite: 5043 and permission (Director, CBA Graduate Programs). The investment characteristics of individual stocks, bonds and other financial assets; strategies and techniques of portfolio management. (F)

**G5113 Derivative Securities and Markets.** Prerequisite: 5043 or Business Administration 5283. Uses of futures, option, and swap contracts in investments, banking, business finance, and foreign trade. Topics include valuation, trading mechanics and strategies, and applications. Hedging foreign currencies is included. The course is math and computer intensive. No student may earn credit for both 4113 and 5113. (Sp)

**G5203 Financial Markets and Institutions.** Prerequisite: 5043 or Business Administration 5283. The structure of financial markets and institutions. Financial market topics include theory of interest rate determination, term structure of interest rates, duration of debt instruments, default risk, valuation of foreign currencies, and hedging foreign currency risk. With respect to financial institutions, topics include the structure of the U.S. financial system, commercial banking, savings and loans, and managing interest rate risk. (F)

**G5303 Corporate Finance—Long-Term Decisions.** Prerequisite: 5043 and permission of Director-CBA Graduate Programs, or Business Administration 5283 and permission of Director-CBA Graduate Programs. Advanced topics in corporate finance. Topics include long- and short-term investment decisions, cost of capital, working capital management, dividend policy, long-term financial planning. The course emphasizes the development of computerized financial models. Cases involving domestic and international firms are utilized. (Sp)

**G5403 International Financial Management.** Prerequisite: 5043 or Business Administration 5283. Designed to provide the student with the analytical tools needed to evaluate and provide solutions for problems in international financial management. Example topics include exchange rates, international financial markets and the monetary system, risk management. (Sp)

**G5413 Financial Engineering.** Prerequisite: 4113 or 5113. How to value forward and futures contracts, swaps, and options and how to use them to manage risk and represent investments in real assets. Examples are drawn from the financial and commodity markets with an emphasis on energy commodities such as oil, natural gas, and electricity. (Sp)

**G5613 Student Investment Fund (Slashlisted with 4613).** Prerequisite: 5043 or Business Administration 5283 and 5103 or 5303 and permission. The management of a real dollar portfolio of common stocks using the value style approach. Emphasis is on the application of fundamental analysis. Frequent class presentations are required. No student may earn credit for both 4613 and 5613. (F, Sp)

**G5713 Fixed Income Fund Management.** Prerequisite: 5043 or Business Administration 5283. Students are involved in the management of a fixed

income (bond) portfolio. Emphasis is given to the analytics of fixed income security valuation, and the analysis of investment opportunities. Frequent class presentations are required. No student may earn credit for both 4713 and 5713. (F)

**G5970 Special Topics in Finance.** Prerequisite: 5043 or Business Administration 5283. May be repeated; maximum credit six hours. Special topics in finance of interest to students in the MBA program. (F, Sp, Su)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp, Su)

**G5990 Directed Readings in Finance.** Prerequisite: 5043 or Business Administration 5283. May be repeated; maximum credit six hours. Individual graduate study of a specific narrow topic not offered in the current curriculum. (F, Sp, Su)

**G6603 Introduction to Finance Theory.** Prerequisite: graduate standing and permission. Topics include decision making under uncertainty, portfolio theory, models of asset pricing, efficient markets, option pricing, capital structure and agency theory.

**G6703 Portfolio Theory and Asset Pricing.** Prerequisite: 6603 and Economics 5213. Topics include utility maximization under uncertainty, portfolio theory, capital market models, and asset pricing including continuous time models.

**G6803 Corporate Finance Theory.** Prerequisite: 6603 and Economics 5213. Topics include complete and incomplete markets, capital structure theory, agency theory, property rights, dividend policy, signaling models, corporate control issues, mergers and acquisitions.

**G6903 Financial Markets and Institutions.** Prerequisite: 6603 and Economics 5213. Topics include the term and risk structure of interest rates, debt pricing, financial contracting, information economics, duration and immunization, futures and options.

**G6960 Directed Readings in Finance.** 1 to 3 hours. Prerequisite: 12 hours in finance and/or specifically related subjects, graduate standing, and permission of instructor. May be repeated with change of topic; maximum credit nine hours. Directed readings in various lines of specialization in finance. Conducted on a conference basis by the staff. Scope of reading and credit to be arranged on entry into the course. (F, Sp, Su)

**G6973 Seminar.** Prerequisite: 12 hours of finance and/or economics, graduate standing, permission. May be repeated with change of topic; maximum credit nine hours. Seminar in latest developments in research and theory from one of the following general areas of the finance field: business finance, capital markets, insurance, investments, money and banking, public finance, real estate. A specific topic is announced for each time of offering. (F, Sp)

**G6980 Research for Doctor's Dissertation.** (F, Sp, Su)

## Fine Arts (F A)

**2970 Fine Arts Seminar.** May be repeated; maximum credit eight hours. Content varies. Interdisciplinary seminar course for Fine Arts. Deals with concepts not usually presented in regular coursework and/or special performance opportunities. (F, Sp)

## French (FR)

**1013 Beginning French for Reading.** Prerequisite: graduate standing. Carries elective credit only. Designed as initial preparation for the advanced-degree reading examination. This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics. (F)

**1023 Beginning French for Reading.** Prerequisite: 1013. Carries elective credit only. Designed as initial preparation for the advanced-degree reading examination. This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics. (Sp)

**1115 Beginning French.** An elementary course in understanding, speaking, reading and writing French. This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics. **Laboratory** (F, Sp, Su) [I-FL]

**1223 Introduction to French for the Engineering Sciences.** Designed as a preparatory course for University of Oklahoma engineering students who are planning to participate in the Engineering Exchange Program in Clermont-Ferrand, France. This course does not fulfill the university-wide

language requirement. This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics. (Sp)

**1225 Beginning French.** (Continued) Prerequisite: 1115. An elementary course in understanding, speaking, reading and writing French.

**Laboratory.** This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics. (F, Sp, Su) [I-FL]

**1235 First-Year French Review.** Prerequisite: two or more years of high school French or equivalent and placement by examination. A thorough one-semester review of the vocabulary, syntax and grammar of the usual first-year college French course. Oral and written drill sufficient to incorporate these elements, at a satisfactory level of performance, in the understanding, speaking, reading and writing of French. Students who have received credit in 1115 and/or 1225 cannot receive credit for 1235.

**Laboratory.** This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics. (F, Sp)

**2113 Intermediate French.** Prerequisite: 1225. The systematic cultivation of increased depth and control in the basic skills of listening, speaking, reading and writing French. **Laboratory** (F, Sp, Su)

**2133 French Conversation and Culture.** Prerequisite: 1225. Conversation practice based on elementary readings in selected topics from traditional and contemporary French culture, with the objective of developing additional active vocabulary and increased oral fluency while obtaining basic concepts about the French culture. (F, Sp, Su)

**2223 Intermediate French (Continued).** Prerequisite: 2113. The systematic cultivation of increased depth and control in the basic skills of listening, speaking, reading and writing French. **Laboratory** (F, Sp, Su)

**2243 French Conversation and Literature.** Prerequisite: 2113 or 2133. Conversation practice based on modern literary texts, with the objective of improving reading speed, vocabulary and comprehension, and increased oral fluency, while obtaining an expanded appreciation of French literary texts. (F, Sp, Su)

**2263 French Culture Through Songs.** Prerequisite: 1225. Through studying and learning songs of famous interpreters like Chevalier, Piaf, Trenet, Brassens, Brel and others, This course will provide students with a unique and entertaining opportunity to perfect pronunciation, vocabulary, grammatical skills, and gain a deeper acquaintance with French high and popular culture. (F)

**3083 Advanced French Conversation and Phonetics.** Prerequisite: 2243 or concurrent enrollment. Intensive practice in speaking French on topics of everyday life; development of specialized vocabularies; fundamentals of French phonetics. (F, Sp)

**3293 French in the Sciences.** Prerequisite: 2223. Addressed to students in all areas, though particularly in the sciences and professional fields as well as French majors interested in improving their skills in reading, discussing and writing about scientific communications in French and the role of science and technology in French culture.

**+G3423 Advanced French Composition.** Prerequisite: 2243. The inculcation of proper writing habits, at an advanced level, toward the achievement of idiomatic French. (Sp, Su)

**3623 Business French.** Prerequisite: two years of college French or equivalent. Focuses on terms and expressions used in business settings. Designed to impart an awareness of the differences between French and American business cultures. (F)

**3723 French for the Professions.** Prerequisite: two years of college French or equivalent. Introduces students to vocabulary in sectors such as advertising, marketing, transportation, medicine, and law. French professional and business cultures are studied. Communication skills for professional and business settings will be practiced in this course. (Sp)

**3753 French Culture Through Film.** Prerequisite: 2243 or concurrent enrollment. This course deals with contemporary French culture through the medium of cinema. Topics examined include family, education, religion and societal issues, and ethnicity. As a course taught in French, it will also focus on regional accents and generational and ethnic speech. (F)

**3853 Introduction to Literary Analysis.** Prerequisite: 2223. Designed to introduce students to the language and technique of literary analysis. Also serves to improve reading skills generally, as well as oral/aural and written skills. Representative works from the various literary genres will be studied. (Sp, Su)

The prerequisite for courses numbered 3900-4999 is 17 hours of French. Other specific prerequisites are so indicated.

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. Covers materials not usually presented in the regular courses. (F, Sp)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. The projects covered will vary. Will deal with concepts not usually presented in regular coursework. (F, Sp, Su)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Will provide an opportunity for the gifted honors candidate to work at a special project in the student's field. (F)

**3990 Independent Study.** 1 to 3 hours. Prerequisite: one course in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**G4153 Survey of French Literature to 1800.** Reading and discussion of major French works and their background from the Middle Ages to the French Revolution. (F, Su)

**G4163 Survey of French Literature. (Continued)** Prerequisite: 4153 or permission. Reading and discussion of major French works and their background from 1800 to the present day. (Sp, Su)

**4313 French Civilization I.** Prerequisite: 3423; History 1223 or 1233. The political and social background of French literature from its beginning to the French revolution. (F, Su)

**4323 French Civilization II.** Prerequisite: 3423; History 1223 or 1233. The political and social background of French literature from the French revolution to the present day. (Sp)

**G4613 Advanced Conversation.** Prerequisite: 3073, 3423; also 4153 or 4163 or 4313, which may be taken concurrently. An advanced course in conversation covering political, literary, religious and social topics. (Su)

**4990 Independent Study.** 1 to 3 hours. Prerequisite: three courses in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**4993 Senior Capstone in French.** Prerequisite: graduating majors in French. Requires undergraduate French majors to synthesize their knowledge of French contributions to world civilization. They will be required, as part of this enterprise, to demonstrate their mastery of the four basic skills involved in learning a foreign language: reading, writing, speaking, and understanding. (Sp) [V]

**The prerequisite for courses numbered 5000 and over is 25 hours of French. Other specific prerequisites are so indicated.**

**G5223 Seventeenth-Century Theatre.** A study of dramatic works of Moliere, Corneille, Racine and other contemporaries. (Irreg.)

**G5243 Explication de Textes.** Prerequisite: graduate standing; seniors by permission of instructor. An intensive method of criticism which analyzes a literary work from as many points of view as possible: linguistic, historical, comparative and aesthetic, calling upon all the student's language and literary skills. (F)

**G5273 Contemporary French Literature.** Prerequisite: Graduate standing or permission of instructor. This course presents the work of a variety of French literary writers, texts composed primarily from 1990 to the present, a period of great revival in French letters. Students examine important questions of intellectual and aesthetic impact in literature coming both from France and from Francophone countries across the world. (Irreg.)

**G5283 Twentieth-Century French Novel.** Prerequisite: graduate standing or permission of instructor. Course presents a survey of the major forms of French novel throughout the twentieth century. (Irreg.)

**G5293 Twentieth-Century French Poetry and Theatre.** Prerequisite: graduate standing or permission of instructor. Course examines major developments in French poetry and theatre throughout the twentieth century. (Irreg.)

**G5313 Introduction to Old French.** Prerequisite: 10 hours of college Latin or equivalent; some knowledge of articulatory phonetics useful, but not required. History of the French vernacular from Latin to Modern French: external history, phonology, morphology, lexicon, syntax, with emphasis on phonological evolution; and introduction to the reading of Old French via

short excerpts from monuments of literature, from the Strasbourg Oaths to Cent Nouvelles. (Alt. F)

**G5323 Old French Readings.** Prerequisite: 5313. Introduction to a literary understanding and appreciation of the Old French Canon as represented by such texts as the Alexis, the Roland, Chretien's romances, Beroul's Tristan, the Rose, theatre, chronicles and lyric poetry, including Rutebeuf and Villon. (Alt. Sp)

**G5603 Sixteenth-Century French Narrative and Prose.** Prerequisite: graduate standing or permission. Narrative and prose writers of the sixteenth century (i.e. Rabelais, Marguerite de Navarre, Montaigne). (Irreg.)

**G5613 Sixteenth-Century French Poetry and Theatre.** Prerequisite: graduate standing or permission of instructor. All major or minor poets will be studied, as well as the revival of classical theatre in French. (Irreg.)

**G5623 Seventeenth Century Prose and Poetry.** Prerequisite: 4153. A survey of baroque, precieux and classical style, form and content as exemplified in the prose and poetry of the period. (Irreg.)

**G5633 Eighteenth Century French 'Philosophes'.** Prerequisite: graduate standing or permission. Presents the "philosophes" of the eighteenth century in France such as Montesquieu, Voltaire and Diderot. (Irreg.)

**G5643 Eighteenth-Century French Narrative and Theatre.** Prerequisite: graduate standing or permission of instructor. The course will present an overview of eighteenth-century French narrative and theatre. (Irreg.)

**G5910 Problems in Research.** 2 to 4 hours. May be repeated with change of content; maximum credit nine hours. An individual course of intensive research with the area and problem to be determined by the student and directing instructor. (F, Sp, Su)

**G5930 Seminar in French Literature and Culture.** Prerequisite: One 5000 level course in same general area. May be repeated with change of subject matter; maximum credit nine hours. In-depth study of a topic in French literature and culture. (Irreg.)

**G5963 Nineteenth-Century French Novel.** Prerequisite: graduate standing or permission of instructor. Course covers the major developments of the French novel throughout the nineteenth century. (Irreg.)

**G5973 Nineteenth-Century French Poetry and Theatre.** Prerequisite: graduate standing or permission of instructor. Course surveys the major literary developments in French poetry and theatre throughout the nineteenth century. (Irreg.)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp)

**G5990 Independent Studies.** 1 to 3 hours. Prerequisite: graduate standing, permission of instructor. May be repeated; maximum credit 12 hours. Independent reading on one or more topics under the general direction of a faculty member. (F, Sp, Su)

**G6980 Research for Doctor's Dissertation.** 2 to 16 hours. (F, Sp)

## Geography (GEOG)

**The department offers courses which are slashlisted so undergraduate students may take an undergraduate 4000-level course while graduate students may take a 5000-level course. The lectures in a slashlisted course are the same. However, students in the 5000-level course have substantial additional requirements beyond those for students in the 4000-level course. These additional requirements are listed in the slashlisted course syllabus.**

**1103 Human Geography.** An introduction to the humanized Earth; specifically, to the geography of population, the global pattern of cultures and such affiliated elements as language, religion, technology, and political organization, and to the physical expression of those cultures in rural and urban settings. (F, Sp, Su) [IV-WC]

**1113 The Language of Maps.** How to read, analyze and interpret graphic information symbolized on a wide variety of maps. Topics include: scale, location, distance and direction, navigation, interpreting human and physical landscapes, map propaganda, maps in the media and comparisons of maps in western and non-western societies. [I-O]

**1114 Physical Geography.** A systematic introduction to the physical Earth; including Earth materials, landform processes and resultant landforms, Earth-sun relations, weather, climate, the water cycle, natural vegetation, and soil types. Emphasis is placed on the inter-relationships among these phenomena. (F, Sp, Su) [II-LAB]

**1213 Economic Geography.** A survey of the contemporary global economy and of the analytical approaches developed by geographers studying it. Economic systems are examined at the household, urban, regional, national, and international levels. Special attention is given to changes in resource use, regional specialization, trade, industrial and retail location, and modernization. (F, Sp) [III-SS]

**2113 Introduction to the City (Crosslisted with Regional and City Planning 2113).** Cities and regions; cities and suburbs; housing for rich and poor; industry and commerce; transportation; public policies and urban politics; planning responses to urban problems. (Irreg.)

**2213 Globalization and the Environment.** Explores the complex assemblage of economic, political, and cultural processes popularly known as "globalization" and examines their implications for resource use and the environment. A central objective is to facilitate critical thinking on global environmental issues and enable students to challenge the increasingly polarized rhetoric concerning economic growth and the environment. (Irreg.)

**2503 Introduction to Computer Mapping and Analysis.** An introductory survey of computer applications in mapping and map analysis. Provides fundamental concepts and techniques necessary for visual presentation, analysis, and interpretation of geographic data using computer mapping technologies. The course covers three main topical areas: nature of geographic data, desktop mapping, and maps and map analysis. (F)

**2603 World Regional Geography.** A broad survey of the world's major culture regions emphasizing basic physical, cultural, economic, and political patterns, as well as the processes that have created those patterns. Emphasis on economic development, ethnic conflict, and environmental degradation, as well as on the changing role of the United States. (F, Sp, Su) [IV-WC]

**3001 Dialogue on the Discipline of Geography.** Prerequisite: 1103, 1114 and 1213; or permission of instructor. Introduction to the discipline of geography, nature of geographical research and the interests and ideas of departmental faculty and students.

**3003 Interpreting Geography.** Prerequisite: junior standing or permission of instructor. A one-semester course that will integrate both human and physical geography using conventional and technical applications through content lecture and pedagogy. Contact and understanding of the nature of the many facets of geography and geographic thinking will be accomplished through discussion, group work, project, case and various field-based activities. (Sp) [III-SS]

**3023 Principles of Physical Geography.** Prerequisite: Upper division standing or permission of instructor. Provides a foundation in physical geography. Students should gain a broad, comprehensive but focused viewpoint if lithospheric, biospheric and atmospheric processes as well as the interdependence among them. (Sp)

**3203 Globalization and the Environment.** Prerequisite: junior standing or permission of instructor. Explores the complex assemblage of economic, political, and cultural processes popularly known as "globalization" and examines their implications for resource use and the environment. A central objective is to facilitate critical thinking on global environmental issues and enable students to challenge the increasingly polarized rhetoric concerning economic growth and the environment. (Irreg.)

**3213 Principles of Human Geography.** Prerequisite: upper-division standing or permission of instructor. Introduction to the distribution of humans and their activities on the surface of the earth and the processes that generate these distributions. Special attention given to the influence of economy, culture, and politics in shaping the land and the spatial character and organization of human life. A key theme is the relationship of human diversity and places to the environment. (F)

**3223 The British Empire and Its Successor States.** Prerequisite: junior standing or consent of instructor. An examination of the relationship between ruler and ruled in the parts of Africa and Asia ruled by the British in the 19<sup>th</sup> and 20<sup>th</sup> centuries. Particular attention to the writings of the colonized peoples and to the lasting influence of colonialism upon them. (F) [IV-NW]

**3243 Principles of Economic Geography.** Prerequisite: upper division standing or permission of instructor. An examination of the distribution of economic activities and the processes that generate them. Special attention is given to principles of economic location and their application to patterns of production, consumption, and exchange. Students will learn the theories and methods used by geographers in studying economic activities from the local to the global scale. (Sp)

**3253 Environmental Conservation.** Contemporary environmental issues and policies. Problems of population growth, food production, energy shortages, resource depletion and pollution impacts will be stressed. The

social aspects of conservation management policies will be viewed at both global and national scales. (F) [III-SS]

**3353 Introduction to Cartography.** A basic survey of maps: their properties, conception and design, construction, compilation and editing, production, and use, with exercises in mapmaking. (F)

**3513 Political Geography.** A survey, stressing current geopolitical conflicts. Special topics include the nation-state, territoriality, the legacies of colonialism, spheres of political influence, regional conflicts, political-geographical integration in such areas as Europe and the Pacific Rim, demographic and resource considerations in world politics, and emerging culturally based conflicts. (F, Sp) [IV-WC]

**3563 Geography of Natural Resources.** Definition and evaluation of mineral, agricultural, forest, and water resources, including their variation over time, between cultures, and as affected by technological innovation. Emphasis is placed on the distribution, technologies, institutions, and landscapes of natural resources in modern economies. (F, Sp)

**3613 Geography of Oklahoma.** A study of the physical regions, populations, distribution, economic development and recreational resources of Oklahoma. (Irreg.)

**+C3633 Historical Geography of the United States .** America's changing geography is considered under three headings: the Colonial Pattern, the Humid East, and the Dry West. Special attention is given to those human activities that have shaped successive cultural landscapes and to those patterns that persist to give present day regions their distinctive character. (F, Sp) [IV-WC]

**3773 Geography of the United States.** Prerequisite: junior standing or permission of instructor. An introduction to the regional character of the United States, including its physical, social, and economic elements. (Irreg.)

**3890 Selected Studies in Geography.** 1 to 3 hours. Prerequisite: permission of instructor. May be repeated with change of subject matter; maximum credit nine hours. To be used for special intersession courses and occasional (irregularly scheduled) courses of special concern and use for the undergraduate. (F, Sp)

**+C3924 Analytic Methods in Geography.** Prerequisite: Mathematics 0123 or satisfactory score on Math placement test. Introduces students to methods of organizing, classifying and describing geographic data, together with methods of interpreting spatial relationships and aerial associations.

#### Laboratory (F)

**3930 Field Techniques for Geographers.** 1 to 4 hours. Prerequisite: 12 hours of geography or permission of instructor. May be repeated with change of subject matter; maximum credit six hours. Basic methods of data acquisition: surveying, measuring, sampling, sketching, and mapping. Individual and group projects may be required. (Irreg.)

**3933 Interpretation of Aerial Photographs.** Prerequisite: 1114 or permission. An introduction to the photographic inventory of physical and cultural land resources including current processes of change, and to the use of aerial photographs in evaluating present land use, potential alternatives, and associated risks. (Irreg.)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. Covers materials not usually presented in the regular courses. (F, Su)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. The projects covered will vary. Deals with concepts not usually presented in regular coursework.

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work at a special project in the student's field. (F, Sp, Su)

**4003 The Global City and Planning Issues (Crosslisted with Regional and City Planning 4003; Slashlisted with 5003).** Prerequisite: English 1213 and junior standing. An introduction to the concept of globalization and its effects on cities, and the city planning issues related to those effects. Characteristics, theories, and strategies of city development are reviewed. Cities are observed from several perspectives: natural and built environment, governance, society, economics, and history. No student may earn credit for both 4003 and 5003. (Sp)

**4133 Fundamentals of Remote Sensing.** Prerequisite: junior standing or permission of instructor. An introduction to the theory and interpretation of remote sensing imagery, with emphasis on photographic, multi-spectral, thermal, and microwave remote sensing systems. Imagery from aircraft,

satellite and low-altitude platforms will be used to illustrate geographic and environmental applications of remote sensing. Introduction to preprocessing (DIP). (F)

**G4200 Internship in Geography.** 1 to 6 hours. Prerequisite: sixteen hours of geography and senior standing. Provides career training experience whereby students may apply geographical skills and develop further professional capabilities in a realistic setting. Students will be assigned to particular business firms, governmental agencies and educational institutions on an individual basis. (F, Sp, Su)

**G4203 Geomorphology.** Prerequisite: 1114, or comparable work in earth sciences, junior standing. Development and modification of land-surface form by atmospheric, fluvial, glacial, mass-wasting, volcanic and tectonic agents. Emphasis is placed on spatial aspects of the interactions at the interfaces of land, air and water. (Irreg.)

**4223 Digital Imaging Processing (Slashlisted with 5233).** Prerequisite: 4133/5133 or permission of instructor. Theory and techniques for computer processing (DIP) of digital earth resources satellite imagery and incorporation into geographic information systems. (Sp)

**4243 Geography of Asia.** Prerequisite: junior standing or permission of instructor. A survey of the Middle East and central, south, southeast and east Asia. The course includes overviews of the continent's physical, social, and economic characteristics, but it treats primarily of the evolution of Asia's contemporary cultural landscapes as an expression of Asian cultures. (Sp) [IV-NW]

**4253 Latin America Geography.** Prerequisite: junior standing or permission of instructor. An exploration of the ways in which natural, cultural, and historical processes have combined to shape a unique region of the world. Special emphasis will be placed on the legacies of colonialism, cultural landscapes, social movements, and environmental degradation and resource conservation. (Sp) [IV-WC]

**4263 Geography of Latin America through Film.** Prerequisite: junior standing or permission of instructor. An advanced undergraduate course designed to introduce students to the various themes shaping the historical and cultural geography of Latin America. Weekly films illustrate exploration and conquest, indigenous encounters, slavery and Africans, colonial society, liberalism, environmental change, urbanization, revolution and issues in contemporary social geography. (F)

**G4273 Regional Climatology.** Prerequisite: 1114, Meteorology 1004, junior or senior standing; or permission. Investigates the nature of the Earth's climate and presents a synthesis of contemporary scientific ideas about atmospheric circulation. Topics include radiation, the hydrologic cycle, general circulation, local and regional climates, and global climate change. Specific attention is focused on the climatic water budget, its utility in evaluating local and regional climates, the emerging role of climate models, and issues in global climate change. (Irreg.) [II-NL]

**4283 Biogeography (Slashlisted with 5283).** Prerequisite: 1114 and junior standing. A survey of spatial patterns and processes in plant populations, plant communities, and vegetated landscapes. Emphasis is placed on the contemporary patterns of species and communities as determined by a combination of factors including physiography, climate, human influences, evolution, and dispersal. Field and laboratory techniques used in biogeographic research are also discussed. No student may earn credit for both 4283 and 5283. (Alt. Sp)

**4293 Hydrologic Science (Slashlisted with 5293).** Prerequisite: Math 1823 and either Physics 2414, 2514 or Chemistry 1315. Study of the processes which control the storage and movement of water at global, regional, and local scales. The emphasis is on the land portion of the hydrologic cycle, and includes the study of processes such as infiltration, soil water flow in the saturated and unsaturated zone, rainfall/runoff and evaporation. Lab sections include exercises on a computer in the field and in a soils lab. No student may earn credit for both 4293 and 5293. (Sp)

**4314 Soils.** Prerequisite: 1114. A survey of physical and chemical properties of soils, climate-soil relationships; soil genesis, survey and classification; soil erosion and its control; and soil resources and human dimensions. **Laboratory** (Irreg.)

**4343 Climate, History, and Society (Slashlisted with 5343).** Prerequisite: junior standing or permission of instructor. This course is an overview of the mutual interactions of climate and human activities, and examines historical examples of significant climatic impacts. The course includes investigation of the nature of earth's climate and a synthesis of contemporary scientific ideas about the climate and its environmental and societal impacts. No student may earn credit for both 4343 and 5343. (Irreg.)

**4353 Introduction to Geospatial Information Technologies.** Prerequisite: junior standing or permission of instructor. Overview of theories, applications, and practices of modern geospatial information technologies, including global positioning systems (GPS), remote sensing (RS), and geographic information systems (GIS). Course includes lectures, discussions, interactive and hands-on computer exercises, field projects, and site visits to OU research centers, local governments, and private geospatial information technologies companies. (Su)

**4433 Cultural and Political Ecology.** Prerequisite: junior standing or permission of instructor. An introduction to the political, economic, and cultural factors that shape human-environmental relations among peasant and indigenous societies around the world. Special attention is placed on how people negotiate decisions about resource use within value and belief systems that vary in response to changing social and environmental contexts. (Sp) [III-SS]

**4443 Urban Ecology (Slashlisted with 5443).** Prerequisite: junior standing and permission of instructor. An interdisciplinary course that examines how cities acquire, utilize, and modify environmental inputs such as land, water, and energy, and in the process generate a complex set of waste streams and environmental impacts such as solid wastes, atmospheric emissions, and habitat modification. No student may earn credit for both 4443 and 5443. (Irreg.)

**4453 Geographic Information Systems (Slashlisted with 5453).** Prerequisite: junior standing or permission of instructor. An introduction to the nature and applications of geographic information systems (GIS) including the categories of geographic data, data input, data models, spatial analysis, output, and the uses of GIS in socio-economic and environmental studies. No student may receive credit for both 4453 and 5453. (F, Sp)

**4553 GIS Applications (Slashlisted with 5553).** Prerequisite: 4453. Emphasizes technical and application practices in geographic information systems (GIS). Through weekly exercises and two projects, students will gain experience with applications and utilities of Geographic Information Systems, and learn how to plan and implement a GIS project. No student may earn credit for both 4553 and 5553. **Laboratory** (Irreg.)

**4563 American Indian Geographies.** Prerequisite: upper-division standing. A survey of the geographical knowledge among Indians in North America. Historical and contemporary topics are covered in a cross-cultural perspective including land use, environmental perception, concepts of space and place, symbolic landscapes, sacred land, and the idea of resources. (Sp) [IV-NW]

**4573 Indigenous Peoples and Resources.** Prerequisite: junior or senior standing or permission of instructor. A global survey of the role natural resources play in contemporary conflicts among indigenous peoples, neocolonial states and corporations, and non-governmental organizations (NGOs). The integrative-humanistic approach emphasizes understanding the ethical, cultural, economic, and ecological issues at stake in individual case studies set in a global context. Possible solutions to these conflicts are examined. (F) [IV-WC]

**4953 Proseminar in Geography.** Prerequisite: 1103, 1114, 1213, 3213, 3353, 3924, and an upper-division physical geography course; 3353 and 3924 may be taken concurrently with permission of instructor. History and character of the discipline of geography, with particular attention to changing themes, debates, and methods, the discipline's relations with its neighbors, and current trends in the discipline. (Sp) [V]

**4990 Independent Study.** 1 to 3 hours. Prerequisite: three courses in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topics not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**Unless otherwise noted, the prerequisite for courses in geography numbered 5000-5999 is 12 hours of geography or, in the case of students not majoring in geography, permission.**

**G5003 The Global City and Planning Issues (Crosslisted with Regional and City Planning 5003; Slashlisted with 4003).** Prerequisite: graduate standing. An introduction to the concept of globalization and its effects on cities, and the city planning issues related to those effects. Characteristics, theories, and strategies of city development are reviewed. Cities are observed from several perspectives: natural and built environment, governance, society, economics, and history. No student may earn credit for both 4003 and 5003. (Sp)

**G5113 Quantitative Methods in Geographical Research.** Prerequisite: 3923 or permission of instructor. An introduction for graduate majors in

geography and those in allied fields to research design and problem-solving research techniques. (F, Sp)

**G5133 Fundamentals of Remote Sensing (Slashlisted with 4133).**

Prerequisite: graduate standing or permission of instructor. An introduction to the theory and interpretation of remote sensing imagery, with emphasis on photographic, multi-spectral, thermal, and microwave remote sensing systems. Imagery from aircraft, satellite and low-altitude platforms will be used to illustrate geographic and environmental applications of remote sensing. Introduction to preprocessing (DIP). No student may earn credit for both 4133 and 5133. (F)

**G5213 Principles and Practice of Urban Planning (Crosslisted with**

**Regional and City Planning 5213).** Prerequisite: open to seniors in social science departments, architecture and civil engineering and to graduate students in regional and city planning. A lecture course which examines the physical, social, economic and public interest determinants of land use; the economic population and land use studies required to provide the basis for planning; space and location requirements and design characteristics for residential, commercial, industrial and public uses of land; and the study of urban traffic as a function of land use in terms of structure and systems of movement. (F, Su)

**G5233 Digital Image Processing (Slashlisted with 4233).** Prerequisite: 4133/5133 or permission of instructor. Theory and techniques for computer processing (DIP) of digital earth resources satellite imagery and incorporation into geographic information systems. No student may earn credit for both 4233 and 5233. (Sp)

**G5243 Geography of China (Slashlisted with 4243).** Prerequisite: graduate standing or permission of instructor. Cultural and environmental geography of China, Tibet and Mongolia since the Qing dynasty (1644-today). No student may earn credit for both 4243 and 5243. (Sp)

**G5283 Biogeography (Slashlisted with 4283).** Prerequisite: 1114 and junior standing. A survey of spatial patterns and processes in plant populations, plant communities, and vegetated landscapes. Emphasis is placed on the contemporary patterns of species and communities as determined by a combination of factors including physiography, climate, human influences, evolution, and dispersal. Field and laboratory techniques used in biogeographic research are also discussed. No student may earn credit for both 4283 and 5283. (Alt. Sp)

**G5293 Hydrologic Science (Slashlisted with 4293).** Prerequisite: Math 1823 and either Physics 2414, 2514 or Chemistry 1315, or the equivalents and graduate standing. Study of the processes which control the storage and movement of water at global, regional, and local scales. The emphasis is on the land portion of the hydrologic cycle, and includes the study of processes such as infiltration, soil water flow in the saturated and unsaturated zone, rainfall/runoff and evaporation. Lab sections include exercises on a computer in the field and in a soils lab. No student may earn credit for both 4293 and 5293. (Sp)

**G5343 Climate, History, and Society (Slashlisted with 4343).** Prerequisite: graduate standing or permission of instructor. This course is an overview of the mutual interactions of climate and human activities, and examines historical examples of significant climatic impacts. The course includes investigation of the nature of earth's climate and a synthesis of contemporary scientific ideas about the climate and its environmental and societal impacts. No student may earn credit for both 4343 and 5343. (Irreg.)

**G5353 Advanced Cartography (Slashlisted with 4353).** Prerequisite: 3353 or permission of instructor. Training in using state-of-the-art hardware and software for computer mapping systems in digital cartographic data structures, in cartographic modeling, and in map production in computer environments. No student may earn credit for both 4353 and 5353. (Sp)

**G5443 Urban Ecology (Slashlisted with 4443).** Prerequisite: graduate standing and permission of instructor. An interdisciplinary course that examines how cities acquire, utilize, and modify environmental inputs such as land, water, and energy, and in the process generate a complex set of waste streams and environmental impacts such as solid wastes, atmospheric emissions, and habitat modification. No student may earn credit for both 4443 and 5443. (Irreg.)

**G5453 Geographic Information Systems (Slash-listed with 4453).**

Prerequisite: 3353 or permission of instructor. An introduction to the nature and applications of geographic information systems (GIS) including the categories of geographic data, data input, data models, spatial analysis, output, and the uses of GIS in socio-economic and environmental studies. No student may receive credit for both 4453 and 5453. (F, Sp)

**G5543 Advanced Digital Analysis of Remotely Sensed Data.**

Prerequisite: 4133/5133 and 4233/5233. Advanced course in remote sensing, including RS and GIS applications/modeling; a brief overview of spatial techniques; and an independent research project. (Irreg.)

**G5553 GIS Applications (Slashlisted with 4553).** Prerequisite: 5453 or equivalent, or permission of instructor. Emphasizes technical and application practices in geographic information systems (GIS). Through weekly exercises and two projects, students will gain experience with applications and utilities of Geographic Information Systems, and learn how to plan and implement a GIS project. No student may earn credit for both 4553 and 5553. **Laboratory** (Irreg.)

**G5610 Field Studies in Regional Geography.** 1 to 4 hours. Prerequisite: eight hours of geography (or three hours of geography and eight hours in one, or 12 hours in two, of anthropology, economics, political science, history, sociology, geology and permission). May be repeated; maximum credit 12 hours. Written reports based on lectures, observations, field notes, interviews and library research are required of each student. (Irreg.)

**G5623 Seminar in GIS Design.** Prerequisite: 4553 or 5553. May be repeated with change of content; maximum credit nine hours. Discusses and practices principles in GIS interface design and project management; integration of spatial data and spatial models with GIS; and spatial decision support systems (SDSS). Students will gain knowledge about the theoretical aspects of GIS technology. (Sp)

**G5650 Advanced Field Studies.** 1 to 6 hours. May be repeated; maximum credit 12 hours. Advanced work in techniques of data acquisition: surveying, measuring, sampling, collection, analysis, sketching, and mapping. Individual and group projects may be required. (Irreg.)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp, Su)

**G5990 Selected Studies in Geography.** 1 to 4 hours. Prerequisite: teacher's certificate or bachelor's degree and permission. May be repeated with change of subject matter; maximum credit eight hours. Designed to afford either an intensive study of a systematic field or an extensive coverage of broad problem topics in geography. (F, Sp, Su)

**The following seminars are offered on an irregular basis depending on availability of faculty resources and demand.**

**G6210 Seminar in Physical Geography.** 1 to 3 hours. Prerequisite: 12 hours of geography or permission. May be repeated with change of subject matter; maximum credit 15 hours. Directed individual research studies in one of the major divisions of physical geography, such as landform analysis, climatology, the geography of soils, water resources or biogeography. Provides training in oral, written and cartographic presentation. (Irreg.)

Sec. 1—Geomorphology

Sec. 2—Climatology

Sec. 3—Soils

Sec. 4—Hydrology

Sec. 5—Biogeography

Sec. 6—Human Impacts on Physical Environment

**G6220 Seminar in Human Geography.** 1 to 3 hours. Prerequisite: twelve hours of geography or permission. May be repeated with change of subject matter; maximum credit fifteen hours. Directed studies in one of the major divisions of human geography. (Irreg.)

Sec. 1—Urban Geography

Sec. 2—Settlement Patterns

Sec. 3—Historical Geography

Sec. 4—Cultural Ecology

Sec. 5—Cultural Geography

Sec. 6—Economic Development

Sec. 7—Political Geography

Sec. 8—Social Geography

Sec. 9—Regional Geography

Sec. 10—Political Ecology

**G6230 Seminar in Economic Geography.** 1 to 3 hours. Prerequisite: 12 hours of geography or permission. May be repeated with change of subject matter; maximum credit 15 hours. Directed studies in one of the major divisions of economic geography. (Irreg.)

**G6240 Seminar in Resource and Environmental Geography.** 1 to 3 hours. Prerequisite: 12 hours of geography or permission. May be repeated with change of subject matter; maximum credit 15 hours. Directed individual research studies in one of the major aspects of resource or environmental geography. Provides training in collection and analysis of data in oral, written and cartographic presentation. (Irreg.)

Sec. 1—Environmental Geography  
 Sec. 2—Natural Resources  
 Sec. 3—Water Resources  
 Sec. 4—Land Use  
 Sec. 5—Energy Resources  
 Sec. 6—Mineral Resources  
 Sec. 7—Applied Climatology

**G6950 Research Problems in Geography.** 1 to 6 hours. Prerequisite: graduate standing in geography, permission. May be repeated with change of subject matter; maximum credit 15 hours. Advanced independent research on any systematic or regional topic within the scope of geography appropriate to the library facilities or field study opportunities available to the student. (F, Sp, Su)

**G6953 Research Methods in Geography.** Prerequisite: admission to master's or doctoral degree program in geography. An intensive introduction to the definition of research problems in geography, to the range of methods available for analysis, and to the presentation of research results. Students will formulate a research proposal that includes problem identification, recommendation and justification of methods for analysis, and preparation of a critical literature review. (Sp)

**G6973 Contemporary Geographic Thought.** A survey of research philosophies and directions in American geography since World War II. An introduction to the geographical teaching and research interests at the University of Oklahoma. (F)

**G6980 Research for Doctor's Dissertation.** (F, Sp, Su)

## Geological Engineering (G E)

**2281 Engineering Co-Op Program (Crosslisted with AME, CH E, C E, C S, ECE, ENGR, EPHY, E S, I E, P E 2281).** Prerequisite: student participation in the program. The Co-Op program provides student placement in jobs outside the University, but in a position related to the student's major. On completion of a semester work period the student submits a brief written report. One hour of credit (elective) granted for each work period, with a maximum credit of six hours. (F, Sp)

**3113 Production Engineering (Crosslisted with Petroleum Engineering 3113).** Prerequisite: Petroleum Engineering 3123, Engineering 3223. Single and two-phase flow through pipes, gas lift, sucker rod pumping, submersible pumps, fluid separation, gas dehydration, pipeline system design, corrosion control. (Sp)

**3303 Drilling Engineering (Crosslisted with Petroleum Engineering 3303).** Prerequisite: Petroleum Engineering 3123, Engineering 2153, 3223. History of drilling, methods and equipment, well kicks and blowouts, drilling fluids, pressure losses in circulating systems, penetration rate, rotary drilling techniques, formation damage, drilling costs. (Sp)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. Covers materials not usually presented in the regular courses. (F, Sp)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. The projects covered will vary. Deals with concepts not usually presented in regular coursework.

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work on a special project in the student's field. (F, Sp)

**4233 Coal Engineering.** Prerequisite: Chemistry 1415, Geology 3003, permission of instructor. Coal occurrence characteristics and theories of origin; exploration, extraction and transportation; economics of coal use; coal as a primary energy source, gasification, liquification, coaking, cleaning, agglomeration, waste disposal, etc. (Irreg.)

**G4503 Applied Oceanography (Crosslisted with Chemistry 4503).** Prerequisite: Geology 1124 or 2233, permission of instructor. Interdisciplinary approach in physical, chemical and biological oceanography, whereby ocean processes affect erosion, deposition, development of coastlines and ocean bottoms, and dictate construction practices. Economic factors of life forms in each zone of ocean; controlling chemical aspects of water depths, temperatures, salinities, oxygen content in the ecological system. (Irreg.)

**G5110 Research.** Prerequisite: permission. Research in subsurface geology, stratigraphy and engineering applications of well logging techniques. (F, Sp)

**G5133 Non-Newtonian Fluid Mechanics (Cross-listed with Petroleum Engineering 5133).** Prerequisite: Engineering 3223 or equivalent. Characteristics of stress in fluids, the role of Newtonian fluid mechanics, extension of Newtonian analysis to Bingham plastics; fluids without yield stress, time dependent non-Newtonian fluids, laminar and turbulent flow, boundary layers in non-Newtonian fluids. (Sp)

**G5143 Fluid Flow in Porous Media (Crosslisted with Petroleum Engineering 5143).** Prerequisite: Petroleum Engineering 4513, graduate standing. Physical concepts involved in the flow of fluids in porous media; treatment of Darcy's law in a mathematical sense; the concept of relative permeability applied also in a mathematical sense. (F)

**G5243 Introduction to Rock Mechanics (Crosslisted with Petroleum Engineering 5243).** Prerequisite: senior standing in engineering or permission. Engineering properties of rock; rock testing techniques; in situ methods; mathematical approach to stress-strain analysis; discontinuities in rock; application for underground openings; rock slopes; foundations and drilling. (Sp)

**G5310 Special Problems in Geological Engineering.** 1 to 3 hours. Prerequisite: Geology 3113, permission. Special studies in stratigraphy, petrology, subsurface geology, sedimentation and petroleum exploitation problems. (F, Sp, Su)

**G5533 Petroleum Reservoir Development (Crosslisted with Petroleum Engineering 5533).** Prerequisite: Engineering 3723, Geology 3113, Petroleum Engineering 4223, 4513, or permission. Petroleum reservoir development and extension. Simulation methods for evaluating a petroleum reservoir, schemes for oil field development. Engineering application of logging and geological, fluid and well-testing data. Student-oriented reservoir simulation projects. (Sp)

**G5713 Introduction to Geostatistics (Crosslisted with Geology 5713 and Petroleum Engineering 5713).** Prerequisite: Undergraduate course in statistics or permission of instructor. Introduction to geostatistical concepts, Principles and tools for description and modeling of spatial variability in oil/gas reservoirs and other geological formations.. Topics include review of basic statistic concepts, exploratory spatial data analysis, stationary and ergodicity, variogram and covariance, kriging, spatial sampling, stochastic realizations and simulations, conditioning, and indicator kriging. (Sp)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp, Su)

**G5990 Special Studies.** 1 to 4 hours. Prerequisite: graduate standing in geological engineering. May be repeated with change of topic; maximum credit four hours. Supervised individual study or specialized research in geological engineering. (F, Sp)

**G6153 Transport Phenomena in Porous Media (Crosslisted with Petroleum Engineering 6153).** Prerequisite: 5143 or equivalent. Fundamental theory of mass, momentum and energy transport in porous media. Emphasis placed upon enhanced oil recovery processes, in situ energy extraction and other processes relevant to energy production. (Irreg.)

**G6253 Advanced Petrophysics (Crosslisted with Petroleum Engineering 6253).** Prerequisite: Petroleum Engineering 4513, 4522, graduate standing or permission. Techniques of sampling petroleum reservoirs with emphasis upon the rock and fluid properties. (Irreg.)

**G6263 Advanced Rock Mechanics I (Crosslisted with Petroleum Engineering 6263).** Prerequisite: 5243. In-situ stress determinations, effects of stress and strain gradients, time-dependent effects, Griffith's theory, crack phenomena, fracture toughness of rocks, poroelasticity concepts.

**G6273 Advanced Rock Mechanics II (Crosslisted with Petroleum Engineering 6273).** Prerequisite: 6263. Stereographic projections, properties of discontinuities, fluid flow in fractures, stability and design of rock slopes (two- and three-dimensional).

**G6283 Seismic Reservoir Modeling (Crosslisted with Geology 6283 and Petroleum Engineering 6283).** Prerequisite: Graduate standing or permission of instructor. This course is designed to explore the seismic response of rocks and how it is related to petrophysical parameters. This understanding is key to interpretation of seismic data in terms of subsurface rocks and fluids. (F)

**G6443 Petroleum Production Systems (Crosslisted with Petroleum Engineering 6443).** Prerequisite: graduate standing, permission. Principles of the development and operation of petroleum production systems. Considers the combined behavior of the reservoirs, the surface equipment, the pipeline system, and the storage facilities. Optimization of these systems for various production schedules using queuing theory, linear programming and dynamic programming. (Irreg.)

**G6573 Advanced Reservoir Engineering (Crosslisted with Petroleum Engineering 6573).** Prerequisite: Petroleum Engineering 4513, 4523 and graduate standing. Optimization of material balance equations; saturation calculations, with and without counterflow; dynamics of water drive reservoirs; accelerated blowdown of strong water drive gas reservoirs; conformal mapping of oil and gas fields; the subsidiary equation; tracer methods; streamlines; miscible processes; dispersion models and optimum solvent slug size. (Irreg.)

**G6583 Enhanced Oil Recovery (Crosslisted with Petroleum Engineering 6583).** Prerequisite: graduate standing or permission. New principles of recovery of oil and gas fields including: polymer, surfactants, miscible recovery processes, inert gas injection, emulsions, steam, in situ and wet combustion techniques. (Sp)

**G6612 Drilling Fluids (Crosslisted with Petroleum Engineering 6612).** Prerequisite: graduate standing and permission of instructor. Theory and practical application of drilling fluids based upon the theory of colloidal chemistry and the technology of fine particles. (Irreg.)

**G6743 Advanced Evaluation of Petroleum Properties (Crosslisted with Petroleum Engineering 6743).** Prerequisite: Petroleum Engineering 4513, 4723, graduate standing. Continuation of Petroleum Engineering 4413. More extensive work on evaluation of petroleum and natural gas properties. Actual fields and leases used. (Irreg.)

**G6980 Research for Doctoral Dissertation.** (F, Sp, Su)

Laboratory includes historical studies of specific regions; study of maps and fossils. **Laboratory** (F, Sp)

**1133 Gold, Silver and Gemstones.** Geological processes leading to the formation of precious metal (gold, silver and platinum) and gemstone (diamond, sapphire, ruby, emerald, topaz, tourmaline) deposits; properties and uses of precious metals and gem minerals; geological constraints on the location and generation of deposits; exploration, mining, processing, and marketing. (Sp) [II-NL]

**1203 The Age of Dinosaurs (Crosslisted with Zoology 1203).** Introduction to basic principles and theories in zoology (evolution, systematics, vertebrate morphology and relationships) and geology (geologic time, earth history, plate tectonics, sedimentation and stratigraphy), focusing on the evolutionary history of Dinosauria. May not be counted for major coursework in either department or for general education requirements. [II-NL]

**2224 Introduction to Mineral Sciences.** Prerequisite: 1114 or permission; Chemistry 1415 or concurrent enrollment. Crystallography, crystal chemistry, optical properties and identification of minerals utilizing the petrographic microscope; an introduction to the rock-forming minerals and their relationships within igneous, metamorphic, and sedimentary rocks.

**Laboratory** (F)

**2232 Survey of Petroleum Exploration Technology.** Prerequisite: 1114 or equivalent, and 1124. To introduce the student to the practical applications of various geological disciplines and concepts used in petroleum exploration and development. Video and CD-ROM presentations followed by discussion. Materials will be selected from oil company training programs to illustrate what a petroleum geologist should learn and how it is applied. (Sp)

**3003 Structural Geology and Stratigraphy for Petroleum Engineers.**

Prerequisite: 1114, Physics 2524 or concurrent enrollment. Treatment of structural and stratigraphic geology with an emphasis on aspects of importance to petroleum engineering. Includes an investigation of mechanical principles relating to the earth's crust, descriptive study of nomenclature, causes of tectonic deformation, sedimentary processes and environments, and stratigraphic principles. **Laboratory** (F)

**3114 Structural Geology.** Prerequisite: 2224, Physics 2524 or concurrent enrollment. An introduction to the concepts of stress, strain, the mechanisms of rock deformation, the mechanics of folding and fracturing, and description of structural styles in various tectonic settings. **Laboratory** (F)

**3123 Introductory Field Geology.** Prerequisite: 3114 or concurrent enrollment; or permission. Laboratory included. Field trips; students will be charged transportation costs. Techniques of geologic fieldwork. Use of Brunton compass, alidade and plane table and topographic maps. Field examination of common geologic situations. Field exercises. **Laboratory** (Sp)

**+G3154 Environmental Geology.** Prerequisite: college algebra and permission of instructor; completion of one college level science course recommended. Designed for students who are wanting to know to relationship between earth materials and environmental issues. Topics include minerals, rocks, depositional environments, porosity, permeability, water occurrence and chemistry, petroleum, natural gas, tar sands, oil shales, land subsidence, and earthquakes. Laboratory includes the study of minerals, rocks, maps, and well cuttings. **Laboratory** (F)

**3223 Igneous and Metamorphic Petrology.** Prerequisite: 2224 or permission. Laboratory included. Field trip; students will be charged transportation costs. Generation, emplacement and crystallization of magma; phase chemistry; principles of igneous rock classification; the relationship of magma types to geologic setting. Principles of metamorphic petrology; phase chemistry and metamorphic reactions; concepts of metamorphic grade, P-T regimes and relationships to geologic environments; concepts of protoliths and provenance. Laboratory study of the textures, structures and mineral assemblages of igneous and metamorphic rocks utilizing hand specimens and thin sections. **Laboratory** (Sp)

**3233 Sedimentary Petrology and Sedimentology.** Prerequisite: 2224 or permission. Laboratory included. Field trip; students will be charged transportation costs. Origin, evolution and interpretation of sedimentary rocks with an emphasis on terrigenous systems; interpretation of mineralogy, textures and structures of terrigenous clastic and carbonate rocks in hand specimen and thin section. **Laboratory** (Sp)

**3513 Fundamentals of Invertebrate Paleontology.** Prerequisite: 1124 or permission. Laboratory included. Field trip; students will be charged transportation costs. A systematic approach to the animal invertebrate phyla, emphasizing fossil forms as they occur in the geologic record. Paleontologic principles and methods with emphasis on evolutionary

## Geology (GEOL)

**1003 Volcanoes and Earthquakes.** Prerequisite: high school chemistry and algebra. Worldwide distribution of volcanic and earthquake activity; types of volcanic eruptions and associated landforms and rocks; causes of and techniques for location of earthquakes; prediction of volcanic eruptions and earthquakes; social consequences of predictions and actual volcanic and earthquake activity. (F, Sp) [II-NL]

**1013 Global Environmental Change.** Past and present change on Earth from a global geologic perspective. Philosophy and methods of science, structure of the earth, plate tectonics, global catastrophes and geologic hazards, human impacts on the environment, global warming, pollution, ozone depletion, acid rain, resources, consumption, population growth, energy and technology. (Sp) [II-NL]

**1024 The History of the Earth and Life.** The origin of the Earth and solar system. Rocks and minerals; geologic time; plate tectonics and continental drift. The ocean-atmosphere system; climate change over time; biological evolution. The fossil record of early life; the "Cambrian Explosion" of life in the oceans; invertebrate animals and their geological history. Geological history of fishes; evolution of plants. Terrestrial vertebrates, including dinosaurs and mammals. Mass extinctions; human evolution; impact of human activities on the global environment and the biosphere. A student may not receive credit for both 1024 and 1114. **Laboratory** (Sp) [II-LAB]

**1104 The Dynamic Earth (Geology for Non-Science Majors).**

Introduction to the fundamentals of geology and their application to land-use, groundwater, mineral use and fossil fuel problems facing society. Several guest lecturers from industry and state and federal surveys will contribute to the content of the course. Laboratory fee. Three hours lecture, two hours lab. **Laboratory** (F, Sp) [II-LAB]

**1114 Physical Geology for Science and Engineering Majors.** Prerequisite: equivalent knowledge of high school chemistry, algebra and trigonometry. Laboratory included. Plate tectonics, the makeup of continents and mountain building. Heat flow, magnetism, gravity, rock deformation, earthquakes and the earth's interior. Surface processes including weathering, erosion, transport and deposition. Landforms, rivers, groundwater, glaciers, ocean processes, and volcanoes. Minerals and rocks. Application of geology to land-use, groundwater, mineral and fossil fuel exploration. **Laboratory** (F, Sp) [II-LAB]

**1124 Earth History.** Prerequisite: none; 1114 helpful but not required. Laboratory included; field trip. Physical history of the earth from its origin as a planet through the Great Ice age. Origin and growth of continents and ocean basins. Systematic survey of the history of continents with emphasis on North America: growth and leveling of mountain chains, rift valleys, transgressions and regressions of seas; continental fragmentation, assembly and relative motions. Plate tectonics, particularly as it relates to continent history. Climate and evolutionary changes through geologic time. Principles and methods used to interpret earth history and date rocks. Geologic time.

paleontology, paleoecology and stratigraphic paleontology. Brief treatments of biogeochemistry and paleobiogeography. **Laboratory** (F)

**3633 Introduction to Oceanography.** General survey of the scientific framework of the four specializations of the oceanographic study—biological, chemical, geological/geophysical and physical oceanography. Applications of ocean research to social and economic problems; interrelations between the ocean disciplines and other fields of study. (Sp) [II-NL]

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. Covers topics not usually presented in the regular courses.

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Subjects covered vary. Deals with concepts not usually treated in regular courses.

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work at a special project in the student's field.

**4103 Regional Tectonics and Orogeny (Slashlisted with 5103).**

Prerequisite: 3114 or permission of the instructor. Overview of tectonic processes that shape the interior of the earth. Topics include plate margin characteristics, theories of driving mechanisms, and regional tectonics analysis of modern and ancient plate margins and orogenic systems. No student may earn credit for both 4103 and 5103. (F)

**4113 Depositional Systems and Stratigraphy (Slashlisted with 5113).**

Prerequisite: 3114, 3233 or permission. Basic stratigraphic principles as well as reconstruction of ancient depositional systems. The controls on deposition of stratigraphic sequences, completeness of the rock record, biostratigraphy, magneto stratigraphy, and seismic stratigraphy. Field trip; students will be charged transportation costs. **Laboratory** (F)

**G4133 Petroleum Geology for Geoscientists.** Prerequisite: 1104 or 1114; or senior standing. Lectures will integrate at a quantitative level several fields of geology with geophysics, geochemistry and engineering that comprise the science of petroleum geology. The history of the petroleum industry, the location and amount of major reserves of oil and gas, and the potential for development of unconventional hydrocarbon resources will be covered. Labs will cover the types of data acquired during the drilling and testing of wells and the interpretation of these data, the analysis of well logs, use of logs and other subsurface data for correlation and mapping manually and using computer software. Recent tools and technological developments will be covered. **Laboratory** (F)

**4136 Field Geology.** Prerequisite: 3123; senior standing or permission. A six-week summer course held at the Oklahoma Geology Camp at Canon City, Colorado. Applications of field techniques, including use of aerial photographs, construction of geological maps and geophysical methods, to the recognition and interpretation of geologic phenomena. (Su) [V]

**4143 Petroleum Geology for Business Majors.** Prerequisite: 1104 or 1114. The integration of several fields of geology with geochemistry, geophysics, and engineering to provide an overview of the science and technology used in the exploration for and development of oil and natural gas fields. Briefly covers historical development of petroleum geology, amount and location of the world's major oil and gas reserves, and future potential for conventional and non-conventional hydrocarbon resources. (F)

**G4233 Subsurface Methods.** Prerequisite: 3114, 4113, and senior standing. Introduction to and the application methods used to obtain geological data from the subsurface. Review of data sources and interpretation techniques. Methods for quantifying displaying geological data as maps, cross-sections, and 3-D volumes. Use of geological database, mapping, and display software. (Sp)

**4373 History of Geology (Slashlisted with 5373).** Prerequisite: junior standing. History of science and the scientific method with an emphasis on geology. Greek science, scholasticism, Copernican revolution Francis Bacon, principle of uniformity, evolution, continental drift, climate, progress. Discussion of writings by Plato, Geike, Kuhn, Popper, Chamberlin, Gilbert, Hubbert and others. No student may earn credit for both 4373 and 5373. (F)

**4413 Paleobotany (Crosslisted with Botany 4413; Slashlisted with 5413).**

Prerequisite: permission of instructor. Introduction to the fossil record of terrestrial plants from algae to flowering plants. Lectures will address anatomy, morphology, taphonomy and paleoecology, including climate and plant-animal interactions. Laboratories will put lecture topics into practice using fossil plants from the Oklahoma Museum of Natural History

collection and from fieldwork. Field trips. No student may earn credit for both 4413 and 5413. **Laboratory** (Sp, even-numbered years)

**4513 Evolutionary Paleobiology (Slashlisted with 5513).** Prerequisite: 3513. Evolutionary patterns in the fossil record. Time resolution and bias in fossil assemblages. Taxonomic diversity and community replacement over geologic time. Mass extinctions and evolutionary radiations. Heterochrony and evolution. Application of methods in biosystematics to fossils, including computer-based techniques. No student may earn credit for both 4513 and 5513. (Alt. Sp)

**G4633 Hydrogeology.** Prerequisite: Mathematics 2443, Physics 2524, senior standing in geology, or permission of instructor. Darcy's law, Hubbert's fluid potential, equations of groundwater flow. Physical properties of geologic materials and fluids. Free convection, compaction- and gravity-driven flow. Role of fluids in geologic phenomena, including mineralization, metamorphism, hydrocarbon migration, sedimentary diagenesis, faulting and earthquakes, paleomagnetism. Application of geologic and geophysical techniques to fluid flow problems. (F)

**4864 Geomicrobiology (Slashlisted with 5864; Crosslisted with Microbiology 4864).** Prerequisite: Microbiology 3813 or permission of instructor. Life below the earth's surface. Bacterial degradation of pollutants. Petroleum microbiology. Role of microorganisms in geochemical cycling of carbon, sulfur, and metals. No student may earn credit for both 4864 and 5864. (F)

**G4970 Seminar.** 1 to 3 hours. Prerequisite: permission. May be repeated; maximum credit nine hours. (F, Sp)

**4983 Senior Thesis in Geology.** Prerequisite: senior standing with a major in geology and permission. May not be repeated. Individual research of a geological topic selected by the student in consultation with the instructor. The project may involve fieldwork, theoretical analysis, computer modeling, and/or data analysis and interpretation, culminating in a written thesis. (F, Sp, Su)

**4990 Independent Study.** 1 to 3 hours. Prerequisite: three courses in general area to be studied; permission of instructor and department. May be repeated; maximum credit nine hours. Contracted independent study for topics not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**G5003 Diagenesis.** Prerequisite: 26 hours of geology or geophysics or permission. Origin and interpretation of diagenetic features of sedimentary rocks, including porosity, permeability, fluid flow, compaction and cementation. Geochemical approaches are stressed. **Laboratory** (Irreg.)

**G5010 Paleomagnetism/Diagenesis Seminar.** One to two hours. Prerequisite: Senior or graduate standing; GPHY 5364 suggested. Seminar includes presentations by the professor on research topics as well as presentations by students on papers they read. In addition, each student will also make at least one presentation on their research. Also, students will work through a self-instruction lab with the microscopes. Focuses on recognizing diagenetic features that are important for paleomagnetism. May be taken for a total of six (6) credit hours. (F, Sp)

**G5020 Sedimentology and Stratigraphy Seminar.** Prerequisite: graduate standing. May be repeated with change of content; maximum credit 12 hours. Directed seminar on selected aspects of sedimentology and stratigraphy. (F, Sp)

**G5030 Petrology Seminar.** Topical presentations and discussions in hard-rock petrology, and related geochemistry and mineralogy, given by faculty, graduate students, and visiting school colloquium speakers. May be repeated for a total of 12 credit hours.

**G5103 Regional Tectonics and Orogeny (Slashlisted with 4103).**

Prerequisite: 3114 or permission of the instructor. Overview of tectonic processes that shape the interior of the earth. Topics include plate margin characteristics, theories of driving mechanisms, and regional tectonics analysis of modern and ancient plate margins and orogenic systems. No student may earn credit for both 4103 and 5103. (F)

**G5113 Depositional Systems and Stratigraphy (Slashlisted with 4113).**

Prerequisite: 3114, 3233 or permission. Basic stratigraphic principles as well as reconstruction of ancient depositional systems. The controls of deposition of stratigraphic sequences, completeness of the rock record, biostratigraphy, magneto stratigraphy, and seismic stratigraphy. Field trip; students will be charged transportation costs. No student may earn credit for both 4113 and 5113. **Laboratory** (F)

**G5123 Mechanics of Crustal Structures.** Prerequisite: 3114, Mathematics 2433, graduate standing or permission of instructor. Introduction to the deformation of shallow crustal materials with emphasis on sedimentary rocks. Includes a review of stress and strain, material properties of rocks,

mechanisms of brittle and ductile deformation, and mechanics of folding, faulting, and salt tectonics. (Sp)

**G5130 Advanced Field Geology.** 1 to 6 hours. Prerequisite: permission. Supervised fieldwork on specific field problems. (Irreg.)

**G5134 Applied Reservoir Characterization.** Prerequisite: permission of instructor. Geological mapping; well log interpretation; 3-D geological modeling; reservoir characterization methodology; reservoir simulation and upscaling; reservoir heterogeneity classification. (Irreg.)

**G5173 Clastic Facies.** Prerequisite: 3233 or 4113 or equivalent. Bedforms, sedimentary structures, flow regime, intrinsic versus extrinsic controls on sedimentation, ancient depositional environments and depositional models (alluvial fan, fluvial, deltaic, lacustrine, eolian, shelf, etc.). (F)

**G5204 Vertebrate Paleobiology (Crosslisted with Zoology 5204).**

Prerequisite: Zoology 1114, 1121, 2204; or permission. Field trips. Systematics, relationships, zoogeography, and evolutionary morphology of the major groups of vertebrates. (Irreg.)

**G5233 Introduction to X-Ray Diffraction and Spectrography.** Prerequisite: 2224 or Engineering 2313 or permission. The experimental methods involved and the principal applications. Laboratory included. **Laboratory (F)**

**G5323 Advanced Stratigraphic Concepts.** Prerequisite: senior or graduate standing. Generation and presentation of sedimentary successions; methods of stratigraphic analysis; sequence stratigraphy and cyclostratigraphy; tectonic, eustatic, and climatic influences of sedimentary successions. (Sp)

**G5343 Stable Isotope Geochemistry.** Prerequisite: Chemistry 1315, 1415; senior or graduate standing. Focuses on the stable isotopes of light elements (C, H, O, N, S) in the various processes that have resulted in their redistribution over geologic time. (Alt. F)

**G5363 Carbonate Geology.** Prerequisite: 26 hours of geology and geophysics, or permission. Students will be charged field trip costs. Petrology and petrography of modern and ancient chemical rocks, the reconstruction of their physical/chemical depositional and diagenetic environments in time and space; applied interpretation of cores, petrophysical logs, and seismic; five-day field trip to the Florida Keys. (Irreg.)

**G5373 History of Geology (Slashlisted with 4373).** Prerequisite: graduate standing. History of science and the scientific method with an emphasis on geology. Greek science, scholasticism, Copernican revolution Francis Bacon, principle of uniformity, evolution, continental drift, climate, progress. Discussion of writings by Plato, Geike, Kuhn, Popper, Chamberlin, Gilbert, Hubbert and others. No student may earn credit for both 4373 and 5373. (F)

**G5413 Paleobotany (Crosslisted with Botany 5413; Slashlisted with 4413).** Prerequisite: permission of instructor. Introduction to the fossil record of terrestrial plants from algae to flowering plants. Lectures will address anatomy, morphology, taphonomy and paleoecology, including climate and plant-animal interactions. Laboratories will put lecture topics into practice using fossil plants from the Oklahoma Museum of Natural History collection and from fieldwork. Field trips. No student may earn credit for both 4413 and 5413. **Laboratory (Sp, even-numbered years)**

**G5443 Formation Damage (Crosslisted with P E 5443).** Prerequisite: graduate standing or permission of instructor. This course presents an overview of the common formation damage processes, mechanisms, theories, and parameters; methods for diagnosis, determination, and control of formation damage; and application for mathematical models for analysis of laboratory and field data. (Irreg.)

**G5513 Evolutionary Paleobiology (Slashlisted with 4513).** Prerequisite: 3513. Evolutionary patterns in the fossil record. Time resolution and bias in fossil assemblages. Taxonomic diversity and community replacement over geologic time. Mass extinctions and evolutionary radiations. Heterochrony and evolution. Application of methods in biosystematics to fossils, including computer-based techniques. No student may earn credit for both 4513 and 5513. (Alt. Sp)

**G5713 Introduction to Geostatistics (Crosslisted with Geological Engineering 5713 and Petroleum Engineering 5713).** Prerequisite: undergraduate course in statistics or permission of instructor. Introduction to geostatistical concepts. Principles and tools for description and modeling of spatial variability in oil/gas reservoirs and other geological formations. Topics include review of basic statistic concepts, exploratory spatial data analysis, stationary and ergodicity, variogram and covariance, kriging, spatial sampling, stochastic realizations and simulations, conditioning, and indicator kriging. (Sp)

**G5813 Basin Analysis for Oil and Gas.** Prerequisite: permission. Development of exploration guidelines to oil and gas (origin, migration, accumulation)

based on regional tectonic styles and related time and place associations of structure, sedimentation, heat history and fluid pressures. **Laboratory (F)**

**G5843 Economic Geology-Metallic Deposits.** Prerequisite: 3114.

Introductory study of the important metallic ore deposits of the world; geology, origin and economic features of the deposits. (Irreg.)

**G5853 Groundwater and Seepage (Crosslisted with Civil Engineering 5853).** Prerequisite: graduate standing in civil engineering, environmental science or geology or permission. An applied course dealing with properties of aquifers, modeling of groundwater flow, groundwater hydrology and its interrelation with surface water, well hydraulics, pumping tests and safe yield of aquifers. (F)

**G5864 Geomicrobiology (Slashlisted with 4864; Crosslisted with Microbiology 5864).** Prerequisite: Microbiology 3813 or permission of instructor. Life below the earth's surface. Bacterial degradation of pollutants. Petroleum microbiology. Role of microorganisms in geochemical cycling of carbon, sulfur, and metals. No student may earn credit for both 4864 and 5864. (F)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp, Su)

**G5990 Special Studies.** 1 to 3 hours. Prerequisite: permission. May be repeated; maximum credit nine hours. Advanced special studies in geological problems. May include directed reading in geology, fieldwork, laboratory research or preparation of reports. (F, Sp, Su)

**G6103 Petroleum Geochemistry.** Prerequisite: graduate standing in geology or chemistry. An introduction to the basic concepts of petroleum geochemistry and their role in exploration. Includes the biomarker concept, pyrolysis techniques, isotopes in petroleum exploration, basin modeling and kinetic studies, organic petrography and detailed studies of a number of case histories. (Irreg.)

**G6233 Electron Microbeam Methods for the Earth and Materials Sciences.**

Prerequisite: graduate standing and permission of instructor. Provides the background necessary to effectively use electron microbeam (scanning electron microscope, electron microprobe) techniques to conduct spatial and compositional characterization of multi-component solid materials, to be achieved through lecture on operational theory coupled with applied (hands-on) utilization of a modern electron microprobe. **Laboratory (F)**

**G6283 Seismic Reservoir Modeling (Crosslisted with Geological**

**Engineering and Petroleum Engineering 6283).** Prerequisite: Graduate standing or permission of instructor. This course is designed to explore the seismic response of rocks and how it is related to petrophysical parameters. This understanding is key to interpretation of seismic data in terms of subsurface rocks and fluids. (F)

**G6453 Topics in Petrology and Plate Tectonics.** Prerequisite: graduate standing in geology or geophysics or permission of instructor. May be repeated with change of subject matter; maximum credit six hours. Geological processes at plate margins with emphasis on the relationship between structural and petrologic features: plate kinematics and petrotectonic associations; the origin of mountain belts, basins, and rock suites at convergent, divergent, and transform boundaries. (Irreg.)

**G6950 Research.** 1 to 4 hours. Prerequisite: graduate standing and permission of faculty supervisor. May be repeated with change of content; maximum credit 12 hours. Individual research in various areas of geology. (F, Sp, Su)

**G6960 Directed Readings.** 1 to 6 hours. Prerequisite: graduate standing and permission of faculty supervisor. May be repeated; maximum credit six hours. Supervised reading at an advanced graduate level. (F, Sp, Su)

**G6970 Seminar.** 1 to 4 hours. Prerequisite: graduate standing and permission of faculty supervisor. May be repeated with change of subject matter; maximum credit twenty hours. Directed seminar on selected aspects of geologic knowledge and inquiry. (F, Sp, Su)

**G6980 Research for Doctor's Dissertation.** 2 to 16 hours. (F, Sp, Su)

## Geophysics (GPHY)

**1104 Adventures in Geophysics.** The basic principles of remotely probing the Earth's shallow subsurface (geophysics) will be introduced through a series of existing case studies (adventures) such as the one served as the basis for "Jurassic Park". This course will also provide students with the opportunity for "hands-on" experience with high-tech geophysical tools. (Sp) [II-NL]

**3413 Principles of Geophysics.** Prerequisite: Mathematics 2423; Physics 2524; or equivalent or permission. A survey of current methods of geophysical measurements and their interpretations. The earth's gravity, magnetic, seismic, mechanical and thermal properties will be discussed. (Sp)

**3423 Introductory Petroleum Geology and Geophysics.** Prerequisite: Geology 1114, Mathematics 2423, Physics 2514, and Geology 3003. Fundamentals of the utilization of geological and geophysical data in the exploration for and development of petroleum reserves. Fundamental principles, geological and geophysical data acquisition, processing and interpretation. (Sp)

**4102 Advanced Field Geophysics (Slashlisted with 5102).** Prerequisite: senior standing. Provides students with practical experience in designing and executing geophysical field studies as well as experience in interpreting the acquired data. Basic principles are reviewed at the beginning of the course. Up to five field studies will be performed and students will process and interpret processed data. No student may earn credit for both 4102 and 5102. (F)

**G4114 Environmental and Geotechnical Geophysics I.** Prerequisite: Mathematics 2434, Physics 2524, or permission of instructor. Part of a two-semester sequence covering the major geophysical tools for environmental and geotechnical problems. Focus on characterizing shallow geologic stratigraphy and structure. This geologic information is applied to geotechnical and environmental concerns such as choice of landfill site, the containment of fluid pollutants in the subsurface, and geotechnical assessment. Techniques to be covered include seismic refraction, seismic reflection, and gravity. (F)

**G4124 Environmental and Geotechnical Geophysics II.** Prerequisite: Mathematics 2433, Physics 2524, or permission of instructor. Part of a two-semester sequence covering the major geophysical tools for environmental and geotechnical problems. Consider techniques used to locate and identify isolated targets such as buried tanks, drums, pits, and trenches. Techniques to be covered include magnetics, resistivity, electromagnetic induction, and ground penetrating radar. (Sp)

**4243 Computational Geosciences (Slashlisted with 5243).** Prerequisite: Mathematics 1823, 2423, 2433 and 2443. MATLAB is a C-based programming environment that has become a standard in scientific computing. This course begins with basic concepts of MATLAB programming and then proceeds to one-, two-, and three-dimensional graphics, interpolation and filtering. No student may earn credit for both 4243 and 5243. (F)

**G4874 Seismic Exploration.** Prerequisite: Physics 2524; Mathematics 2433 or concurrent enrollment. Lectures and laboratory/problem sessions covering theory and applications of reflection and refraction seismic exploration methods. Emphasis is on the common-depth-point reflection method. (F)

**4953 Senior Thesis in Geophysics.** Prerequisite: senior standing with a major in geophysics and permission. May not be repeated. Individual research of a geophysical topic selected by the student in consultation with the instructor. The project may involve fieldwork, theoretical analysis, computer modeling, and/or data analysis and interpretation, culminating in a written thesis. (F, Sp, Su) [V]

**G4970 Seminar.** 1 to 3 hours. Prerequisite: permission of instructor. May be repeated with change of content; maximum credit nine hours. (F, Sp)

**4990 Independent Study.** 1 to 3 hours. Prerequisite: three courses in general area to be studied; permission of instructor and department. May be repeated; maximum credit nine hours. Contracted independent study for topics not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**G5003 Rock Physics for Seismic Applications.** Prerequisite: graduate standing. Introduction to rock physics for geophysical applications; rock properties; elastic constraints; link to geophysical response; empirical relationships; poroelasticity; attenuation; dispersion; fluid properties; fluid substitution; prediction of velocities; anisotropy applications. (F)

**G5102 Advanced Field Geophysics (Slashlisted with 4102).** Prerequisite: graduate standing. Provides students with practical experience in designing and executing geophysical field studies as well as experience in interpreting the acquired data. Basic principles are reviewed at the beginning of the course. Up to five field studies will be performed and students will process and interpret processed data. No student may earn credit for both 4102 and 5102. (F)

**5243 Computational Geosciences (Slashlisted with 4243).** Prerequisite: Mathematics 1823, 2423, 2433 and 2443. MATLAB is a C-based programming environment that has become a standard in scientific computing. This course begins with basic concepts of MATLAB

programming and then proceeds to one-, two-, and three-dimensional graphics, interpolation and filtering. No student may earn credit for both 4243 and 5243. (F)

**G5364 Paleomagnetism.** Prerequisite: permission. Concerns the magnetic properties of minerals and rocks and the physical and chemical processes which produce them. Laboratory techniques used in investigations are discussed. (F)

**G5513 Introduction to Seismic Processing.** Prerequisite: Physics 2524, Mathematics 3333, or permission. Introduction to 2-D seismic data processing, the critical link between acquisition and interpretation. Extensive use of mathematical software for theory as well as complimentary state-of-the-art industry software on selected marine and land seismic data sets from around the world. Topics addressed include the theoretical and applied analysis of the acquisition array models, temporal and spatial sampling, noise, wavelet non-stationary, amplitude normalization, FFT and IFFTs, filter theory, predictive, signature, and spike deconvolution, F-K filtering, velocity analysis, and migration. Students will process from beginning to completion their own seismic lines. (F)

**G5613 Introduction to Seismic Stratigraphy.** Prerequisite: Physics 2524, Mathematics 3333, or permission. Introduction to the stratigraphic interpretation of reflection seismic data, emphasizing 2-D exploration seismic reflection group analysis. Topics covered include the theory and practice of borehole constrained interpretation, analysis, and mapping of seismic sequences, fault mechanical stratigraphy, chronostratigraphy, seismic facies, relative changes in sea level, and integrated geohistory analysis with emphasis upon providing a foundation for petroleum system analysis. Seismic sections for the analyses are taken from varying tectonic and depositional settings worldwide. (Alt. F)

**G5713 Solid Earth Geophysics.** Prerequisite: Mathematics 2433, Physics 2524, or permission of instructor. A survey of the physical and chemical origins of the earth and its development through pregeologic and geologic history, as inferred from modern cosmology, geochemistry, geomagnetism, seismology and satellite gravity data. The dynamic processes occurring in the earth are emphasized. (F)

**G5723 Tectonophysics.** Prerequisite: Physics 2524, Mathematics 3333, Geology 5813 or permission. Strongly recommended are 5713 or 5813. Overview of tectonics of plates through the integration of geology and geophysics. Theory, analysis, and modeling of the creation, modification, and destruction of plates, basins, and mountains through geologic time and space through the integration of borehole and outcrop geology with such geophysical disciplines as: earthquake seismology, refraction geophysics, reflections geophysics, heat flow, magnetics, and gravity. Required fieldtrip to the western U.S.

**G5813 Geomechanics.** Prerequisite: Mathematics 2433, Physics 2524, or permission of instructor. The mechanical, dynamic and thermal properties of the earth's lithosphere and asthenosphere will be discussed. Specific topics: lithospheric flexure—elastic, plastic and viscoelastic; isostasy; the formation and thermal history of oceanic lithospheric; the thermal and mechanical development of sedimentary basins. (Sp)

**G5864 Gravimetric and Magnetic Exploration.** Prerequisite: Mathematics 2433, Physics 2524, or permission of instructor. Lectures and laboratory/problem sessions covering theory and applications of gravimetric and magnetic exploration. Includes potential theory, filtering, modeling and interpretation. Emphasis is on exploration for minerals, oil and gas. Concepts of geodesy and isostasy are briefly considered. **Laboratory** (Sp)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum applicable toward degree, four hours. (F, Sp, Su)

**G5990 Special Studies.** 1 to 3 hours. Prerequisite: permission. May be repeated; maximum credit nine hours. Advanced special studies in geophysical problems. May include directed reading in geophysics, fieldwork, laboratory research or preparation of reports. (F, Sp, Su)

**G6013 Near-Surface Geophysical Imaging.** Prerequisite: graduate standing. Presents the mathematical basis and algorithms for near-surface geophysical imaging. These techniques are based on standard measurement configurations for seismic and radar surveys. Students will learn to implement these imaging algorithms using MATLAB programming. (F)

**G6174 Advanced Seismic Exploration.** Prerequisite: 4874. A survey of the latest concepts of exploration seismology including the use of integral transforms and information theory as applied to the digital processing of seismic data. (Irreg.)

**G6523 Advanced Seismic Processing.** Prerequisite: 5513, or permission. Advanced topics in 2-D and 3-D seismic data processing. Theory and

practice with intensive use of mathematical software on selected 2-D and 3-D seismic data sets from around the world. Topics addressed include processing design for complex geologies, advanced amplitude-phase-frequency normalization techniques, advanced filter design including time and spatially variant processes, Q analysis, linear and parabolic Tau-P filtering, 2-D and 3-D AVO data preparation, inversion, and analysis, DMO, pre-stack depth migration, finite-difference, Stolt, Kirchhoff, and other time and depth migration and cascaded model-driven migration methods, surface consistency, coherency, and other topics. (Alt. Sp)

**G6623 Advanced Seismic Stratigraphy.** Prerequisite: 5613 or permission of instructor. Advanced topics of theory and practice in seismic stratigraphy with an emphasis upon wavelet analysis in 3-D and 4-D development geophysical settings. Topics covered include the theory and practice of modeling, interpreting, and mapping principle reservoir characterization tools: velocities, frequency, phase, attributes, 2-D and 3-D AVO, and DHIs as well as the seismic characterization of wedges and fans (deltas and turbidites), and carbonate buildups (reefs and banks). Seismic projects are taken from various fields worldwide and include the integration of borehole petrophysical data. (Alt. Sp)

**G6874 Applied Seismic Modeling.** Prerequisite: 4874. Theory and use of seismic ray trace modeling in survey design, testing or processing algorithms, and interpretation. Methods are developed in 1-, 2-, and 3-dimensions and focus on asymptotic ray theory. The lab requires formulation, solution, and class presentation of a ray tracing problem of the student's choice.

#### Laboratory (Irreg.)

**G6950 Research.** 1 to 4 hours. Prerequisite: graduate standing and permission of faculty supervisor. May be repeated with change of content; maximum credit 12 hours. Individual research in various areas of geophysics. (F, Sp, Su)

**G6960 Directed Readings.** 1 to 6 hours. Prerequisite: graduate standing and permission of faculty supervisor. May be repeated; maximum credit six hours. Supervised reading at an advanced graduate level. (F, Sp, Su)

**G6970 Seminar.** 1 to 4 hours. Prerequisite: graduate standing, permission. May be repeated with change of subject matter; maximum credit twenty hours. Directed seminar on selected aspects of geophysical knowledge and inquiry. (F, Sp)

**G6980 Research for Doctor's Dissertation.** 2 to 16 hours. Prerequisite: permission of instructor. (F, Sp, Su)

## German (GERM)

**1013 Beginning German for Reading.** Prerequisite: graduate standing. Elective credit only. Designed as initial preparation for the advanced-degree reading examination. This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics. (F)

**1023 Beginning German for Reading.** (Continued) Prerequisite: 1013. Elective credit only. Designed as initial preparation for the advanced-degree reading examination. This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics. (Sp)

**1115 Beginning German.** An elementary course in understanding, speaking, reading and writing German. This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics. (F, Sp, Su) [I-FL]

**1225 Beginning German.** (Continued) Prerequisite: 1115. An elementary course in understanding, speaking, reading and writing German. This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics. (F, Sp, Su) [I-FL]

**2113 Intermediate German.** Prerequisite: 1225. Develops reading skills and control of grammar. Emphasis on expansion of vocabulary and strong reinforcement of grammatical structures. Reading and discussion of texts of literary and cultural interest. Oral and written assignments. (F, Sp)

**2223 Intermediate German.** (Continued) Prerequisite: 2113. (F, Sp)

**2323 German Composition and Conversation.** Prerequisite: 2113. Exercises in oral and written German. Reading of cultural and literary texts of contemporary interest. Emphasis on writing and speaking German. (F, Sp)

**3013 Scientific German.** Prerequisite: 1023 or 1225. Training in the reading of scientific material of gradually increasing difficulty. (Irreg.)

**3123 Scientific German II.** Prerequisite: 3013. Continuation of 3013. Training in the reading of scientific material of gradually increasing difficulty. (Irreg.)

**+G3423 Advanced German Composition.** Prerequisite: 2323. The inculcation of proper writing habits, at an advanced level, toward the achievement of idiomatic German. (Sp)

**+G3523 Advanced Conversation.** Prerequisite: 2223 and 2323. Practice in conversational skills at an advanced level. (Sp)

**3623 Business German.** Prerequisite: 2223. Introduces German business language as used in retail/wholesale, export/import, transport, and media. Will also familiarize the student with the European Union and cultural aspects of the German speaking business world. (F)

**3723 German for the European Market.** Prerequisite: 2223. German business language as used in banking transactions, marketing, business letters, and business firms such as corporations, general and limited partnerships, and trade unions. How to respond to claims by firms in European countries and how to establish subsidiaries in another European country. Prepares students to take the "Prufung Wirtschaftsdeutsch" (International Certificate in Business German). (Sp)

**3853 Literature and Film.** Prerequisite: 2223 and 2323. Introduction to representative works of contemporary German literature and film. Within the context of reading and writing assignments and the viewing and discussion of films, the course is designed to improve language skills and knowledge of German culture. (F)

**The prerequisite for courses numbered 3900–4999 is 17 hours of German. Other specific prerequisites are so indicated.**

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Will consist of topics designated by the instructor in keeping with the student's major program. The topics will cover materials not usually presented in the regular courses. (F, Sp)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. The projects covered vary. The content deals with concepts not usually presented in regular coursework.

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work at a special project in the student's field. (F, Sp)

**3990 Independent Study.** 1 to 3 hours. Prerequisite: one course in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp)

**4003 History of the German language (Slashlisted with 5003).** Prerequisite: 3423, 3853. Linguistic, cultural, and social evolution of the German language from Indo-European times to the present. Additional emphasis is given to the place of German within the Germanic family of languages and to significant socio-linguistic issues in German-speaking countries as they enter the new millennium. No student may earn credit for both 4003 and 5003. (F)

**4113 The Middle Ages (Slashlisted with 5113).** Prerequisite: 3423, 3853. Secular and religious literature of medieval Germany, Austria, Switzerland, and the Netherlands discussed within the international cultural context of the European Middle Ages. No student may earn credit for both 4113 and 5113. (Alt. F)

**4253 Goethe's Faust and the Problem of Evil.** Prerequisite: 3423 and 3853. Intensive study of Faust I, Faust II, and the Urfau. The social and cultural history of the Faust figure, up to Goethe's Faust, will also be explored. No student may earn credit for both 4253 and 5253. (Irreg.)

**G4313 Culture and Literature I.** Prerequisite: 3423 or 3853. From the beginnings until the end of the seventeenth century. A survey of literature, art, religion, social relations, music and history. (F)

**G4323 Culture and Literature II.** Prerequisite: 3423 or 3853. From 1700 to 1900. A survey of literature, art, philosophy, social relations, music and history. (F)

**G4333 Topics in the Twentieth Century German Literature & Culture.** Prerequisite: 3423 or 3853. From 1900 to the present. A survey of literature, art, film, social relations, music and history. (Sp) [V]

**4433 German Classicism and Romanticism (Slashlisted with 5433).** Prerequisite: 3423, 3853. A comprehensive study of the characteristics of

Classicism and Romanticism with emphasis on contrasts in literary theory and techniques. No student may earn credit for both 4433 and 5433. (Alt. F)

**4603 The Sixteenth and Seventeenth Centuries (Slashlisted with 5603).** Prerequisite: 3423, 3853. A survey of the main literary movements of the period with concentrated study on the works of its principal writers. No student may earn credit for both 4603 and 5603. (Alt. Sp)

**4633 Enlightenment and Sturm und Drang (Slashlisted with 5633).**

Prerequisite: 3423, 3853. A study of the literature and literary techniques of the Enlightenment and the reaction thereto expressed in Sturm und Drang fiction and theory. No student may earn credit for both 4633 and 5633. (Alt. F)

**4643 The Nineteenth Century (Slashlisted with 5643).** Prerequisite: 3423, 3853. A study of the literature and literary techniques of Poetic Realism with emphasis on the drama and the novella. No student may earn credit for both 4643 and 5643. (Alt. F)

**4663 Early Twentieth Century Literature(Slashlisted with 5663).**

Prerequisite: 3423, 3853. A study of the literature and theory of the first half of the twentieth century. Special attention will be given to naturalism, impressionism, and expressionism. No student may earn credit for both 4663 and 5663. (Alt. F)

**4773 Post-1945 German Literature and Culture in Modern Europe**

**(Slashlisted with 5773).** Prerequisite: 3423, 3853. Study of selected prose, poetry, and drama written after World War II in Austria, East Germany, Switzerland and West Germany, within the context of cultural and economic changes. Also includes contemporary German films. No student may earn credit for both 4773 and 5773. (F) [IV-WC]

**4990 Independent Study.** 1 to 3 hours. Prerequisite: three courses in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp)

**The prerequisite for courses numbered 5000 and over is 25 hours of German. Other specific prerequisites are so indicated.**

**G5003 History of the German Language (Slashlisted with 4003).**

Prerequisite: graduate standing. Linguistic, cultural, and social evolution of the German language from Indo-European times to the present. Additional emphasis is given to the place of German within the Germanic family of languages and to significant socio-linguistic issues in German-speaking countries as they enter the new millennium. No student may earn credit for both 4003 and 5003. (F)

**G5113 The Middle Ages (Slashlisted with 4113).** Prerequisite: Graduate standing. Secular and religious literature of medieval Germany, Austria, Switzerland, and the Netherlands discussed within the international cultural context of the European Middle Ages. No student may earn credit for both 4113 and 5113. (Alt. F)

**G5253 Goethe's Faust and the Problem of Evil (Slashlisted with 4253).**

Prerequisite: Graduate standing. Intensive study of Faust I, Faust II, and the Urfaut. The social and cultural history of the Faust figure, up to Goethe's Faust, will also be explored. No student may earn credit for both 4253 and 5253. (Irreg.)

**G5433 German Classicism and Romanticism (Slashlisted with 4433).** A comprehensive study of the characteristics of Classicism and Romanticism with emphasis on contrasts in philosophy and literary techniques. No student may earn credit for both 4433 and 5433. (Alt. F)

**G5603 The Sixteenth and Seventeenth Centuries (Slashlisted with 4603).**

A survey of the main literary movements of the period with concentrated study on the works of its principal writers. No student may earn credit for both 4603 and 5603. (Alt. Sp)

**G5633 Enlightenment and Sturm und Drang (Slashlisted with 4633).** A study of the literature and literary techniques of the Enlightenment and the reaction thereto expressed in Sturm und Drang fiction and theory. No student may earn credit for both 4633 and 5633. (Alt. F)

**G5643 The Nineteenth Century (Slashlisted with 4643).** A study of the literature and literary techniques of Poetic Realism with emphasis on the drama and the novella. No student may earn credit for both 4643 and 5643. (Alt. F)

**G5663 Early Twentieth Century Literature(Slashlisted with 4663).**

Prerequisite: Graduate standing. A study of the literature and theory of the first half of the twentieth century. Special attention will be given to naturalism, impressionism, and expressionism. No student may earn credit for both 4663 and 5663. (Alt. F)

#### **G5773 Post-1945 German Literature and Culture in Modern Europe**

**(Slashlisted with 4773).** Prerequisite: Graduate standing. Study of selected prose, poetry, and drama written after World War II in Austria, East Germany, Switzerland and West Germany, within the context of cultural and economic changes. Also includes contemporary German films. No student may earn credit for both 4773 and 5773. (F)

**G5910 Problems in Research.** 2 to 4 hours. May be repeated with change of content; maximum credit nine hours. An individual course of intensive research with the area and problem to be determined by the student and directing instructor. (F, Sp)

**G5930 Seminar in German Literature and Culture.** 2 to 3 hours.

Prerequisite: one 5000-level course in same general area. May be repeated with change of subject matter; maximum credit nine hours. In-depth study of a topic in German literature and culture. (Irreg.)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp)

**G5990 Independent Studies.** 1 to 3 hours. Prerequisite: graduate standing, permission of instructor. May be repeated; maximum credit 12 hours. Independent reading on one or more topics under the general direction of a faculty member. (F, Sp, Su)

## **Graduate College (GRAD)**

#### **G5003 Oklahoma Scholar-Leadership Enrichment Program Graduate Seminar.**

Prerequisite: graduate standing. May be repeated with change of content; maximum credit 12 hours. An interdisciplinary seminar variable in content changing with each seminar. Seminars are led by prominent national and international scholars and leaders coordinated with a current faculty member in their area of expertise. Emphasis is on enrichment and exploration with scholars to investigate ideas and issues affecting the future of humanity. (F, Sp)

**G5990 Graduate Special Topics.** 1 to 4 hours. Prerequisite: graduate standing and permission of instructor. May be repeated with change of topic; maximum credit twelve hours. Selected topics in graduate areas not usually covered in traditional courses. For any particular section there may be additional prerequisites required. (F, Sp, Su)

**G6990 Graduate Advanced Special Topics.** 1 to 4 hours. Prerequisite: graduate standing and permission of instructor. May be repeated with change of content; maximum credit twelve hours. Selected advanced topics in graduate areas not usually covered in traditional courses. For any particular section there may be additional prerequisites required. (F, Sp, Su)

## **Greek (GRK)**

**1115 Beginning Greek.** Introductory study of the vocabulary and grammar of the Greek language. Some practice in the reading of simple Attic prose; usually excerpts from Xenophon's *Anabasis*. (F, Sp, Su) [I-FL]

**1215 Beginning Greek.** Prerequisite: 1115, or first year Greek in high school. Introductory study of the vocabulary and grammar of the Greek language. Some practice in the reading of simple Attic prose; usually excerpts from Xenophon's *Anabasis*. (Sp) [I-FL]

**The prerequisite for 2000-level courses is 1215 or the equivalent.**

**2113 Intermediate Prose.** Select passages from Plato's minor works, with grammatical and literary interpretation. (F)

**The prerequisite for 3000-level courses is one 2000-level course or the equivalent.**

**+G3113 Advanced Prose.** May be repeated with change of subject matter; maximum credit six hours. Readings in Plato: *Crito* and *Apology*; Lysias: *Select Orations*; Demosthenes: *De Corona*. (Sp)

**3123 New Testament.** Prerequisite: 1115 and 1215 or equivalent. Students will study the grammar, vocabulary and style of the Greek New Testament. Emphasis will be placed on accurate translation. (F)

**+G3213 Homer.** May be repeated with change of subject matter; maximum credit six hours. Select passages from the *Iliad* and the *Odyssey*, with particular attention to the peculiarities of the Homeric dialect. (Irreg.)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program and one intermediate Greek course. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping

with the student's major program. The topics will cover materials not usually presented in the regular courses.

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to the Honors Program and one intermediate Greek course. May be repeated; maximum credit six hours. Will provide an opportunity for the honors candidate to work at a special project in the student's field.

**3990 Independent Study.** 1 to 3 hours. Prerequisite: one course in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**The prerequisite for 4000-level courses is one 3000-level course or the equivalent.**

**G4213 Drama: Aeschylus, Sophocles, Euripides, Aristophanes.** May be repeated with change of subject matter; maximum credit nine hours. Extensive reading in representative tragedies and comedies of the Athenian dramatists. Supplementary studies in the development of the Greek theatre and its drama. (F)

**4990 Independent Study.** 1 to 3 hours. Prerequisite: three courses in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**The prerequisite for 5000-level courses is graduate standing or one 4000-level course or the equivalent.**

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F)

**G5990 Special Studies.** 1 to 4 hours. May be repeated; maximum credit eight hours. Reading and research, arranged and directed in consultation with the instructor, in specified areas of Greek language and literature. (F, Sp)

## Health and Exercise Science (HES)

**The department offers courses which are slashlisted so undergraduate students may take an undergraduate 4000-level course while graduate students may take a 5000-level course. The lectures in a slashlisted course are the same. However, students in the 5000-level course have substantial additional requirements beyond those for students in the 4000-level course. These additional requirements are listed in the slashlisted course syllabus.**

**1021 Beginning Judo.** Consists of skill training in the sport of judo and the associated cognitive acquisition of terminology, contest rules and customs. Skills portion will deal with falling techniques, throws, holdowns, chokes and armbars. Cognitive portion will deal with the training aspects of judo (chiai, randori, kata and uchi komi), basic terminology and contest rules. (F, Sp)

**1111 Adaptive Physical Education.** Limited to disabled students. May be repeated; maximum credit four hours. (F, Sp)

**1121 Beginning Weight Training.** To learn basic skills of weight training, i.e., warm-up, lifting techniques, training programs, etc.; to condition and strengthen the body through a continuous weight training program; to learn and appreciate the ability of correct weight training to enhance personal fitness and the carry-over value into other sports and activities. (F, Sp, Su)

**1131 Intermediate Weight Training.** Prerequisite: 1121 or permission. To enhance basic weight training skills by providing a more thorough knowledge of weight training; to learn proper procedures for total physical development; to learn the principles of nutrition and the role it plays in weight training; to learn through proper program design to develop weight training into an overall strength fitness program that can be utilized as a lifetime leisure activity. (F, Sp, Su)

**1221 Individual Fitness.** May be repeated; maximum credit eight hours. Exercise designed to condition the body for maximum health and fitness; special emphasis on cardiovascular fitness. (F, Sp, Su)

**1231 Lifestyle Physical Activity.** May be repeated; maximum credit three hours. Learn and practice strategies for incorporating lifestyle physical activity into your daily routine. Perform physical activities such as walking, bicycling, or others of your choice at times convenient to you instead of the two class periods of the week. (Irreg.)

**1341 Beginning Bowling.** Bowling alley service charge. (F, Sp)

**1351 Recreational Activities.** May be repeated with change of subject matter; maximum credit three hours. (F, Sp, Su)

**1361 Beginning Golf.** (F, Sp, Su)

**1371 Intermediate Golf.** Prerequisite: 1361 or permission. (F, Sp)

**1521 Beginning Swimming.** (F, Sp)

**1531 Intermediate Swimming.** Prerequisite: 1521 or permission. (F, Sp)

**1552 Water Safety Instruction.** Prerequisite: 1561 or American Red Cross Emergency Water Safety course. (Intersession)

**1561 Lifeguard Training.** Prerequisite: permission of instructor. Introduces the new concept of rescuing victims at all waterfront areas with an emphasis on speed. Will satisfy both federal and state guidelines which are required for all lifeguards. (Intersession)

**1661 Beginning Racquetball.** Fundamental skills of racquetball, i.e., serving, forehand, backhand, court positions and strategy. (F, Sp, Su)

**1681 Beginning Tennis.** (F, Sp, Su)

**1691 Intermediate Tennis.** Prerequisite: 1681 or permission. (F, Sp)

**1921 Basketball.** Teach a basic understanding of the game of basketball; skills and analysis of skills, nature and rules of the game, and strategies for game situations. (F, Sp, Su)

**1941 Soccer.** Teach a basic understanding of the game of soccer; skills and analysis of skills, nature and rules of the game, and strategies in game situations. (F, Sp)

**1961 Softball.** Teach a basic understanding of the game of softball; skills and analysis of skills, nature and rules of the game, and strategies for game situations. (F, Sp)

**1981 Volleyball.** Basic understanding of the game of volleyball; skills and analysis of skills, nature and rules of the game, and strategies for game situations. (F, Sp, Su)

**2022 Theory of Coaching and Athletic Management.** Prerequisite: three hours of biological science and three hours of social science. Introduction to the multifacets of the athletic coaching profession. Presents information to the beginning coach related to administrative relationships, off-season and in-season planning, ethics, recruiting, fund raising, travel planning and equipment purchase and care. (F, Sp)

**2131 Introduction to Health and Exercise Science.** Designed to introduce major students to the fundamentals of HES, including curricular disciplines, basic terminology, career opportunities, and professional associations. Students will also learn basic library research skills and a working knowledge of the support services and technologies available at the University. (F, Sp)

**2212 First Aid.** Includes the theory related to causes and prevention of accidents, as well as development of sufficient knowledge to determine the nature and extent of injuries. Training focuses on taking proper procedural steps at the proper times. Upon successful completion of the course and its specific requirements, students are awarded the American Red Cross Community First Aid and CPR Certificates. **Laboratory** (F, Sp, Su)

**2223 Outdoor Recreation.** Investigation and study of trends and emphasis on governmental and private organizations involved in the development of outdoor recreation for the public. (Sp)

**2823 Introductory Nutrition (Crosslisted with Clinical Dietetics 1823).** Evaluation of basic composition of nutrients and accessory factors required for adequate human nutrition. Application of nutritional principles to the planning of normal and special dietary regimens. [II-NL]

**2913 Personal Health.** Emphasizes the health knowledge and practices needed for effective living. The course has a holistic focus on personal health and provides both an informational and behavioral basis for health promotion and disease prevention. Topics include: mental health, stress management; fitness; nutrition; alcohol, tobacco, and other drug education; sexuality; and chronic/infectious disease. (F, Sp)

**3000 Special Topics in Health and Exercise Science.** 1 to 3 hours.

Prerequisite: junior standing or permission of instructor. May be repeated with change of content; maximum credit nine hours. Topics in health and exercise science not accommodated by the existing curriculum. Example: psychological factors in exercise adherence, i.e., personality traits of select exercise individuals, reinforcement procedures, personal goals as related to exercise needs, etc. (Irreg.)

**3021 Sports Officiating.** Standards and principles involved in the art of officiating. Laboratory experience required. Speedball, football, and volleyball. WNORC examinations for women. (F)

**3031 Sports Officiating.** Same as 3021, with emphasis on basketball, softball, baseball, and track and field. (Sp)

**3052 Theory of Baseball.** Prerequisite: 2022. The sciences of coaching baseball. Thorough coverage of the basic fundamentals of defensive and offensive baseball; coaching and teaching techniques; strategy, and administrative duties of the baseball coach. (Irreg.)

**3072 Theory of Basketball.** Prerequisite: 2022. History and technique of the game basic teaching and coaching of fundamental skills; methods of training and care of equipment. Advanced techniques in offensive and defensive strategy; psychology of handling personnel; scouting assignments. (Irreg.)

**3173 Materials and Methods in the Elementary School Physical**

**Education Program.** Prerequisite: sophomore standing, permission. Basic philosophy and characteristics of a program of physical education for the elementary school child; how to plan and organize the program; the desirable activities; standards for facilities and equipment; evaluation. (F, Sp, Su)

**3253 Recreation Resources—Leisure Environment.** Prerequisite: 2132. The historical and philosophical basis of leisure and recreation in modern society; the recreation environment from a regional and urban perspective; and critical issues that face recreation and urban planners and designers. Incorporates population geography and environmental health issues into an analysis of the physical and social environment that supports recreational programming and facility development. Focuses on urban development and the relationship of recreation resources to the aesthetic and mechanics of modern metropolitan areas. (F)

**3430 Field Experiences in Health and Exercise Science.** 1 to 4 hours. Prerequisite: junior standing or permission of department. May be repeated with change of activity or advanced position; maximum credit four hours. Field study related to student's area of interest (athletic coaching, athletic training, exercise science, health promotion, sport management) as approved by the department's field supervisor or adviser. A contract is required prior to beginning the field experience. The contract will address: statement of purpose, process of submitting reports, on-site evaluations, and written evaluations by student and site supervisor. (F, Sp, Su)

**3502 Care and Prevention of Athletic Injuries.** Prerequisite: 2212 or equivalent; three hours of biological science and three credit hours of social science. Recognition, cause, prevention, treatment, rehabilitation of athletic injuries; taping methods, protective equipment, and doctor's recommendations; equipping the training room, conditioning the athlete, practice routines and the athlete's diet. **Laboratory** (Sp)

**3513 Health Promotion Program Planning.** Prerequisite: HES major or permission of instructor. Discussion of health promotion programming in disease prevention, risk reduction, and wellness. Understanding the theoretical issues related to the development and evaluation of health promotion programs and the behavioral dimensions of health promotion. (F, Sp)

**3523 Human Sexuality.** Prerequisite: 2913, Psychology 1113. An introduction to biological, psychological, and sociological concepts which form the interdisciplinary foundation for studying human sexuality. Current research findings in all areas will be emphasized. Areas of emphasis will include: personal, social, sexual, and gender identity development across the lifespan, interaction and communication within social and intimate relationships, and reproductive and other health-related sexuality issues. (F, Sp)

**3533 AIDS and Its Impact on American Society.** Prerequisite: Zoology 1114 and three hours of social science, or permission of instructor. Provide a current overview of the medical and epidemiological aspects of AIDS and HIV spectrum disorders. Also focus on the psychosocial, educational, legal and ethical issues which have evolved in this country as a result of our response to AIDS and HIV.

**3563 Lifestyle Interventions.** Prerequisite: HES major or permission. Examines the relationship between individual behavior and the health status of a community. Current lifestyle intervention literature will be the focus. Application of intervention strategies will be presented for school, worksite, and community settings. (Irreg.)

**3573 Obesity and Weight Management.** Prerequisite: Zoology 2124 or permission of instructor. Provide students with knowledge of the physiology and psychology of obesity and overweight. Course is designed to educate students not only on the scientific background of obesity but how to apply this knowledge to management of obesity in the general and specific populations they will be serving. (Irreg.)

**3803 Exercise Science for Rehabilitation Sciences.** Prerequisite: Zoology 2124 or 3103. An introductory study of the principles and concepts of exercise science as they pertain to the rehabilitation sciences. Theoretical and scientifically established mechanisms are examined which explain the

body's physiological response, adaptation, and concomitant regulation during acute and chronic bouts of exercise. Particular emphasis will be placed on application to physical and occupational therapies. (Irreg.)

**3813 Principles of Health and Fitness.** Prerequisite: HES major or permission of department. Study of the underlying principles of life sciences that contribute to an understanding of the role of physical activity in health, fitness, and sports medicine. Specific reference to an overview of public health and disease, anatomy and biomechanics, exercise physiology, health appraisal and fitness testing and programming, human development and behavior, and program management. **Laboratory** (F)

**3823 Physiology of Exercise.** Prerequisite: 3813, Zoology 2124 or 3103 or equivalent and permission. An introductory study of principles and concepts of exercise physiology. Theoretical and scientifically established mechanisms are explored that explain the body's response, adaptation, and concomitant regulation during acute and chronic exercise. Applications presented in the clinical, sport, occupational, and normal exercise settings. Focus is on an understanding of the body's function from the cellular to systemic level during exercise. An understanding of assessment and physical training principles to explain health and performance is emphasized. Specific factors that affect the physiological bases of human performance are investigated. (Irreg.)

**3833 Evaluation of Health and Physical Performance.** Prerequisite: 3823 or permission of instructor. To develop basic skills and competencies in clinical and experimental laboratory assessment techniques. Emphasis is placed on a healthy population with introductory concepts for special populations. To understand the basic underlying physiological theory and application principles in the exercise physiological theory and application principles in the exercise physiology laboratory with specific emphasis on learning the assessment techniques to evaluate the responses and adaptations of exercise. (Irreg.)

**+G3843 Biomechanics.** Prerequisite: Zoology 2255, HSS major, or permission. The integrated study of anatomy, physiology, and mechanics with emphasis on understanding the anatomical and functional aspects of human movement in the area of health and sport sciences, such as in clinical, daily living, and sport applications. (F, Sp)

**3853 Exercise Testing and Prescription.** Prerequisite: Health and Exercise Science major or permission. A multidisciplinary study of biological and behavioral principles that explain physical activity's role in nutrition, exercise and weight control strategies. Analysis of the impact of these principles on health, disease and quality of life. Critical examination of underlying mechanisms that explain the dose-response activity relationship between physical activity, health and fitness. (Irreg.)

**3863 Exercise and Health Issues of Women.** Prerequisite: 3813 or permission of instructor. Course focuses on topics related to the effects of exercise on the health of adult women, including body composition, reproductive function and hypokinetic diseases. (Irreg.)

**3873 Principles of Personal Training.** Prerequisite: Permission of instructor. To develop an understanding of basic physiological mechanisms and application principles necessary to evaluate the acute and chronic responses and adaptations to exercise. To develop and understanding of basic skills and competencies in personal training technique and evaluation. Emphasis is placed on a healthy population with introductory concepts for special populations. (Irreg.)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Study of current research developments in health and sport sciences. An opportunity for the Honors' candidate to work with a faculty mentor on a research project of special interest to the student in the health and sport sciences. (F, Sp, Su)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. An opportunity for the Honors' candidate to work with a faculty mentor on a research project of special interest to the student. (F, Sp, Su)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Will provide an opportunity for the gifted honors candidate to work at a special project in the student's field. (F, Sp, Su)

**3990 Independent Study.** 1 to 3 hours. Prerequisite: one course in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**G4213 Management in Health and Exercise Science.** Prerequisite: junior standing, HES majors only, or permission of instructor. Concentration on

managerial theories, research, and their applications in health and sport organization and administration. Specific topics include organizational theories, communication, leadership, motivation, managerial skills, and functions of management, issues of policies, marketing, and financial aspects of management. (F, Sp)

**4430 Internship in Health and Exercise Science.** 4 to 8 hours. Prerequisite: junior or senior standing and twenty credit hours of HES major core, or permission of adviser. May be repeated with change in organization or advanced position with approval of adviser; maximum credit eight hours. Practical experience in administration, techniques, organizational structure and appropriate materials used with health, fitness, or sport related occupations. (F, Sp, Su)

**4523 Human Sexuality II.** Prerequisite: 3523 or permission. In-depth study of human sexuality from a biopsychosocial perspective which emphasizes the roles of biology, psychological factors, and social learning. Area studies will include sexual and gender development across the life span; interaction and communication within intimate relationships; reproductive and health-related sexuality topics; and a historical look at the evolution of mating and love relationships. In addition, students will examine the integration of human sexuality issues and education in health-related occupations. (Irreg.)

**4543 Comprehensive Stress Management.** Prerequisite: Health and Exercise Science major or permission. Helps students gain an awareness of stress and its effects, practice management techniques to reduce personal stress, and implement those techniques in their daily lives as well as the lives of others (school, community, corporation, etc.). Topics include: psychophysiology of stress, stress and disease, nutrition, personal planning and time management, cognitive restructuring, relaxation, and biofeedback. (Irreg.)

**4823 Sport and Exercise Nutrition.** Prerequisite: Health and Exercise Science major or permission of instructor. Provide students with a basic understanding of the influence of nutrition on sport and exercise performance. It will require students to integrate their knowledge of nutritional physiology, biochemistry and intermediary metabolism with that of exercise physiology and to apply this knowledge to develop a critical understanding of the nutritional and practical dietary needs of individuals participating in sport and exercise. (Irreg.)

**4833 Physiology of Exercise Laboratory.** Prerequisite: Health and Sport Sciences/Zoology 3823 or permission. Laboratory experiments emphasizing the understanding of fundamental physiological mechanisms, regulating responses, and adaptation to exercise. Basic analytical methodologies pertaining to the energy, muscular and circulatorespiratory systems. Includes factors affecting physiological performance capacities and experimental basis of exercise assessment and training. (F, Sp)

**4853 Chronic Disease Intervention.** Prerequisite: Health and Exercise Science major or permission. Provide students with a basic understanding of disease process in selected chronic diseases and intervention strategies for risk reduction and chronic disease prevention. Basic principles of epidemiology and chronic disease surveillance will also be covered. (Irreg.)

**4863 Physical Activity and Aging.** Prerequisite: 2913 and Zoology 2114, or permission of instructor. Discussion of general concepts of aging and the issues related to dying, the expected changes related to aging in the various physiological systems, i.e., body composition, cardiovascular, bone, and skeletal muscle. In addition, exercise programming concerns for the aged as well as the possible benefits of exercise during aging will be discussed. (Irreg.)

**G4933 Drug Education.** Prerequisite: 2913. Beneficial and harmful uses and effects of drugs. Motivations behind drug abuse, especially among youth, and implications of this problem on the individual, school and society. Consideration given to legislative and educational efforts. Investigation of interpersonal skills and communication interaction techniques. The use of values-clarification techniques. (F)

**4953 Senior Capstone.** Prerequisite: senior standing and completion of all HES core courses. An integration and synthesis of the major disciplines of study in the health and exercise science (HES). Readings, discussions and research methods will focus on applications and problem solving approaches related to contemporary policy, economic, social and ethical issues. [V]

**4990 Independent Study.** 1 to 3 hours. Prerequisite: three courses in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**G5000 Issues and Procedures in Health and Exercise Science.** 1 to 3 hours. Prerequisite: graduate standing or permission of instructor. May be

repeated with change of content; maximum credit six hours. Current topics such as the following: exercise prescription for the elderly; adherence to physical activity; exercise/ sport; theories of motivation applied to sport; neuro-psychology in motor control; personnel policies in public recreation. (Sp, Su)

**G5430 Internship in Health and Exercise Science.** 4 to 8 hours. Prerequisite: successful completion of course requirements in area of study; student must complete a minimum of 24 course hours, including all core requirements, before enrolling in internship; internship hours will be in addition to normal course requirements (i.e., 30-32). May be taken on a semester or two-semester basis; maximum credit eight hours. Field experience in area of study. Student will participate in on-the-job experiences in a wide range of hosting agencies, businesses and institutions. (F, Sp, Su)

**G5523 Health Promotion Strategies.** Prerequisite: graduate standing and permission of instructor. Will provide students with a basic introduction to the principles of health promotion. Specific topics will include risk appraisal and risk reduction, behavior change theories, program planning and management, holistic health/wellness, and others. (F)

**G5543 Stress Theory Research and Management Applications.** Prerequisite: graduate standing. Help students gain awareness of stress and its effects, practice management techniques to reduce personal stress, develop stress research skills and learn ways to implement stress management into their lives as well as into the lives of others (in schools, the community, worksites, etc.).

**G5553 Health Promotion Evaluation.** Prerequisite: graduate standing; 2913, 4923; or permission of instructor. Examination of the processes used to evaluate health promotion and health education programs. Includes: needs assessment, quality assurance evaluation, summarative evaluation, data analysis, and cost benefit analysis strategies. (F, Sp)

**G5563 Health Behavior I: Individual and Group Influences.**

Prerequisite: 3513, Psychology 1113 or permission of instructor. Focuses on behavioral theories and research which are pertinent to understanding factors/conditions that influence the development of and change processes related to health behavior in individuals or small groups such as family units. It is designed to provide a knowledge and theoretical base for integration of behavioral principles into research design and health promotion programming. (Sp)

**G5823 Exercise Physiology (Crosslisted with Industrial Engineering, Physiology 5823).** Prerequisite: Industrial Engineering 4823; Zoology 3104 or 3133; Physiology 5016 or 5019; or permission. Advanced study of physiological responses, regulatory mechanisms and adaptations of human performance and health; factors affecting performance and health; and training and evaluative techniques. (F)

**G5833 Advanced Exercise Physiology Laboratory.** Prerequisite: 5823 or permission. Laboratory experiments of a theoretical and applied nature emphasizing advanced concepts of physiological mechanisms, regulating responses and adaptation to exercise. Analytical and prescriptive methodologies pertaining to the energy, muscular and cardiorespiratory systems, including body composition techniques. **Laboratory** (Sp)

**G5843 Biomechanics (Crosslisted with Industrial Engineering 5843).** Prerequisite: 3843 or Industrial Engineering 4824 or permission. Review of muscle, bone and joint structure and function. Review of kinematic and kinetic principles as applied to human movement. Analysis of human movements using film, anthropometric, dynamometer, force platform, electromyographic and performance techniques. Application of human movement analysis to ergonomics, sport and rehabilitation. (Irreg.)

**G5853 Health Fitness: Theory and Application.** Prerequisite: 3513 or 4513 and Zoology 3133, or equivalent; graduate standing. A multidisciplinary study of health-fitness theories and their applications in preventive health. Emphases are threefold: first, to understand the underlying theoretical framework of epidemiological, biological and behavioral concepts; second, to develop skills to implement programs emphasizing physical fitness assessment and prescription; third, to critically examine the role of physical activity and fitness strategies in preventive and therapeutic health settings.

**G5863 Physiology of Aging.** Prerequisite: Physiology 2124, 3104 or Zoology 3133, or permission of instructor. Discuss the various theories of aging as well as the age expected changes in the various physiological systems (cardiovascular, respiratory, muscle, bone, nerve and body composition). In addition, exercise programming concerns for the aged as well as the possible benefits of exercise during aging will be discussed. (F)

**G5873 Clinical Exercise Physiology (Crosslisted with Physiology 5873).** Prerequisite: 5823 or PHYO 5006 or equivalent. Exercise is examined as an important clinical evaluation and management method. Recent

investigations and reviews in physiology and medicine are emphasized in study of the body's responses to exercise stress in the health-disease continuum. Primary focus is given to the mechanisms explaining pathophysiological processes that can be affected by exercise. (Sp)

**G5883 Exercise Endocrinology.** Prerequisite: 5823 or permission of instructor. In-depth examination of the role of the endocrine system on regulating acute and chronic metabolic responses to exercise. Special endocrine issues related to exercise physiology (i.e., diabetes) will be studied. (Irreg.)

**G5940 Intensive Studies in Health and Exercise Science.** 1 to 6 hours. Prerequisite: graduate standing or permission. Completion of research project under faculty supervision. Meets research requirement for non-thesis option. (F, Sp, Su)

**G5953 Scientific Investigations in Health and Exercise Science.** Prerequisite: graduate standing. Collection, analysis and interpretation of data. Critical evaluation of reported research related to human movement. (F)

**G5960 Directed Readings in Health and Exercise Science.** 1 to 6 hours. Prerequisite: graduate standing, permission. Designed for graduate students to provide them with an opportunity to investigate selected problems in the field. Thirty hours library and research work for each credit hour. Consultations with instructor required. Written report. Required for all students in a nonthesis program. (F, Sp, Su)

#### **G5963 Statistical Applications in Health and Exercise Science.**

Prerequisite: graduate standing or permission of instructor. The application of techniques used to organize, analyze, and interpret statistical data unique to health and exercise science. Topics include measures of central tendency, measures of variability, percentiles, sampling, correlation, regression, standard scores, and tests of significance through repeated measures ANOVA and including parametric, non-parametric tests. (Irreg.)

**G5970 Seminar in Health and Exercise Science.** 2 to 6 hours. Prerequisite: graduate standing. May be repeated with change of subject matter; maximum credit six hours. Study of pertinent and current problems of research. Students may use seminars to identify and develop thesis projects. Required written paper and research. (Sp)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. Required of all students writing master's thesis. Consultations with major professor required as thesis progresses. (F, Sp, Su)

**G5990 Independent Studies in Health and Exercise Science.** 1 to 6 hours. Prerequisite: graduate standing or permission. A study of selected problems under guidance of instructor. At least twenty-five hours of library and research time required for each hour of credit carried. Final paper required. (F, Sp, Su)

**G6523 Social Marketing in Health Promotion.** Prerequisite: 5523 or permission of instructor. Focuses on the incorporation of basic marketing principles into strategies for behavioral and social change. Targeted outcomes include individual behaviors, group/population norms, environmental supports and policies pertinent to health promotion and/or public health issues. (Su)

**G6543 Physical Activity and Health.** Prerequisite: graduate standing and permission of instructor. An examination of physical activity and exercise as they relate to health status and chronic disease prevention. Special emphasis will be placed on epidemiologic evidence of physical activity benefits across the lifespan in a variety of chronic disease states. (Irreg.)

**G6563 Health Behavior II: Community, Organizational and Population Influences.** Prerequisite: 5563 or permission of instructor. Focuses on behavioral theories and research which are pertinent to understanding macro influences on health behavior. It is designed to provide a knowledge and theoretical base for integration of behavioral principles in health promotion programming. Particular emphasis is placed on community, organizational, and population based intervention. (Sp)

**G6573 Intervention Mapping.** Prerequisite: 5563 and 6563, or permission of instructor. Course focuses on the process of developing health promotion programs using the steps of intervention mapping. Students are expected to have an understanding of needs assessment, the use of individual and community level behavior changing theories in the development of health promotion intervention, and program evaluation before taking the course. (Irreg.)

**G6824 Cardio-Respiratory Exercise Physiology.** Prerequisite: 5823 or permission of instructor. Focus on basic physiology of the cardiovascular and respiratory (CVR) system, including a review of basic CVR exercise physiology. Build upon this basic knowledge with presentation of research findings of the CVR system emphasizing exercise responses, adaptations

and regulatory mechanisms. Independently examine special topics, with opportunities for laboratory experiences, identified by the instructor and of particular interest in a seminar setting. (Irreg.)

**G6834 Human Body Composition.** Prerequisite: 5823 or permission of instructor. Technology used for assessment, factors such as gender, age and ethnicity effects on body composition measures. The relationship between body composition and disease and lab techniques. **Laboratory** (Irreg.)

**G6844 Neuromuscular Physiology.** Prerequisite: 5823 or permission of instructor. Basic microanatomy and physiology that will lend to an enhanced understanding of topics such as training, soreness, injury and disease. Provide lab based experience in assessment by computer techniques and ultra sonography. **Laboratory** (Irreg.)

**G6853 Chronic Disease Assessment and Intervention.** Prerequisite: graduate standing and permission of instructor. Provide basic understanding of selected chronic diseases including assessment, disease process, pharmacological and medical treatment and intervention strategies for reducing risk. (Irreg.)

**G6884 Endocrinology and Metabolism of Exercise.** Prerequisite: 5823 or permission of instructor. Provide in-depth examination of the energy metabolism during exercise and the role of endocrine system in regulating acute and chronic metabolic responses to exercise. Special endocrine issues related to physiology (i.e. diabetes) will be studied. **Laboratory** (Irreg.)

**G6940 Independent Research in Health and Exercise Science.** 1 to 3 hours. Prerequisite: master's degree and permission of instructor. May be repeated; maximum credit three hours. Supervised research for advanced graduate students on major projects with a faculty member. (F, Sp, Su)

**G6943 Special Topics/Problems in Health and Exercise Science.** Prerequisite: Graduate standing or permission of instructor. Special topics in health promotion and exercise science are considered in detail. Emphasis is placed on the intensive study of research literature in a designated specialty area in Health and Exercise Science. (Irreg.)

**G6953 Measurement Issues in Health and Exercise Science.** Prerequisite: 5823 or permission of instructor. Conceptual and measurement issues in health promotion and exercise science. Knowledge, attitude, and behavior assessment, principles of instrument construction, and assessment of physical activity, physical fitness, and human performance. (Irreg.)

**G6960 Directed Readings in Health/Exercise Science.** Prerequisite: Graduate standing and permission of instructor. May be repeated; maximum credit six hours. Special reading programs are designed to enable graduate students (1) to extend their study to fields that are not covered in other courses and/or (2) to provide an opportunity for more intensive study of subjects covered in other courses. (F, Sp, Su)

**G6970 Seminar in Health and Exercise Science.** 1 to 3 hours. Prerequisite: graduate standing and permission of instructor. May be repeated with change of subject matter; maximum credit nine hours. Study of pertinent and current problems of research. Students may use seminars to identify and develop area of dissertation research. (Irreg.)

**G6980 Research for Doctor's Dissertation.** 2 to 12 hours. (F, Sp, Su)

**G6990 Independent Study in Health and Exercise Science.** 1 to 3 hours. Prerequisite: master's degree and permission of instructor. May be repeated; maximum credit 12 hours. Supervised research for advanced graduate students on major projects with a faculty member. (F, Sp, Su)

## Hebrew (HEBR)

**1115 Beginning Hebrew.** An elementary course in understanding, speaking and writing Hebrew. This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics. (F, Sp) [I-FL]

**1225 Beginning Hebrew (continued).** Prerequisite: 1115. An elementary course in understanding, speaking and writing Hebrew. This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics. (F, Sp) [I-FL]

The prerequisite for 2000-level courses is 1225 or the equivalent.

**2113 Intermediate Hebrew.** Readings in Classical and post-Classical Hebrew with emphasis on independent and accurate translation. (F)

**2213 Intermediate Hebrew.** Readings in Classical and post-Classical Hebrew with emphasis on independent and accurate translation. (Sp)

**3113 Advanced Hebrew.** Prerequisite: 2113. With this course students will further develop the four basic skills of Hebrew. They are required to write

papers, read various genres (newspapers, poetry, Bible, etc.) and conduct discussions on various topics. Students should be able to express themselves in sophisticated and intelligent Hebrew orally and in writing. (F) **3223 Advanced Hebrew Continued.** Prerequisite: 3113. Students will continue to develop the four language skills. They will read literary texts and newspaper articles, write paragraphs on descriptive and comparative topics, develop an understanding of various spoken materials (lectures, speeches), and participate in discussions about social and professional topics. (Sp)

**3990 Independent Study.** 1 to 3 hours. Prerequisite: one course in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp)

**4990 Independent Study.** 1 to 3 hours. Prerequisite: three courses in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp)

## History (HIST)

**1113 History of Medieval Europe.** History of Europe from the fall of Rome to the end of the 15th century. Emphasis on the development of social structures and culture forms, and the sociocultural background of political and religious developments. (F, Sp)

**1223 Europe, 1500 to 1815.** An introductory survey of Europe in the early modern period. Topics include the Reformation, development of the nation-state, the Enlightenment, and the French Revolution and Napoleon. (F, Sp) [IV-WC]

**1233 Europe Since 1815.** An introductory survey of Europe from 1815 to the present. Examines the major political, economic, social and cultural trends in the major countries and European foreign affairs and overseas expansion. (F, Sp) [IV-WC]

**1483 United States, 1492 to 1865.** A general survey of United States history from its colonial origins to the end of the Civil War, with emphasis upon national political, diplomatic, economic, constitutional, social and intellectual developments. (F, Sp, Su) [IV-US]

**1493 United States, 1865 to Present.** A general survey of United States history from the Civil War to the present day, with emphasis upon national political, diplomatic, economic, constitutional, social and intellectual developments. (F, Sp, Su) [IV-US]

**1543 Introduction to American Indian History.** A history of American Indian people in North America and their role in shaping American history through the early 1970's. Emphasis will be on how cultural values influenced Indian-European interactions and how cultures change over time. (F, Sp) [IV-NW]

**1613 Western Civilization I.** History and culture of western civilization from origins of Greek society to end of religious wars in seventeenth century. (F) [IV-WC]

**1623 Western Civilization II.** History and culture of western civilization between 1660 and the present. Emphasis will be placed on western institutions and ideas, their evolution, and their influence elsewhere. (Sp) [IV-WC]

**1723 East Asia to 1600.** A general survey of the histories of China, Japan, Korea, and Vietnam to 1600. Focus on philosophical, cultural, social and political developments in each of the four regions under consideration, as well as intra-Asian interactions. (Irreg.) [IV-NW]

**1733 East Asia since 1600.** A general survey of the histories of China, Japan, Korea, and Vietnam from 1600 to the present. Focus on the political, social, and economic systems of these countries; major historical events; intra-Asian interactions and East Asia's response to the West. (Irreg.) [IV-NW]

**1913 World Civilizations to 1600.** Deals with the entire globe rather than with some one country or region; deals with all peoples, not just with Western or non-Western peoples. Focuses on historical forces or movements of worldwide influence. Comparative history. (F) [IV-WC]

**1923 World Civilization 1600-Present.** Deals with the entire globe rather than with one country or region; deals with all peoples, not just with so-called Western or non-Western peoples. Focuses on historical forces or movements of worldwide influence. Comparative history. (Irreg.) [IV-WC]

**2013 Ancient Near Eastern Civilizations.** A study of the major civilizations of the Ancient Near East from the last Pluvial period (ca. 8400 B.C.) through the first millennium B.C., with particular emphasis on the historic periods (ca. 3000 B.C. onwards). (Irreg.) [IV-NW]

**2023 Greek and Roman Civilization.** Covers the major political events of Greco-Roman history and civilization, but considerable attention will be devoted to Greek and Roman religion, historical writing, Roman law, engineering, and architecture; also Periclean Athens and Augustan Rome. Contributions of these civilizations to our own will be described. (Irreg.) [IV-WC]

**2033 African-American History to 1865.** Traces the history of African-American people from their African background to the end of the American Civil War. The topics to be covered will include precolonial African social systems, the Atlantic slave trade, the evolution of slavery in the New World and the African-American community in the United States. [IV-WC]

**2043 African-American History Since 1865.** Traces the history of African-American people from the end of the Civil War to the contemporary period. The topics will include African-American family during and after Reconstruction; African-American role in organized labor before 1915; Booker T. Washington-W.E.B. Leadership; Afro-American Migration, Harlem Renaissance and the Civil Rights movement. [IV-WC]

**2333 The British Empire.** A survey of the development of the British Empire and Commonwealth to the present day. Emphasis upon the period after the American Revolution; includes extension of control in Asia and Africa, movements of independence, the emergence of the Commonwealth and mid-twentieth-century challenges to the Commonwealth. (Irreg.) [IV-WC]

**2613 Colonial Hispanic-American History, 1492 to 1810.** The founding and development of the Spanish and Portuguese empires in America with special attention to the conquest of native civilizations and to the political, economic, social and intellectual institutions of the colonial period. (F, Su) [IV-WC]

**2623 History of Hispanic-American Nations, 1810 to the Present.** The emancipation and development of the Spanish-American nations (and of Brazil) with special attention to the movements for national independence, political unification, economic developments and social welfare. (Sp) [IV-WC]

**2683 Introduction to Islam.** Survey of the history of Islamic civilization in the Near East, North Africa, India and Malaysia from the advent of the Prophet to the modern period. (Irreg.) [IV-NW]

**2713 Survey of African Civilization.** Survey of the social, economic, political and cultural development of sub-Saharan African peoples from the emergence of human society to the present. (F) [IV-NW]

**2803 Survey of Russia.** An introduction to the history of Russia from its beginnings to the present day. Intended primarily for nonspecialists. (F) [IV-WC]

**3000 Topics in Ancient History.** 1 to 5 hours. May be repeated for credit with change of content. Discussion of a selected special problem or problems in ancient history. (Irreg.)

**3003 History of Sparta.** Traces the history of Sparta from its antecedents in the Heroic Age through the Dorian Invasion to the Roman conquest. (Sp) [IV-WC]

**3013 Archaic Greece.** An examination of the history of ancient Greece from the earliest times to the fifth century, with emphasis upon Minoan Crete, Mycenaean Greece, Homeric Greece and the Archaic era ©. 3000 to 500 B.C.). (F) [IV-WC]

**3023 Classical Greece.** An examination of the history of ancient Greece during its "classical" period, the fifth and fourth centuries B.C., with emphasis upon Athens, Sparta and Alexander the Great ©. 500-300 B.C.). (Irreg.) [IV-WC]

**3033 Alexander the Great.** Prerequisite: junior standing. Examines the Macedonian and 4<sup>th</sup> Century Greek background of Alexander, the career of Alexander, and the legacy of Alexander (the Hellenistic world). Topics include the breakdown of Greek unity, Alexander's conquests and military genius, his sudden death and the resulting wars of succession, the culture of the Hellenistic period. (Alt. F) [IV-WC]

**3043 Egypt and Mesopotamia.** Prerequisite: Junior standing or permission of instructor. A study of the ancient histories and cultures, literatures, religious thought, political ideas, and art. (Irreg.)

**3053 Medieval Italy.** Prerequisite: 1113 or 1613 or junior standing. A survey of Italy from circa 400-1350 CE, emphasizing the mix of Roman, Christian, and barbarian traditions, relations between the church and empire, and the role of cities and commerce. (Sp) [IV-WC]

**3060 Topics in Medieval History.** 1 to 5 hours. May be repeated for credit with change of content. Discussion of a selected special problem or problems in medieval history. (F, Sp)

**3063 The Ancient Art of War.** Traces the history of warfare from its origins through the ancient world to the beginning of the Middle Ages. (Sp) [IV-WC]

**3073 Women in Early Modern Europe.** Prerequisite: junior standing.

Examines the experience of women in Europe from c. 1350 to c. 1650. Examines ideas about women, life cycle, economic activity, education, exercise of power, and religion, noting the enhanced position of women from c. 1350, following the Black Plague, and the decline in that position which began c. 1500. (Irreg.)

**3083 The American Colonies.** A history of the British colonies in North America from the earliest discoveries and of the United States from the Second Continental Congress to the inauguration of Washington in 1789. (Irreg.) [IV-WC]

**3093 The United States: Revolution and New Nation to 1815.** The American Revolution and the development of political institutions under the Articles of Confederation and the Constitution; innovations of the Federalists; domestic and foreign affairs. (Irreg.) [IV-WC]

**3103 Slavery in World History.** Prerequisite: junior standing. Examines slavery and unfree labor from the earliest times in Mesopotamia to the present and includes an analysis of slavery in the American South and Latin America. Also traces the history of the Abolition Movement. (Irreg.) [IV-NW]

**3113 The Crusades.** Prerequisite: 1113 or 1613 or junior standing. Covers crusades to the Holy Land and Europe against Moors, pagans, heretics, and enemies of the Pope. Topics include crusade ideology, relations between Latins, Byzantines, Jews and Muslims, crusader states, techniques of warfare, and the experience of crusading. (F) [IV-WC]

**3120 Topics in Modern European History.** 1 to 5 hours. May be repeated for credit with change of content. Discussion of a selected special problem or problems in modern European history. (Irreg.)

**3123 War in European History.** Prerequisite: 1223 or 1233. A study of the impact of war on European history and the interaction of armies and society in the period from the fourteenth century to the present. [IV-WC]

**3133 Medieval Women.** Prerequisite: 1113 or 1613 or junior standing. Covers social history of women in western Europe from late Antiquity to the late Middle Ages. Topics include stages of life, marriage, families, occupation, law, power, health, religion, love, and education. (F) [IV-WC]

**3143 The Era of the Reformation.** An analysis of the forces leading to the religious upheaval in the sixteenth century and the spread of Protestantism in Northern European countries; the Catholic Reformation or Reaction; Thirty Years War; and the relation of the Reformation Era to medieval and modern civilization. (F) [IV-WC]

**3153 The Great War, 1914–18.** Prerequisite: 1223 or 1623. Examines the causes, conduct, and consequences of World War I, with primary emphasis on its cultural impact. (F) [IV-WC]

**3163 Europe from the French Revolution to Napoleon.** A social, political, military and cultural treatment of Europe from 1789 to 1815. Appropriate attention will also be given to causes of the French Revolution. (Sp) [IV-WC]

**3173 The Emergence of Modern European Society, 1815 to 1870.** Main emphasis is upon reaction, liberalism and nationalism in Europe from the Congress of Vienna to the fall of the Second Empire. Social, political, military and cultural trends are examined. (Irreg.) [IV-WC]

**3183 Europe in the Age of Imperialism, 1870 to 1914.** Political, social and military history of Europe with particular attention to World War I and its origins. (Irreg.) [IV-WC]

**3193 Europe in the Twentieth Century.** Major topics include World War I and the postwar settlements; the breakdown of democracy and the rise of totalitarian states; origins and course of World War II; and postwar Europe and the Cold War. (F) [IV-WC]

**3203 European Diplomacy Since 1815.** A study of diplomatic relations among the European powers from the Congress of Vienna to the present. (Irreg.) [IV-WC]

**3213 Intellectual History of Nineteenth-Century Europe.** Examination of the impact on European social and political development of concepts such as Nationalism, Imperialism, Socialism and Darwinism. (Irreg.) [IV-WC]

**3223 Intellectual History of Twentieth-Century Europe.** A general survey of the major intellectual developments in Western Europe since 1900, including the areas of social thought, religious thought, political philosophy, scientific thought, literature and drama. In each area the relationship of intellectual expression will be related to the historical context from which it emerged. (Irreg.) [IV-WC]

**3233 Modern Spain.** Prerequisite: junior standing. Examines the political, economic, social, and cultural aspects of modern Spanish history

(1808-present) and will attempt to place Spain within the context of European history, where it has often been ignored by European historians. (F, Su) [IV-WC]

**3243 European Women and Gender Relations-18th Century to Present.** Prerequisite: 1233 or 1623. Explores the social, cultural, political, and economic history of European women and gender relations from the Scientific Revolution to the present. (Irreg.) [IV-WC]

**3253 Hitler and Nazi Germany.** Prerequisite: 1233. Focuses on the man, the part, and the regime. Hitler's personality and ideological beliefs, the party's growth and membership, and the regime's structure and policies are investigated. The topics are discussed within the context of German history and political, social, and economic developments in 20<sup>th</sup> century Europe. (Irreg.) [IV-WC]

**3263 Germany 1800-1923: The Long Nineteenth Century.** Prerequisite: junior standing. This course surveys modern Germany's passage from pre-industrial feudalism at the beginning of the modern period, through national unification under an authoritarian empire, to its first unsuccessful democratic experiment in the aftermath of war and defeat in the 1920's. (Irreg.) [IV-WC]

**3273 History of Ireland, Part I.** Examines the early history of Ireland from the third century to 1600. Looks at early tribal culture, the advent of Christianity and its effect, the struggle for national unification, and relations with England. (Sp) [IV-WC]

**3283 History of Ireland, Part II.** Examines the history of Ireland from 1600 to the present day. Looks at the British conquest of Ireland, subsequent Anglo-Irish relations, events leading to Irish independence, and the origins and causes of present day sectarian violence. (Sp-alternate) [IV-WC]

**3290 Topics in British History.** 1 to 5 hours. May be repeated for credit with change of content. Discussion of a selected special problem or problems in British history. (Irreg.)

**3293 Antisemitism.** Prerequisite: junior standing. Covers the history of antisemitism, the world's oldest prejudice, from the Middle Ages to the present, with emphasis on the 19<sup>th</sup> and 20<sup>th</sup> centuries. Topics include antisemitism's religious and social roots, the Inquisition, the Holocaust, antisemitism of the right and left, and ethnic, black, and "genteel" antisemitism. (Irreg.) [IV-WC]

**3303 Women in North Africa.** Prerequisite: junior standing. Survey aspects of the lives of traditional and modern women in North Africa from the turn of the 20th century to the present. The course will look at Muslim (Arab and Berber) and Jewish women in both rural and urban settings in the pre-colonial, colonial, and post-colonial periods. In addition to lectures and readings, the classes will be augmented with documentary and artistic films. (F) [IV-NW]

**3313 Israeli Culture through Film.** Prerequisite: junior standing or permission of department. Introduces students to the Israeli culture in its modern day context of the young Jewish state. Focuses on the dynamic mosaic of this multi-faceted society which is still evolving. (Sp) [IV-NW]

**3323 Tudor England.** A study of England from 1485 to 1603. Topics covered include the establishment of the Tudor dynasty, Tudor administrative and political development, the English Reformation, foreign and colonial relations, economic growth, and sixteenth-century social and cultural life. (F) [IV-WC]

**3333 Stuart England.** A study of England from the accession of James I in 1603 to the death of Queen Anne in 1714. Topics covered include economic change and growth, colonial development, the Puritan revolution, constitutional and religious controversies following the Restoration, and social and intellectual developments. (Sp) [IV-WC]

**3343 Eighteenth-Century England.** A discussion of the domestic politics, society, economy, foreign affairs and constitutional and imperial development of England from the accession of the Hanoverians in 1714 to the passage of the First Reform Act of 1832. (Irreg.) [IV-WC]

**3353 England Since 1832.** Topical analysis of major developments in British life since 1832, including growth of political democracy, adaptation to industrialism, social and cultural change, foreign affairs, imperialism, growth of the welfare state. Britain's changed role in the twentieth century. (Irreg.) [IV-WC]

**3363 Legal and Constitutional History of England I.** The first part of a course of lectures on the development of the English constitution, and of legal concepts, institutions and procedures from the Anglo-Saxons to the present. (Irreg.) [IV-WC]

**3373 Legal and Constitutional History of England II.** Prerequisite: junior standing. The second of a two-part course on the development of the English constitution and of legal concepts, institutions and procedures from the Anglo-Saxons to the 20<sup>th</sup> century. It covers the period 1485-1911. (Irreg.) [IV-WC]

**3383 The American West.** A survey of the economic, political, social and cultural development of the American West. Particular attention will be paid to the West as a frontier process and as a causative factor in historical change. (F) [IV-WC]

**3393 History of Oklahoma.** Meets the requirement in Oklahoma history for teacher's certificate. A survey of Oklahoma history from its beginning to the present, including its Indian background, formation into territories, achievement of statehood, and general cultural, economic and political development. (F, Sp, Su)

**3403 America through Western Film.** Prerequisite: Junior standing. Examines 20th century American history focusing on western films. Surveys genre from dime novels and B-westerns through 1990's, with special emphasis on important themes such as race, gender, American identity, American politics, and mythology. (Irreg.)

**3413 Hebrew Civilization in Ancient Times.** A topical survey from 1400 B.C. to 425 A.D., dealing critically with the main institutions and their historical background from early tribal theocracy to the end of the Rabbinic Patriarchate under Rome. (Sp) [IV-WC]

**3423 War, Prosperity and Depression.** Prerequisite: 1493 or equivalent. American involvement in World War I, and the impact of war on American society; the postwar decade, innovations of a New Era, and the crisis of American individualism; Franklin D. Roosevelt, the New Deal, and tensions in Depression America. [IV-WC]

**3430 Topics in United States History.** 1 to 5 hours. May be repeated for credit with change of content. Discussion of a selected problem or problems in United States history. (F, Sp, Su)

**3433 The United States in the Cold War Era.** Prerequisite: 1493 or the equivalent. Examines changes taking place in American life during the second half of the twentieth century. Topics include the Cold War, McCarthyism, the New Frontier, Civil Rights Movement, protest in the 60s, the Vietnam War, and adaptations to a global economy. [IV-WC]

**3443 American Frontier to 1828.** Prerequisite: 1483. An analysis of frontier development in the region east of the Mississippi with special emphasis on a comparative view of world frontiers. (F) [IV-WC]

**3453 The American Frontier Since 1828.** An analysis of frontier development in the trans-Mississippi West with special emphasis on a comparative view of world frontiers. (Sp) [IV-WC]

**3463 The Life of the Mind in America: to 1815.** Main currents in American thought during the nation's first two centuries. How a uniquely American culture developed in response to a unique environment. Special topics: European intellectual background, early religious thought, the Enlightenment, Revolutionary ideology, racial thought, nationalism and the philosophic foundations of the new experiment in government. (Irreg.) [IV-WC]

**3473 Life of the Mind in America: 1815 to 1877.** Main currents in American thought during the nineteenth century. How American culture weathered the tests of expansion, sectionalism, Civil War and economic growth. Special topics: the ideology of American democracy, Romanticism and Transcendentalism, religion, reform, the debate over slavery, the impact of war and the intellectual defense of American capitalism. (Irreg.) [IV-WC]

**3483 The Life of the Mind in America: Since 1877.** Main currents in American thought in this century. How American culture responded to industrialization, urbanism, technology, world war, depression and affluence, and foreign entanglement. Special topics: liberalism, conservatism, radicalism and the debate over economic justice; literature, philosophy and art; the role of the intellectuals and their attempts to discover meaning in a complex world. (Irreg.) [IV-WC]

**3493 American Environmental History.** Examine American attitudes toward the environment since the founding of American colonies, evolution of natural resource policies, and lives of prominent figures in the "conservation" and "ecology" movements of the late nineteenth and twentieth centuries. (F) [IV-WC]

**3500 Special Topics in History.** Prerequisite: junior standing. May be repeated with change of content; maximum credit six hours. Covers topics not covered in current course listings or specific geographic area topics courses. (F, Sp)

**3503 World War II.** Prerequisite: junior or senior standing. Treats origins, conduct and outcome of World War II in global setting. Emphasis on roles of national interest, policy making, relations of states, and effects of war on societies involved. (F) [IV-WC]

**3513 American Constitutional History to 1900.** Prerequisite: 1483 or 1493. A study of the United States Constitution in its historical (social, economic, political, religious) context to 1900. (F) [IV-WC]

**3523 American Constitutional History, 1900-Present.** Prerequisite: 1483 or 1493. A study of the U.S. Constitution in its historical (social, economic, political, religious) context since 1900. [IV-WC]

**3533 The History of Early American Women.** Explores the history of American women from the seventeenth century to the mid-nineteenth century by focusing on women's lives from a wide variety of perspectives including demographic change, sexuality, work patterns, and political involvement. (F) [IV-WC]

**3543 The History of Modern American Women.** Explores the history of American women from the mid-nineteenth century to the present by focusing on women's lives from a wide variety of perspectives including demographic change, family life, sexuality, work patterns, and political involvement. (Sp) [IV-WC]

**3553 The Civil War.** A course of lectures on the social, economic, political, intellectual and military aspects of the years 1861 to 1865. (Irreg.) [IV-WC]

**3563 United States Diplomatic History (Crosslisted with Political Science 3563).** A survey of American diplomatic history from the War for Independence to the present, emphasizing relations with major European, Latin American and Far Eastern countries. [IV-WC]

**3573 Special Topics Colloquium.** Prerequisite: History major and junior standing or permission of instructor. May be repeated with change of topic, maximum credit 15 hours. A writing-intensive, open topic, seminar designed to improve students' research and writing abilities and introduce them to basic methodological issues in history. While the course is specifically meant to prepare students for their senior capstone course, the emphasis on research and writing will enhance their preparation for all upper-division history course. This course must be completed prior to enrolling for the senior capstone. (F, Sp)

**3583 History of Sport in America.** Examines the role of sport in American society, and uses sport as a device to explore social, historical and political topics like the commercialization of leisure, changing conceptions of masculinity, violence, racism, labor relations, gender relations, and working-class culture. (Irreg.)

**3593 Women in the American West.** Prerequisite: 1483 or 1493. Nineteenth-century gender ideologies, multi-cultural interaction and exchange, work roles and community building, participation in politics, and reform movements of women in Trans-Mississippi West. (Irreg.) [IV-WC]

**3603 Germany 1918-1990: The Short Twentieth Century.** Prerequisite: junior standing. Surveys Germany's experience from the period before the first world war into the 1990's. Students will explore the violent stresses challenging Europe's most dynamic industrial society, and the spiral into dictatorship, war and genocide after the failure of a fragile democracy in the first half of the century. The course tracks the subsequent challenges facing divided successor states of east and west between 1945 and the reunification of the 1990's. (Irreg.)

**3623 Conformity and Dissent in the 1950s and 1960s.** Examines conformity and dissent in the 1950s and 1960s. Topics include the consumer culture, suburbia, the impact of television, "McCarthyism", the Beats and the 1960s counterculture, student protest, civil rights and black nationalism, and women's liberation. (Irreg.) [IV-WC]

**3633 American Indian Ethnohistory to 1870.** Prerequisite: junior standing. Examines the ways in which native societies in North America responded to European invasions between 1492 and 1890. Emphasis will be placed on Indian culture, the way in which it changed, and the various governmental attempts to destroy it. (F) [IV-NW]

**3643 American Indian: 1870-Present.** Prerequisite: junior standing. Examines American Indian history since the 19th century reservation era. Major themes include life patterns, cultural survival patterns, pan-Indian movements, the Indian Reorganization Act, relocation and termination policies, and self-determination issues. (Sp) [IV-WC]

**3653 The Media and Social Change in 20th Century United States.** Prerequisite: 1483 or 1493. A history of the interaction between the American people and the six most important ways of receiving information about their world during the 19th and 20th centuries. These include mass

market newspapers (also known as the "penny press"), modern advertising, motion pictures, comic books, radio, and television. This is not an introduction to journalism or communications theory, nor a course in film history. (Irreg.) [IV-WC]

**3663 Political Islam.** Prerequisite: junior standing. The study of radical Islamic thinkers, political parties, and governments in the modern Middle East. (Irreg.)

**3673 African-American Thought in the 20<sup>th</sup> Century.** Prerequisite: 2043. Survey of the key African-American thinkers of the 20<sup>th</sup> century. (Irreg.) [IV-WC]

**3690 Topics in Latin American History.** 1 to 5 hours. May be repeated for credit with change of content. Discussion of a selected special problem or problems in the history of Latin America. (F)

**3693 Political/Socioeconomic History of South Africa.** Prerequisite: 2713. Traces the political and socioeconomic experience of South Africans from 1652 to the present. Emphasizes political and social transformation of South African from racial segregation to Apartheid. Also examines the post-Apartheid changes in contemporary South Africa. (Irreg.) [IV-NW]

**3703 Native Peoples of Latin America.** Explores the history of Latin America's indigenous peasantry and the issue of ethnicity in the modern world. Focus is on the people of Mexico, Guatemala, Peru and Brazil. (Irreg.) [IV-NW]

**3713 History of Mexico, 1800-present.** Explores the history of Mexico from independence to the present. Particular attention is paid to the issues of statebuilding, dependency, revolution, and post-revolutionary change. (Irreg.) [IV-WC]

**3723 Africa Since 1945.** Prerequisite: junior standing. The course thematically and chronologically examines social, political, cultural and economic developments in Africa from the end of World War II to the contemporary period. The growth of millenarian religious movements, nationalism, decolonization, and the post-colonial nation states are among the topics examined. (F) [IV-NW]

**3740 Topics in African History.** 1 to 5 hours. May be repeated for credit with change of content. Discussion of a selected special problem or problems in African history. (Sp, Su)

**3743 Southern Africa Since 1800.** Focuses on the socio-economic and political evolution of Southern Africa as a distinctive region from 1800 to the contemporary period. The preponderant role of South Africa in the development of the region will be emphasized, while Zimbabwe, Mozambique and Angola will also be closely studied. (Sp) [IV-NW]

**3753 Cultural Revolutions of the 1960's.** Prerequisite: junior standing. Examines the rapid political, economic and cultural changes of the 1960's as a world-wide phenomenon. (Irreg.)

**3763 Eastern Europe since 1938.** Prerequisite: 1233 or 1623. Studies the impact on eastern Europe of World War II, Nazi and Soviet occupation, Stalinism, communist reform efforts, the collapse of communist rule, and subsequent transformations. (Sp) [IV-WC]

**3770 Topics in Russian and East European History.** 1 to 5 hours. May be repeated for credit with change of content. Discussion of a selected special problem or problems in Russian or Eastern European history. (Sp)

**3773 Pan-African Movement.** Traces the history of the Pan-African idea from Edward Blyden to Kwame Nkrumah, and pays special attention to African efforts to unify the African states under the rubric of the Organization of African Unity. Highlighted in the course are W.E.B. DuBois, Marcus Garvey, George Padmore, and Kwame Nkrumah. (Irreg.)

**3783 Africa Since 1800.** Thematically traces the evolution of Africa during the colonial period and explains how the continent moved to independence in the second half of the twentieth century. Such topics as the development of formal colonies and protectorates, the missionary factor and African nationalism will be studied. (F) [IV-NW]

**3793 Imperial Russia.** A study of the origins and growth of the Russian Empire, origins and development of autocracy and serfdom, Russia's emergence as a great power, its reforms and revolutions. (Sp, Su) [IV-WC]

**3803 The Era of the Russian Revolutions.** Deals specifically with the conditions and events of change in Russia between 1905 and 1921. Seeks to take into account the broad questions of industrialization and backwardness, the popular responses to these matters and the rise of radical groups. Beyond this setting, major attention will be placed on the dissolution of the old regime during World War I and the two revolutions of March and November 1917, as well as the civil wars and the NEP. (Sp)

**3813 The Soviet Union: Development and Problems.** Detailed study of political, social, cultural and economic developments in the Soviet Union in world affairs. (F) [IV-WC]

**3823 History of Japanese Culture.** Prerequisite: junior standing. Surveys the development of Japanese civilization from the earliest times to the present through art, architecture, literature, religions, and political ideas. (Irreg.) [IV-NW]

**3833 Nation Building in East Central Europe, 1790 to 1939.** A comparative study of the social and political processes of nation building among the Polish, Czech, Slovak, Magyar, and Yugoslav peoples; the attempts of the Habsburg and Tsarist empires to deal with national diversity; the emergence of independent nation-states; and the problems of domestic and international instability between the two world wars. (Irreg.) [IV-WC]

**3840 Topics in Asian History.** 1 to 5 hours. May be repeated for credit with change of content. Discussion of a selected special problem or problems in Asian history. (Sp, Su)

**3843 International Relations in the Middle East.** Prerequisite: junior standing or permission of instructor. Covers the major wars of the region beginning with the first world war, when the modern state system was created, and ending with the Gulf War, when the U.S. hoped to construct a new world order. The Arab-Israeli conflict, the Cold War, the contest for control of the Persian Gulf and oil markets are also covered. Discussed will be the role of the great powers as well as the major Middle Eastern states in shaping international relations in the region over the past century. (Irreg.)

**3853 Japan to 1850.** Prerequisite: 1723 or 1733 or junior standing. Trace the history of Japan beginning with the earliest Jomon and Yayoi cultures and ending with the unraveling of the last feudal regime in the nineteenth century. (Irreg.) [IV-NW]

**3863 Japan Since 1850.** Prerequisite: 1723 or 1733 or junior standing. Designed to introduce students to the history of Japan from the 1850's to the present. Will include the Meiji restoration, industrial development, imperial expansion, wartime mobilization, the U.S. occupation, economic recovery and high growth, and the changing political and popular culture of the 1980s and 1990s. (Irreg.) [IV-NW]

**3873 Traditional China.** Survey of Chinese history to 1700. Roots of longevity of Chinese civilization; salient features of traditional Chinese society; evolution of the bureaucratic state; philosophy and religion; literature and the arts; elite and popular culture; major historiographical debates on the nature of Chinese society; significance of China in East Asian and world history. (Alt. F) [IV-NW]

**3883 Modern China to 1945.** Manchu conquest of China; founding of the Ch'ing dynasty; High-Ch'ing culture; foreign imperialism; internal disintegration; reforms and revolution; warlord politics; Nanking decade; New Culture Movement; rise of Chinese Communism; Sino-Japanese War. (Alt. Sp) [IV-NW]

**3893 Culture and Society in the Middle East.** Prerequisite: junior standing or permission of instructor. Covers the major social and cultural conflicts which have defined the peoples and states of the modern Middle East from 1800 to the present. The focus will be on Turkey, Iran, Egypt and Israel. History texts, primary documents, and novels will be read. Particular attention will be paid to the debates over the place of women and religion. (Irreg.)

**3903 Contemporary Japan.** Prerequisite: 1733 or 3863. Explores the unique politico-economic system that developed in Japan following the Pacific War. While emphasizing the characteristics of this system, students also learn about the people living in it, how they adapt, how some do not, and the challenges facing Japan today. (Irreg.) [IV-NW]

**3913 The Samurai in Japanese History.** Prerequisite: 1723 or 1733 or 3853. Explores the history of the most popular figure in Japanese history. Covers warfare and invasion before the formation of the early state up to the suicide of the last Samurai in 1970. (Irreg.) [IV-NW]

**3923 Contemporary China.** Survey of Chinese history since 1949. Founding of the People's Republic of China; Great Leap Forward; communication; Hundred Flowers Campaign; Cultural Revolution; China after Mao; Taiwan; Sino-American relations; China and the Third World. (Alt. F) [IV-NW]

**3933 History of the Great Witch-Hunt in Early Modern Europe and America (Crosslisted with Womens' Studies 3933).** Prerequisite: junior standing. Covers an important era in the history of human rights and misogyny while offering a view of early modern Europe through social, legal, political, and religious lenses. (Irreg.) [IV-WC]

**3943 European Fascism.** A comparative analysis of the ideology, popular appeal, and success or failure of fascist movements in modern Italy, Germany, and other West and East European countries. (Alt. F) [IV-WC]

**3950 Topics in Middle Eastern History.** 1 to 3 hours. Prerequisite: junior standing. May be repeated with change of content; maximum credit nine

hours. Discussion of a selected problem or problems in Middle Eastern history. (Irreg.)

**3953 The Modern Middle East.** Explores the political and social history of the modern countries of Egypt, Iraq, Israel, Jordan, Lebanon, Saudi Arabia, Syria and Turkey and areas affected by them from 1500 to the present. (F) [IV-NW]

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program and permission. May be repeated; maximum credit six hours. Will consist of topics designated by the instructor in keeping with the student's major program. The topics will cover materials not usually presented in the regular courses. (F, Sp, Su)

**3963 Rebirth of Israel.** Prerequisite: junior standing. Examines the historical evolution of the Zionist movement in the second half of the 19<sup>th</sup> century through the establishment of the State of Israel in the mid-20<sup>th</sup> century within the framework of Jewish modernization, antisemitism, and conflicting modern nationalisms. (Irreg.) [IV-WC]

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. The projects covered will vary. The content will deal with concepts not usually presented in regular coursework. (Sp, Su)

**3973 Judaism—A Religious History.** Prerequisite: junior standing. Introductory survey of Judaism from its earliest origins in the ancient Near East to the present. Development of ideas, forms of worship, and religious expression as well as sectarian trends and variations will be examined. (Irreg.) [IV-NW]

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work at a special project in the student's field. (F, Sp, Su)

**3983 Medieval Jewish History.** Prerequisite: junior standing or permission of instructor. Survey of Jewish history from the fall of the Second Temple in 70 C.E. to the expulsion from Spain in 1492. Primary emphasis on the social and intellectual history of the Jewish communities of the Islamic world and of Latin Christendom and their relations with the two great medieval civilizations. (Irreg.) [IV-NW]

**3993 The Evolution of Martyrdom in the Judeo-Christian Civilization.** Prerequisite: junior standing. Traces the historical development of martyrdom in Judaism and Christianity to understand what motivated individuals and communities to give up their lives for their convictions. Compare the evolution of the idea of martyrdom in Judaism and Christianity to identify differences and similarities between these two faiths. (Irreg.) [IV-WC]

**4973 Undergraduate Seminar in History.** Prerequisite: History majors may enroll only after completing 75 credit hours of undergraduate coursework, 24 hours of which must be history. Non-majors may enroll with permission of instructor. May be repeated with change of content; maximum credit nine hours. Extensive research in historical sources and literature relating to a special problem or topic selected by the instructor. Emphasis will be on the individual preparation of research papers. (F, Sp, Su) [V]

**4990 Independent Study.** 1 to 3 hours. Prerequisite: three courses in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**G5050 Directed Readings in History.** Prerequisite: graduate standing. Graduate-level independent study for master's candidates only. (Irreg.)

**G5054 Historical Methods—Bibliography and Criticism.** Prerequisite: graduate standing or permission. The nature and philosophy of history; techniques of research and writing. (F)

**G5110 Independent Studies in European History.** 1 to 4 hours.

Prerequisite: permission of instructor. May be repeated with change of content; maximum credit 15 hours. Independent study, arranged between the professor and student, in the history of Europe. (F, Sp, Su)

**G5143 Government Publications (Crosslisted with Library and Information Studies 5143).** Prerequisite: LIS 5013 or permission of instructor. Acquaints the student with the basic reference sources that provide access to the publications of governmental organizations. United States government publications are stressed. Topics include: the basic catalogs and indexes; depository system; acquisition, selection, organization, use of, and on-line retrieval of government publications. (Irreg.)

**G5210 Independent Studies in American History.** 1 to 4 hours.

Prerequisite: permission of instructor. May be repeated with change of

content, maximum credit 15 hours. Independent study, arranged between the professor and student, in the history of America. (F, Sp, Su)

**G5300 Directed Readings in Medieval History.** 1 to 5 hours.

Prerequisite: graduate standing, a reading knowledge of either French or German, and permission of instructor. May be repeated with change of content and permission; maximum credit 12 hours. A supervised program of readings in a selected special problem in medieval history. (F)

**G5310 Independent Studies in Latin American History.** 1 to 4 hours.

Prerequisite: permission of instructor. May be repeated with change of content, maximum credit 15 hours. Independent study, arranged between the professor and student, in the history of Latin America. (F, Sp, Su)

**G5320 Research in Medieval History.** 1 to 5 hours. Prerequisite: graduate standing, reading knowledge of Latin, and permission of instructor. May be repeated with change of content; maximum credit 12 hours. A supervised program of research in the sources for medieval history, preparatory to research for the master's thesis in medieval history. (F, Su)

**G5410 Independent Studies in African History.** 1 to 4 hours. Prerequisite: permission of instructor. May be repeated with change of content; maximum credit 15 hours. Independent study, arranged between the professor and student, in the history of Africa. (F, Sp, Su)

**G5510 Independent Studies in Asian History.** 1 to 4 hours. Prerequisite: permission of instructor. May be repeated with change of content; maximum credit 15 hours. Independent study, arranged between the professor and student, in the history of Asia. (F, Sp)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp, Su)

**G6050 Research Problems.** 2 to 5 hours. Prerequisite: 12 hours of history and permission. May be repeated with change of content; maximum credit 15 hours. An individual course of intensive research with the area and problem to be determined by the student and directing instructor. (F, Sp, Su)

**G6160 Advanced Readings in European History.** 1 to 4 hours. Prerequisite: permission of instructor; student must be at Ph.D. level. May be repeated with change of content; maximum credit 15 hours. Independent study in the history of Europe; designed to give students the opportunity to do intensive readings in his/her major fields of study under direct guidance of his/her advisory committee. (F, Sp, Su)

**G6200 Seminar in European History.** 2 to 4 hours. Prerequisite: graduate standing with permission. May be repeated with change of content. Training in historical research, bibliography and historiography, featuring reports and criticism. (F, Sp)

**G6230 Advanced Directed Readings in Medieval History.** 1 to 5 hours.

Prerequisite: master's degree or equivalent in history, reading knowledge of French and German and permission of instructor. May be repeated with change of content and permission; maximum credit 18 hours. A supervised program of readings on a selected special problem in medieval history. (F)

**G6240 Advanced Research in Medieval History.** 1 to 5 hours. Prerequisite: master's degree in history, or its equivalent, reading knowledge of Latin, German and French, and permission of instructor. May be repeated with change of content; maximum credit 18 hours. A supervised program of research in the sources of medieval history, preparatory to the research for the doctoral dissertation in medieval history. (F)

**G6260 Advanced Readings in American History.** 1 to 4 hours. Prerequisite: permission of instructor; student must be at Ph.D. level. May be repeated with change of content; maximum credit 15 hours. Independent study in American history; designed to give students the opportunity to do intensive readings in his/her major fields of study under direct guidance of his/her advisory committee. (F, Sp)

**G6300 Seminar in Latin American History.** Prerequisite: graduate standing and permission. May be repeated with change of content; maximum credit nine hours. Training in historical research, bibliography and historiography. Features reports and criticism. (Irreg.)

**G6360 Advanced Readings in Latin American History.** 1 to 4 hours.

Prerequisite: permission of instructor; student must be at Ph.D. level. May be repeated with change of content; maximum credit 15 hours. Independent study in Latin American history; designed to give students the opportunity to do intensive readings in his/her major fields of study under direct guidance of his/her advisory committee. (F, Sp)

**G6400 Seminar in American History.** 1 to 4 hours. Prerequisite: graduate standing with permission. May be repeated with change of content. Training in historical research, bibliography and historiography. Features reports and criticism. (F, Sp)

**G6460 Advanced Readings in African History.** 1 to 4 hours. Prerequisite: permission of instructor; student must be at Ph.D. level. May be repeated with change of content; maximum credit 15 hours. Independent study in African history; designed to give students the opportunity to do intensive readings in his/her major fields of study under direct guidance of his/her advisory committee. (F, Sp)

**G6500 Africa Since 1945: Nationalism and the Postcolonial State.** 1 to 4 hours. Prerequisite: graduate standing with permission. Training in historical research, bibliography, and historiography. Features reports and criticism. Emphasizes how nationalist movements contributed to the liberation of African countries from European colonialism. Also examines how the postcolonial state initially developed multi-party democracy but only for a brief period. (Irreg.)

**G6560 Advanced Readings in Asian History.** 1 to 4 hours. Prerequisite: permission of instructor; student must be at Ph.D. level. May be repeated with change of content; maximum credit 15 hours. Independent study in Asian history; designed to give students the opportunity to do intensive readings in his/her major fields of study under direct guidance of his/her advisory committee. (F, Sp, Su)

**G6600 Seminar in Middle Eastern History.** 1 to 4 hours. Prerequisite: graduate standing with permission. May be repeated with change of content; maximum credit 12 hours. Training in historical research, bibliography, and historiography. Features reports and criticism. (Irreg.)

**G6800 Seminar in Modern Japanese History.** 1 to 4 hours. Prerequisite: graduate standing with permission. May be repeated with change of content; maximum credit 12 hours. Training in historical research, bibliography, and historiography. Features reports and criticism. (Irreg.)

**G6980 Research for Doctor's Dissertation.** 2 to 16 hours. (F, Sp, Su)

## History of Science (HSCI)

The department offers courses which are slashlisted so undergraduate students may take an undergraduate 4000-level course while graduate students may take a graduate 5000-level course. The lectures in a slashlisted course are the same. However, students in the 5000-level course have substantial additional requirements beyond those for students in the 4000-level course. These additional requirements are listed in the slashlisted course syllabus.

**1133 Science and Popular Culture.** Draws on interdisciplinary perspectives to examine the interplay between science and popular culture from the Scientific Revolution to the present. Topics include representations of science, scientists, and nature in popular literature, television, films, and documentaries; the development of zoos and science museums; children and science, and science journalism. (Sp) [IV-WC]

**2103 The Origins and Development of Modern Science.** Prerequisite: sophomore standing. May be repeated once with change of section. 1. Science and Civilization; 2. Science and Religion in Historical Perspective; 3. Science, Frauds and Fallacies; 4. History of Science and Technology; 5. History of Evolutionary Thought; 6. Science in Its Social Context: 1600 to the Present. (F, Sp, Su)

**2223 Lives in Science: History of Science Through Biography.** Prerequisite: sophomore standing or permission of instructor. A biographical approach to the history of science. Accounts of selected scientific figures' lives are studied from various periods and cultures. Special attention is given to critical analysis and interpretation of scientific biographies, and to differing traditions in biographical treatment of scientists. (Sp) [IV-WC]

**2333 Inventing the Modern World.** A survey of the history of technology since 1500. The course emphasizes historical contexts and cultural meanings, not technical details, as it explores the key steps in the construction of our modern technological world. Materials include literature and film as well as non-fiction. (F) [IV-WC]

**+G3013 History of Science to the Age of Newton.** Prerequisite: junior standing or permission. A survey of Western people's efforts to understand the natural world, from earliest historical times to the seventeenth century. (F, Sp, Su) [IV-WC]

**+G3023 The History of Science Since the Seventeenth Century.**

Prerequisite: junior standing or permission. A survey of the historical and intellectual development of modern science. (F, Sp, Su) [IV-WC]

**3423 Modern Medicine – A Historical Introduction.** Prerequisite: junior standing or permission of instructor. Examines the history of modern

medicine in Europe and America. Aims to connect medical ideas and practices to the broader social and cultural contexts in which they were developed. (Irreg.) [IV-WC]

**3433 Science, Technology, and Politics: International Perspectives.** Prerequisite: junior standing, or permission of instructor. Focuses on interactions among professionals, the public, and the state, with case studies drawn from different national contexts. Topics will vary, but can include such issues as AIDS; genetically-modified organisms; legal testimony; nuclear power; global warming; weapons development; mass transit; cloning; and science and engineering education. (Irreg.) [IV-WC]

**3443 Historical Studies of Science in a Religious World.** Prerequisite: junior standing or permission; previous history/history of science course recommended. An overview of major events in the intersection of science and religion from the Middle Ages to the present. Detailed look at the historical record and exploration of the background of the people involved, the social and political context, and the reasons why certain issues mattered so much. (Irreg.) [IV-WC]

**3453 Science and Civilization in Islam.** Prerequisite: junior standing or permission. History of scientific traditions and ideas in Islamic civilization, from the origins of Islam to the early modern period. Emphasis is on the derivation, development and transmission of Islamic science, as well as on the assimilation and influence of science within Islamic culture. (Sp) [IV-NW]

**3463 Cold War Science.** Prerequisite: junior standing or permission. Science and technology during the Cold War, including strategic weapons and SDI, medical experiments, the space race, science in popular culture, and science and foreign policy. (Irreg.) [IV-WC]

**3473 History of Ecology and Environmentalism.** Prerequisite: junior standing or permission of instructor. Explores the historical development and interaction of ecology as a profession and a political stance from the eighteenth through the twentieth century. The course centers on the science of ecology, with attention paid to the political ramifications of particular ideas and how they have been incorporated into environmental discussions (conservation, the Dust Bowl era, population control, the DDT controversy, and rainforest deforestation). (Irreg.) [IV-WC]

**3493 The Cultural History of Information.** Prerequisite: junior standing or permission of instructor. An introduction to the history of information technologies and communications media from the printing press to the internet. Topics will include the print revolution, the advent of electronic communications, the growth of broadcast media, the development of the digital computer, and the internet boom. Course materials include novels and films as well as non-fiction. (Irreg.) [IV-WC]

**3550 Topics in the History of Science.** 1 to 3 hours. Prerequisite: junior standing and permission of instructor. May be repeated with change in content; maximum credit six hours. Topics of special interest in the history of science. (Irreg.)

**3813 Science in the Ancient World.** Prerequisite: junior standing or permission. An examination of science and scientific inquiry in the Near East and Greece in antiquity. Topics include the origins of ancient science, the transmission and interaction of various scientific traditions, the relation between science and philosophy, the development of a concept of science, and the place of science within the cultures of the period. (Irreg.) [IV-WC]

**3823 Science in Medieval Culture.** Prerequisite: junior standing or permission. A survey of the historical development of medieval scientific, mathematical, medical, and philosophical thought. (Irreg.) [IV-WC]

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Will consist of topics designated by the instructor. The topics will cover materials not usually presented in regular coursework.

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. The projects covered will vary. The content will deal with concepts not usually presented in regular coursework.

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Will provide an opportunity for the gifted honors candidate to work at a special project. (Irreg.)

**4833 Renaissance and Early Modern Science.** Prerequisite: 3013 or permission of instructor. Sixteenth- and seventeenth-century science. Detailed studies of scientific theories and the scientific enterprise in the early modern period. (Irreg.)

**4990 Independent Study.** 1 to 3 hours. Prerequisite: three courses in general area to be studied; permission of instructor and department. May

be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**G5513 Advanced Studies in the History of Ancient and Medieval Science.** Prerequisite: 3013 or equivalent, or permission of instructor. May be repeated with change of content; maximum credit 12 hours. Thematic historical analyses of ancient and/or medieval foundations of science, focusing on the development of particular disciplines or scientific institutions, the relationship between science and religion, or transmission of science. Includes examination of sources and critical assessment of scholarly interpretations. (Irreg.)

**G5523 Advanced Studies in the History of Renaissance and Early Modern Science.** Prerequisite: 3013 or 3023, or equivalent, or permission of instructor. May be repeated with change of content; maximum credit 12 hours. Thematic historical analyses of scientific ideas and practices in the scientific revolution and the ideas and practices in the scientific revolution and the enlightenment, 16<sup>th</sup>–18<sup>th</sup> centuries. Includes examination of sources and critical assessment of scholarly interpretations. (Irreg.)

**G5533 Advanced Studies in the History of Modern Science.** Prerequisite: 3023, or equivalent, or permission of instructor. May be repeated with change of content; maximum credit 12 hours. Thematic historical analyses of modern science and culture focusing on the European and American development and professionalization of scientific disciplines, interdisciplinary relationships among the sciences, and intersections between scientific and public culture. Includes examination of sources and critical assessment of scholarly interpretations. (Irreg.)

**G5550 Topics in the History of Science.** 1 to 3 hours. Prerequisite: graduate standing and permission of instructor. May be repeated with change of content; maximum credit 12 hours. Topics of scholarly interest in the history of science.

**G5960 Directed Readings in the History of Science.** 1 to 4 hours. Prerequisite: graduate standing and permission of instructor. May be repeated with change of content; maximum credit six hours toward M.A. degree, 12 hours toward Ph.D. degree. Intensive readings in a selected area of the history of science, under the direction of a graduate faculty member.

**G5970 Seminar: Research, Criticism and Analysis.** 2 to 3 hours. Prerequisite: permission of instructor. May be repeated with change of content; maximum credit 15 hours. Fundamentals of investigation and exposition in the history of science. (F, Sp)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp, Su)

**G5990 Special Studies.** 2 to 5 hours. Prerequisite: permission of instructor. May be repeated with change of content; maximum credit nine hours. Specialized studies in the history of science. Individual research culminating in the preparation of a research paper. (F, Sp, Su)

**G6970 Seminar in the History of Science.** 2 to 3 hours. Prerequisite: permission of instructor. May be repeated with change of content; maximum credit 15 hours. Advanced study and historical criticism in specialized areas. (F, Sp)

**G6980 Research for Doctor's Dissertation.** 2 to 16 hours. (F, Sp, Su)

**3223 American Thought and Culture in the 1940s.** Prerequisite: English 1213 and permission of Honors College. Study of America in the 1940s through an examination of American intellectual and cultural life. Among the themes discussed are wartime American culture, modern American liberalism and conservatism, the effects of McCarthyism, the changing place of women and minorities in American life, and anxieties about life in the atomic age. (Irreg.) [IV-WC]

**3233 American Politics and Society Since 1945.** Prerequisite: permission of Honors College. Examines the background of a number of important and controversial issues in American society since 1945, especially the problems of race, gender, and class conflict. (Irreg.) [IV-WC]

**3313 Autobiography in America.** Prerequisite: junior standing and permission of Honors College. An investigation of the canonical texts of American autobiography from 1682 to the present. Students will study the primary genres in American autobiography including spiritual autobiographies, captivity and slave narratives, immigrant autobiographies, and stories of the "self-made man," as well as texts that subvert these models. Also examine current issues in contemporary literary scholarship on autobiography, including self-fashioning, problems of truth and authenticity, issues of collaboration and co-optation and the dynamics of canon formation. (F) [IV-AF]

**3323 Introduction to American Women's Writing.** Prerequisite: junior standing and permission of Honors College. A study of women's writing in America from the colonial period to the present day. Genres to be studied include poetry, short stories, drama, and the essay. The course also provides a survey of feminist approaches to literary theory and criticism. (F) [IV-WC]

**3413 U.S. Environmental History.** Prerequisite: junior standing and permission of Honors College. Examines past interactions between humans and the natural world in what is now called the United States. Issues to be discussed include native American resource management, the ecological impact of European colonization, resource exploitation in the industrial era, the origins of preservation/conservation, and the roots of environmental problems/debates. (F) [IV-WC]

**3513 Biotechnology.** Prerequisite: Zoology 1114 or Microbiology 3813 or Botany 1114 and permission of Honors College. Survey of the most active areas in the field including recombinant DNA technology, protein engineering, large-scale cultivation of microorganisms, commercial exploitation of microorganisms, mammalian cells in culture and their application in vaccine production and monoclonal antibody production, gene therapy, and genetic engineering in plants. (F)

**3613 Alcohol and Drugs in American Society.** Prerequisite: permission of Honors College. An interdisciplinary study of the use and abuse of alcohol, illicit drugs, and licit pharmaceuticals in the United States from 1790 to present. Explores the changing perception of drug use and users within the contexts of immigration, the rise of industrial capitalism, urbanization, foreign policy priorities, and the evolution of the medical profession and drug industry. The course draws on historical, sociological, anthropological, and medical texts, as well as music and film. (Irreg.) [III-SS]

**3713 Religion in America.** Prerequisite: permission of Honors College. Traces the development, character and impact of religion in America from the pre-colonial era to the present. (Irreg.) [IV-WC]

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Will consist of topics designated by the instructor. The content will emphasize work not presented in other courses. (F, Sp, Su)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: member of Honors College Curriculum in good standing. An upper-division Honors College course to be used by departments and by the Honors College. (F, Sp, Su)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated with change of content; maximum credit six hours. Will provide an opportunity for the gifted honors candidate to work at a special project under the guidance of a professor in the student's field. (F, Sp, Su)

**3993 Honors Colloquium.** Prerequisite: admission to and good standing in Honors College Curriculum. May be repeated with change in course topic. An interdepartmental course involving two or more instructors from different departments. (Sp)

## Honors Program (HON)

**2970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors College Curriculum. May be repeated; maximum credit six hours. (F, Sp)

**2973 Perspectives on the American Experience.** Prerequisite: permission of Honors College. May be repeated; maximum credit six hours. An interdisciplinary investigation of the social, economic, and political realities of American life and culture from the late nineteenth century to the present. Topics to be treated include immigration, the rise of mass production and consumer culture, the Great Migration, the Cold War, 1960s social movements, and current "culture wars." (Sp) [IV-WC]

**3213 American Politics and Culture in the Great Depression.**

Prerequisite: junior standing and permission of Honors College. Explores the complicated relationship between politics and culture in America during the 1930s, an era of enormous political and cultural ferment, through primary and secondary materials, including novels, short stories, journalism, movies, and works of history. (F)

## ***Human Relations (H R)***

**Courses offered through the Advanced Programs format have a two-hour credit award with a one-hour additional independent study option, and the course numbers are listed on the transcript as ending with 2 and 1. To gain the full equivalent of the content as the comparable course listed on campus, both the two-hour and one-hour enrollment must be completed.**

**3003 Human Relations Theory.** Prerequisite: junior standing or permission of instructor. Emphasizes key ideas of theorists who have contributed to the interdisciplinary field of human relations. Students are introduced to selected primary readings by influential scholars with the goals of understanding and integrating the various perspectives, and of developing critical thinking skills. (Irreg.)

**3013 Introduction to Human Relations.** Prerequisite: permission of department. Designed to introduce students to the breadth and depth of the field of human relations. Emphasis is on the processes of communication, problem solving, decision making, conflict and change as they occur in individuals, interpersonal, group and intergroup relations. (F, Sp, Su)

**3033 Writing for Human Relations Professionals.** Prerequisite: junior standing or permission of instructor. Familiarizes students with the fundamental skills of professional writing and presentation. Student skill development emphasized in the course includes critical thinking, information gathering, comprehensive planning, precise writing, and effective presentations. (Irreg.)

**3043 Interpersonal Skills and Group Dynamics.** Prerequisite: 3013 or permission of instructor. Students explore interpersonal dynamics that characterize effective communication in families, the workplace, community organizations, and social settings. Focuses on ways to improve relationships and emphasizes observation, analysis, and skill training in relationship development. (Irreg.)

**3203 Introduction to Organizational Studies.** Prerequisite: 3013 or junior standing, or permission of instructor. This course surveys the basic concepts of organizational studies, including organizational behavior, motivation, leadership, teams, change and development, conflict, organizational structure and design, and innovation. (Irreg.)

**3213 Interpersonal Skills in the Workplace.** Prerequisite: 3013 or junior standing, or permission of instructor. This course examines a variety of social skills used when interacting with others in the workplace, and considers strategies for effective intervention. Course topics include non-verbal communication, questioning, listening, conflict management, negotiating, self-disclosure, assertiveness, and persuading. These skills will be considered in a variety of interview and group meeting situations. (Irreg.)

**3223 Computing in Human Relations.** Prerequisite: 3013 or junior standing, or permission of instructor. The course will discuss the possibilities of using various computer applications as tools for self-promotion. Students will gain experience in using relevant software to aid in securing and keeping employment in human relations fields. The course is constructed in a way that will address each student's career path, and each assignment will be made according to those individual differences. (Irreg.)

**3233 Presentation Skills in Human Relations.** Prerequisite: 3013 or junior standing, or permission of instructor. This course is designed to provide students with the skills, knowledge, and strategies to prepare and deliver effective presentations in human relations settings. In this course, students will receive opportunities to plan, develop, deliver and evaluate presentations. (Irreg.)

**3303 Family Issues in Human Relations.** Prerequisite: 3013 or junior standing, or permission of instructor. This course will focus on contemporary issues challenging families and couples. The text and instruction will explore the ideas of why humans seek intimacy, different forms of human coupling, variations of marriage and family life, parenting, and problems faced by families. (Irreg.)

**3313 Ethical Issues in Intercollegiate Athletics.** Prerequisite: 3013 or junior standing, or permission of instructor. This course is designed to survey intercollegiate athletics in America and contemporary ethical issues related to major college sports and its place within higher education. Such topics as character development, criminal activity, gender equity, academic scandal, extra benefits, illegal inducements, and compensation of college athletes, etc., are explored in depth. (Irreg.)

**3323 Applied Sport Psychology.** Prerequisite: 3013 or junior standing, or permission of instructor. This course is designed to assist students in the

understanding and application of psychological skills associated with excellence in human performance. The students are encouraged to engage in a thoughtful exploration of their beliefs, attitudes and behaviors associated with performance both in life and sports. (Irreg.)

**3403 History of Racism.** Prerequisite: 3013 or junior standing, or permission of instructor. Racism is the single most critical barrier to building effective coalitions for social change. Racism has been consciously and systematically erected, and it can be undone only if people understand what it is, where it comes from, how it functions, and why it is perpetuated. This course will examine history and culture to look at racism within the United States of America. (Irreg.)

**4013 Social Change Process.** Prerequisite: 3013 or permission of instructor. Utilizing interdisciplinary behavioral sciences literatures, students will gain knowledge of selected laws and community programs that characterize social change activities. Through case studies, guest lectures, and field trips, the students will acquire the skills needed to design and carry out a community project that may positively impact the lives of a target population. (Irreg.)

**G4113 Practicum in Human Relations.** Prerequisite: junior standing, two courses in social sciences and permission of instructor. May be repeated with change of content; maximum credit nine hours. Practica are designed for undergraduate and graduate students who wish to acquire experiences in human resources agencies. While directly participating in the helping process, students will learn about the function of professionals in different disciplines, the nature of agencies, their relation to one another and to the community. (F, Sp, Su)

**4170 Special Topics in Human Relations.** 1 to 3 hours. Prerequisite: 3013 or junior standing, or permission of instructor. May be repeated with change of content; maximum credit nine hours. The course is designed to permit the study of topical human relations issues. (Irreg.)

**4203 Social Issues in the Workplace.** Prerequisite: 3013 or junior standing, or permission of instructor. This course will provide students with an interdisciplinary examination of human relations, social issues, and the workplace. Historical social change will be examined as it is impacted by workplace dynamics. The course will employ a case study approach to explore social justice concerns and sociocultural dynamics in the American workplace. (Irreg.)

**4303 Human Relations in Action.** Prerequisite: 3013 or permission of instructor. Students apply learning from previous courses to a field project of their choosing. The service learning that takes place is grounded in relevant human relations theory and practice. Each student is required to complete 60 hours of field work. (Irreg.)

**4313 Intercollegiate Athletic Administration.** Prerequisite: 3013 or junior standing, or permission of instructor. Intercollegiate athletics has many constituencies with differing perceptions about its value to higher education and the community. This course is designed to survey intercollegiate athletics in America and its place within higher education. The contributions of college athletics to higher education will be discussed in depth as well as its values to student-athletes. In addition, the organizational structure and roles of the college athletics department are explored in depth. (Irreg.)

**4403 Undoing Racism.** Prerequisite: 3403 or permission of instructor. Experience has shown us that organizing skills alone are not sufficient to build the kind of coalitions necessary for a broad-based movement for social change. This course examines history, culture, international dynamics of leadership, and networking in order to bring about self-awareness, and to facilitate for others an understanding of the issues within a racial construct. (Irreg.)

**4413 Adolescent Issues in the African-American Community.** Prerequisite: 3013 or junior standing, or permission of instructor. This course is designed to introduce students to adolescent issues facing African-Americans. The course will examine development of all adolescents, as well as critically analyze the major issues and challenges facing African-American youth. Students will also identify possible solutions to these issues. (Irreg.)

**4423 Women's Issues in Human Relations.** Prerequisite: 3013 or junior standing, or permission of instructor. This course examines a perspective on women's development that accurately reflects women's experiences rather than society's traditional view of women. We will explore the effect on women of being silenced, sexualized, and subordinated in a patriarchal culture. Particular attention will be given to self-in-relation theory, a developmental theory proposing that women develop their sense of self

through relationships, but eventually discover that this is not valued or required. Since so many of our attitudes are determined in early life, we will explore the construction of identity in adolescent female development. Views of women's experiences in different cultures will also be examined. (Irreg.)

**4503 Applied Research.** Prerequisite: Communication 2513, , Economics 2843, Political Science 3123, Psychology 2003, Social Work 2223, or Sociology 3123. Introduces students to the theoretical and methodological skills necessary to conduct an applied research program. Methodological approaches are varied and emphasize a range of social science orientations. (Irreg.)

**4513 Service Learning.** Prerequisite: 3003, 3013, 3043, and 4013. Capstone course to be taken in the final semester. Students apply learning from other courses to a project of significant community need. Classes are held both on campus and on-site, and group work, evaluative discussion, and written reflection are integral parts of the course. (Irreg.)

**4990 Independent Study.** 1 to 3 hours. Prerequisite: three courses in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**G5003 Theoretical Foundations of Human Relations.** Prerequisite: admission to the degree program in human relations or permission of department. An analysis of human relations theories and concepts from the perspectives of the social sciences, the humanities and education. (F)

**G5013 Current Problems in Human Relations.** Prerequisite: admission to the degree program in human relations or permission of department. In-depth studies of outstanding problems facing social practitioners, including racism, sexism, poverty and human rights. Strategies for change and ethics of intervention also will be discussed. (F)

**G5023 Research in Human Relations.** Prerequisite: admission to the degree program in human relations or permission of department. Special focus will be upon designing and implementing a research project related to the student's area of concentration in human relations. (Sp)

**G5033 Seminar in Leadership in Organizations.** Prerequisite: graduate standing or permission of instructor. Focus is upon a survey of major leadership approaches and theories and application in organizational settings. Discussions of the leadership process and administration of assessment instruments are used to increase a student's awareness of his/her own leadership style.

**G5043 Seminar in Organizational Change and Development.** Prerequisite: graduate standing or permission of instructor. Focus will be upon the change process and a survey of major approaches used to bring about organizational change, such as confrontation meetings, survey feedback, job enrichment, process consultation and third party intervention. (Sp)

**G5053 Racial Diversity.** Prerequisite: graduate standing or permission of instructor. Focuses on the changing demographics of our society, especially related to race and culture, gender, age, disability, and socio-economic status, emphasizing the implications of these factors for effective management. (F)

**G5063 Seminar in Strategies of Social Change.** Prerequisite: graduate standing or permission of department. A study of techniques for bringing about individual, group or organizational changes. Special focus will be placed on philosophies and results of violent and nonviolent tactics. (F)

**G5073 Creative Problem Solving.** Surveys the nature of creative thinking and creative problem solving. Topics to be covered include creative thinking obstacles, creativity, readiness, major stages of the creative problem-solving process (fact finding, problem finding, idea finding, solution finding and acceptance finding) and use of a variety of individual and group techniques for different stages in the process. (Sp)

**G5083 Seminar in Group Dynamics.** Prerequisite: graduate standing or permission of department and graduate dean. An intensive study and critical evaluation of social-psychological concepts related to sensitivity training as a human relations technique. (CE)

**G5093 Introduction to Graduate Studies in Human Relations.** Prerequisite: admission to degree program in human relations or permission of instructor. Designed to acquaint graduate students with human relations theory and practice in various contexts. Emphasis is placed on the role of human relations professionals as agents of persistence and change at the interpersonal, group, organizational and societal levels of analysis. (F)

**G5100 Advanced Theories in Human Relations.** 1 to 3 hours. Prerequisite: graduate standing or permission of instructor. May be repeated with change of content; maximum credit six hours. Additional in-depth studies

of human relations theories and their implications for human relations practitioners will focus on topics such as, but not limited to: affirmative action and reverse discrimination; spiritual aspects of recovery in chemical dependency; conceptual models of violence and nonviolence as a basis for peace curriculum; human relations in the twenty-first century; human values in sexuality; and women and men in organizations. (F, Sp)

**G5110 Advanced Seminar in Current Problems.** 1 to 3 hours.

Prerequisite: graduate standing or permission of instructor. May be repeated with change of content; maximum credit six hours. Additional in-depth studies of current social problems and strategies for intervention and change on topics such as, but not limited to: chemical dependency and society; ethnic and gender discrimination issues; disadvantaged children; domestic violence; sexual/physical abuse; physically and emotionally handicapped populations. (F, Sp)

**G5113 Seminar in Local Issues in Human Relations.** Prerequisite:

graduate standing or permission of instructor. May be repeated with change of topic; maximum credit nine hours. Variable topics and content related to human relations problems and solutions. (F, Sp, Su)

**G5123 Decision-Making in Adult and Higher Education (Crosslisted with EDAH 5123).** Prerequisite: graduate standing. Provides students with an understanding of various forces which influence the process of decision-making in adult and higher education, as well as provide an opportunity to examine how such decisions can be reached and implemented. The student will examine realistic examples of decision-making in such areas as budgeting, trustee relations, tenure decisions, faculty development, and curriculum. (F, Sp)

**G5153 Human Emotions.** Prerequisite: graduate standing, permission of instructor. Goal is to become familiar with some of the major conceptualizations of emotions and the evidence used to validate them; to examine a number of emotions such as: attachment, love, loss and grief, depression, anxiety, joy, anger, fear, etc. Will be both didactic and experiential. Skills in self-disclosure, active listening, empathy, confrontation, etc. will be used to increase the understanding of emotions and to increase the ability to communicate emotional content. (F)

**G5163 Seminar in Nonverbal Behavior in Human Relations.**

Prerequisite: graduate standing or permission of instructor. Topics include research methods, cross-cultural studies, proxemics, kinesics, vocalics, emotions, touch and human development, dress and appearance, attractiveness and social order. (F or Sp)

**G5173 Seminar in Applied Interpersonal Dynamics.** Prerequisite: 5083, graduate standing or permission of instructor. A human relations learning laboratory in which students can improve their self-awareness, communication skills and conceptual frame of reference. Topics include: self-disclosure, human emotion, concreteness, listening skills, genuineness, confrontation and immediacy. (Irreg.)

**G5183 Seminar in Issues in Human Relations Training.** Prerequisite: 5083 or 5173. Focuses on theory and research in group dynamics (group development, membership, goals, conformity, power, leadership, essentials in laboratory design); ethics, values and professionalism in human relations; and criticisms of human relations training. (CE)

**G5193 Intervention and Practice in Training.** Prerequisite: 3013, 5003, 5013, 5023, 5083 or 5173. Specifically designed to enable advanced students to explore their skills in working with others from both a theoretical and pragmatic perspective. Students are required, through course content, to develop a clear picture of facilitation, leadership, consultant or teacher style. (Sp)

**G5200 Internship in Human Relations.** 1 to 6 hours. Prerequisite: admission to the degree program in human relations and permission of department. Field experience in and outside Oklahoma. Each student must have both types of experiences. Agency roles and responsibilities will be learned by on-the-job practice. (F)

**G5273 Athletics in Higher Education (Crosslisted with EDAH 5273).**

Prerequisite: graduate standing. Provide students with an understanding of the history, structure and administration of intercollegiate athletics, as well as an opportunity to discuss a wide variety of related contemporary issues. (Irreg.)

**G5323 Organizational Behavior in Human Relations.** Prerequisite:

graduate standing. Organizational behavior (OB) represents the behavioral approach to management. OB is concerned with human behavior at work and how various structures and work processes influence such behavior. This course will address a number of important organizational issues and processes, including organizational culture, group behavior and teamwork, and leadership. (Su)

**G5333 Mediation.** Prerequisite: graduate standing. Studies how the acceptable third party assists parties in resolving disputes. There will be considerable attention paid to the mediation process and the activities of mediators. Also focuses on negotiations because mediators help parties complete negotiations they are unable to settle on their own. (F)

**G5403 Psycho-Social Development.** Prerequisite: graduate standing or permission of instructor. Covers human psycho-social development. Discussion of the expanding social realm of the developing individual. Theories and research in a variety of areas related to social development will include: attachment, aggression, sex typing, moral development, and parent-child interaction. (F, Sp)

**G5413 Chemical Dependency.** Prerequisite: graduate standing or permission of instructor. Explores how chemical dependency affects individuals in their physical, psychological and social functioning. The dynamics of the illness, treatment and recovery process are explored. Attention is given to the feelings, physical, psychological and social aspects of chemical dependency. Both didactic and experiential. (F)

**G5423 Family Systems and Family Reconstruction.** Prerequisite: permission of instructor. Teaches students how to impact family systems. Through didactic and experiential learning, students will learn how students function in systems and explore their own rules for living in systems. (CE)

**G5433 Group Counseling in Human Relations.** Prerequisite: graduate standing or permission of instructor. Examines a variety of group counseling models, types of groups (process, solution-focused, action-oriented), the role of the group counselor, group members, and techniques and strategies for facilitating group work. (Irreg.)

**G5443 Adolescent Issues in Human Relations.** Prerequisite: graduate standing or permission of instructor. Designed to acquaint human relations professionals with issues facing teens today. The pressures confronting youth along with various adaptive and maladaptive coping behaviors will be studied. (F, Sp, Su)

**G5453 Ethical Issues in H R Counseling.** Prerequisite: graduate standing or permission of instructor. Surveys ethical, legal, and professional issues facing human services workers. (F, Sp, Su)

**G5463 Counseling Skills in Human Relations.** Prerequisite: graduate standing or permission of instructor. Introduce students to the helping professions and provide them with a basic mastery of important counseling skills in human relations. (Irreg.)

**G5473 Women and Mental Health.** Prerequisite: graduate standing or permission of instructor. Examines psychological theory and practice as it pertains to women. This course will look at traditional theories and practice, new approaches to working with women, and topical issues. (Irreg.)

**G5483 Diagnosis in Human Relations Counseling.** Prerequisite: graduate standing or permission of instructor. Introduces students to the diagnostic systems of mental disorders outlined by the American Psychiatric Association and the World Health Organization. Also covers principles and techniques of interviewing which produce a correct diagnosis. (F, Sp)

**G5493 Assessment and Evaluation in Human Relations.** Prerequisite: graduate standing or permission of instructor. Provides an overview of clinical and social assessment procedures used in counseling settings including career and life planning, personality, and mental health assessments. Emphasis is placed on a thorough examination of diagnostic classifications for mental disorders. Also develops a working knowledge of assessment skills along with a bias-free multicultural perspective, and ethical issues applicable to assessment. (F, Sp)

**G5613 Human Relations in Education (Crosslisted with EACS 5613).** Prerequisite: graduate standing. Focuses on intrapersonal, interpersonal and intergroup relations problems in the public schools. Specifically, deals with persistent school/classroom problems associated with multiculturalism. Attempts to blend theory and practice through a lecture/discussion/problem-solving approach. Emphasizes teacher self-awareness as a major aspect of the human relations approach. (F, Sp)

**G5960 Directed Readings in Human Relations.** 1 to 6 hours. Prerequisite: graduate standing, permission of instructor. May be repeated; maximum credit six hours. Individual investigations and report of findings on selected problems in human relations education. (F, Sp, Su)

**G5980 Research for Master's Thesis.** Prerequisite: admitted to candidacy for a Master of Human Relations. Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. Original paper in an area of concentration in human relations. (F, Sp, Su)

**G5990 Independent Study.** 1 to 4 hours. Prerequisite: 5023 or equivalent and permission of instructor. May be repeated; maximum credit six hours. Individual investigation of special research topics in human relations. (F, Sp, Su)

## *Industrial Engineering (I E)*

The school offers courses which are slashlisted so undergraduate students may take an undergraduate 4000-level course while graduate students may take a graduate 5000-level course. The lectures in a slashlisted course are the same. However, students in the 5000-level course have substantial additional requirements beyond those for students in the 4000-level course. These additional requirements are listed in the slashlisted course syllabus.

**2281 Engineering Co-Op Program (Crosslisted with AME, CH E, C E, C S, ENGR, ECE, E PHY, E S, G E, P E 2281).** Prerequisite: student participation in the program. The Co-Op program provides student placement in jobs outside the University, but in a position related to the student's major. On completion of a semester work period, the student submits a brief written report. One hour of credit (elective) granted for each work period, with a maximum credit of six hours. (F, Sp, Su)

**2303 Materials, Design and Manufacturing Processes (Crosslisted with Aerospace and Mechanical Engineering 2303).** Prerequisite: Aerospace and Mechanical Engineering 2113 or Civil Engineering and Environmental Science 2113 or Engineering 2303. Mechanical and physical properties of engineering materials. Introduction to design concepts, manufacturing processes and equipment used in engineering. (Sp)

**2311 Computer Aided Design and Graphics Laboratory for Industrial Engineers.** Corequisite: 2303. Fundamentals of engineering design, AutoCAD, proE and SolidWorks applications. (Sp)

**2823 Enterprise Engineering.** Prerequisite: sophomore standing. Introduction to the industrial engineering role as enterprise system integrator. Systems concepts, modeling and analysis; integrated product/service and operational process design; productivity and quality improvement; computer technology insertion; project, operations, and global supply chain management. (F)

**2960 Directed Reading.** 1 to 3 hours. Prerequisite: Engineering 1112; permission of the department; special permission card required. May be repeated; maximum credit three hours. Individual project studies for University College students in industrial engineering. (F)

**†G3293 Applied Engineering Statistics.** Prerequisite: Mathematics 2433. Introduction to probability, one and higher dimensional random variates, function of random variables, expectation, discrete and continuous distributions, sampling and descriptive statistics, parameter estimation, use of statistical packages. Not available for graduate credit for students in engineering disciplines. (F, Sp, Su)

**†G3304 Design and Manufacturing II.** Prerequisite: 2303, 2311, Civil Engineering and Environmental Science 2153 (or concurrent enrollment) or Aerospace and Mechanical Engineering 3143 (or concurrent enrollment). Dimensioning and tolerancing; tolerances—type, design and specification; assembly and fit design; tolerance standards; process planning—precedence representation in machining, operation and machine sequencing; jigs and fixtures—design and analysis; time and cost estimation for machining; automation; processes/system integration. **Laboratory** (F)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. Covers materials not usually presented in the regular courses. (F, Sp, Su)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Projects covered will vary. Deals with concepts not usually presented in regular coursework.

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work on a special project in the student's field. (F, Sp)

**3990 Special Topics.** 1 to 3 hours. Directed study for undergraduates. (F, Sp, Su)

**4113 Decision Support System for Industrial Engineers.** Prerequisite: 4623, Computer Science 1323, or permission of instructor. This course will cover principles and tools for developing decision support systems for solving industrial engineering problems. Tools that will be used are

Microsoft Excel, Visual Basic for Excel, and Microsoft Access. The advanced features of Excel for data manipulation and presentation as well as optimization will be covered. The embedded Visual Basic language in Excel will be taught. Principles of database design will be studied together with Access software. The applications will cover a wide range of topics such as simulation, queuing, facility layout and warehousing, portfolio optimization, and MRP. At the end of the course the students should acquire basic skills to develop a small-scale but complete decision support system with Microsoft Office tools. Students are required to bring a laptop to the class to complete in-class exercises. (F)

**G4223 Fundamentals of Engineering Economy.** Prerequisite:

Mathematics 2423. Introduction to concepts of economic analysis to optimize benefits utilizing multivariate, multistaged mathematical models. Topics include cost and worth comparison, capital costs and sources, time value of money, replacement economics, taxes, economic efficiency of alternate designs, minimum costs and maximum benefits, risk and uncertainty and economics of work schedules. (Sp)

**†G4333 Production Systems and Operations.** Prerequisite: 2823 and 4623, or by permission. Operations-oriented topics for production systems. Supply chain process (tactical planning, operational scheduling and sequencing, management and planning, demand promising). Customer service process; E-Business and information technology applications for production systems. (F)

**4363 Facility Planning, Warehousing, and Material Handling**

(*Slashlisted with 5363*). Prerequisite: 4623. Facility location and layout models, design, analysis, and improvement of warehousing operations, material handling systems in manufacturing and warehousing operations, informational technologies for management of operations, supply chain relationships. No student may earn credit for both 4363 and 5363. (Sp)

**4393 Capstone Design Project.** Prerequisite: senior standing, students must have taken the EIT exam, and permission. Restricted to graduating industrial engineering students; to be taken in the last semester. Current problems drawn from production and service organizations will be presented by personnel from these organizations. Students will solve these problems under the guidance of their instructor, using industrial engineering methodology. (Sp) [V]

**4553 Engineering Experimental Design (Slashlisted with 5553).** Prerequisite: 3293 or Engineering 3293. Fundamentals of design of experiments. Analysis of variance models for single factor designs with blocking factors and multi-factor designs, including factorial and nested designs. Fixed, random and mixed models. Analysis of covariance models. No student may earn credit for both 4553 and 5553. (F)

**4563 Quality Engineering (Slashlisted with 5563).** Prerequisite: 3293 or Engineering 3293, and 4553. The use of statistical methods for quality control and improvement in product and non-product environments for engineering and management utilization. Focus will be on statistical process control tools and total quality management. No student may earn credit for both 4563 and 5563. (Sp)

**4623 Systems Modeling and Optimization.** Prerequisite: 2823. Problem solving using analytical models. Introduction to optimization, linear programming, integer, dynamic programming, and goal programming methods. Simplex method and sensitivity analysis. Practical applications using optimization software such as LINDO, LINGO, EXCEL SOLVER. Analytical decision making. Introduction to stochastic programming. (F)

**4633 Applied Engineering Optimization.** Prerequisite: Engineering 3293 or 3293, 4623. Data mining techniques, heuristics and applications of operations research to financial engineering, site selection, transportation, transhipment and assignment problems. Routing techniques, facility layout models, queueing models and applications, Monte Carlo simulations and applications. (Sp)

**4663 Systems Analysis Using Simulation.** Prerequisite: Engineering 3293 or 3293, 4633. Implements the science of systems analysis through the use of simulation modeling and statistical analysis; inclusive of time study analysis for performing input modeling tasks. **Laboratory** (F)

**†G4824 Ergonomics.** Prerequisite: junior standing or permission of instructor. The measurement of human physical capabilities and limitations. Measurement of the environment and elicited human responses. Workplace, equipment and job design with regard to human performance efficiency, health, and safety. **Laboratory** (Sp)

**4853 Applied Research Methods (Slashlisted with 5853).** Prerequisite: 4553 and 4824. Experimental methodology for empirical investigation, including problem formulation. The development and measurement of

performance criteria, experimental and oral communication. The measurement of human performance is typically the vehicle used for students in this course. No student may earn credit for both 4853 and 5853. (F)

**4990 Special Studies.** 1 to 3 hours. Prerequisite: senior standing. May be repeated once; maximum credit six hours. Directed study for undergraduates. (F, Sp, Su)

**G5123 Advanced Computer Programming for Industrial Engineers.**

Prerequisite: CS 1323, IE 4623, or permission of instructor. This course will cover open source programming tools and software libraries for implementing decision support systems to solve industrial engineering problems. The course will be centered on the PERL programming language. We will cover numerous PERL libraries for manipulating data, developing database applications, accessing and automating web based interfaces and developing graphical user interfaces (GUI). We will use PERL libraries to implement mathematical programming models, simulation models and statistical analysis. In a final project these tools will be used together to implement a small-scale but complete decision support system. (F)

**G5263 Introduction to Expert Systems.** Prerequisite: 3253 or equivalent. Introduction to the basic concepts, design and applications of expert systems. Specific topics include history of artificial intelligence, early applications, conventional programming versus knowledge engineering, languages, research problems, and engineering applications. (F, Su)

**G5303 Computer-Aided Manufacturing.** Prerequisite: 3304 or permission. Computer applications to machines and processes in manufacturing systems. Numerical control principles, concepts of control theory as applied to numerical control, computer-assisted NC programming (APT, Compact II, etc.), automated process planning, adaptive control and robotics. **Laboratory** (Sp)

**G5313 Advanced Metal Cutting.** Prerequisite: 3304 and permission of instructor. Theory of metal cutting or machining. Mechanics and dynamics of metal cutting are discussed with relevance to existing literature. The role of sensors in automation of machining is explored. **Laboratory** (F)

**G5323 Advanced Production Systems and Operations.** Prerequisite: 4333 or by permission. Laws of factory physics that describe the basic behavior of discrete manufacturing systems. Limitations of traditional control approaches (i.e. MRP and DRP). Modern approaches to planning of material and capacity. Differences between push system and pull systems. Theory of constraints. The corrupting effect of variability on a manufacturing system. Operational performance measures. Industry-specific differences in business drivers and system behavior. (Sp)

**G5343 Reliability in Engineering Design.** Prerequisite: Engineering 3293 or permission of instructor. Probabilistic reliability models for the lifetimes of manufactured components. Structure functions, system reliability calculations, lifetime distributions, models of dependence, parameter estimation, availability, maintainability, burn-in, preventive maintenance. **Laboratory** (Sp)

**G5353 Design of Quality Assurance Systems.** Prerequisite: Engineering 3293. The methods of statistical quality control; industrial case studies; economics of quality control problems; problems of inspector error; principles of productivity and quality improvement; experimental design techniques to find assignable cause. (F)

**G5363 Facility Planning, Warehousing, and Material Handling**

(*Slashlisted with 4363*). Prerequisite: 4623. Facility location and layout models, design, analysis, and improvement of warehousing operations, material handling systems in manufacturing and warehousing operations, informational technologies for management of operations, supply chain relationships. No student may earn credit for both 4363 and 5363. (Sp)

**G5423 Advanced Engineering Economics.** Prerequisite: Engineering 4223. Economic analysis under conditions of risk and uncertainty with particular emphasis on econometric models applied to engineering systems. (Irreg.)

**G5513 Engineering Decision Analysis.** Prerequisite: Engineering 3293. The no-data problem; decision criteria; decisions with experimentation; extensive and normal forms of analysis; optional stopping; utility and loss functions; multiple-criterion decision making; applications of decision analysis. (Irreg.)

**G5523 Applied Probabilistic Models in Industrial Engineering.**

Prerequisite: 4633 or permission of instructor. Review of probability theory, random variables, discrete and continuous distributions, moment generating functions and conditional probability; introduction to Markov chains, Markov processes and renewal theory; applications to queuing theory, inventory systems and reliability models. (Irreg.)

**G5553 Engineering Experimental Design (Slashlisted with 4553).**

Prerequisite: 3293 or Engineering 3293. Fundamentals of design of experiments. Analysis of variance models for single factor designs with blocking factors and multi-factor designs, including factorial and nested designs. Fixed, random and mixed models. Analysis of covariance models. No student may earn credit for both 4553 and 5553. (F)

**G5563 Quality Engineering (Slashlisted with 4563).** Prerequisite: 3293 or Engineering 3293, and 4553 or 5553. The use of statistical methods for quality control and improvement in product and non-product environments for engineering and management utilization. Focus will be on statistical process control tools and total quality management. No student may earn credit for both 4563 and 5563. (Sp)

**G5573 Statistical Analysis of Simulation Models.** Prerequisite: 4663, and Engineering 3293; or permission. Probabilistic and statistical aspects in the design and analysis of stochastic simulations: random number generation, random variate generation, input modeling, output analysis (including time series models and spectral analysis), ranking and selection and variance reduction techniques. **Laboratory** (Sp)

**G5613 Multicriteria Optimization.** Prerequisite: 4623. Survey of developments and applications of theory and methods pertinent to decision making under conflicting criteria. Goal programming and interactive methods for multicriteria mathematical programming will be emphasized with applications.

**G5623 Linear Programming.** Prerequisite: 4623. Introduction to set theory and vector spaces, convexity analysis, special matrices. Properties and solution methods of linear inequalities, Farkas' Lemma, optimality conditions, polyhedral sets and cones. Simplex method, theory of duality, simplex based algorithms, bounded variable and decomposition approaches, sensitivity and parametric analysis, geometrical interpretations, complementary pivot theory. (Sp)

**G5643 Engineering Optimization.** Prerequisite: 4623 or permission. Basic computational tools for solving nonlinear unconstrained and constrained optimization problems arising in engineering practice. Emphasis is on models and methods applicable to problems in engineering design, process operations, control, production planning, manufacturing and management. (F)

**G5653 Engineering Network Flow Analysis.** Prerequisite: 5623. Modeling network flow problems, algorithms and computational analysis of networks. Topics include: graph theory, shortest path problems, network flow problems, computer applications. (Sp)

**G5663 Simulation I.** Prerequisite: 4663, Engineering 3293 or permission of instructor. Advanced network modeling, continuous modeling, discrete event modeling, animation. (F)

**G5673 Simulation II.** Prerequisite: 5663. Advanced study of simulation methodology. Provides practical experience in building and running computer simulation models of industrial systems. Utilization of statistical techniques for analyzing the output from a simulation is also emphasized. Addresses discrete event simulation as well as animation. (Sp)

**G5683 Applied Operations Research.** Prerequisite: 4623, 4633 and/or permission. The application of operations research techniques to the solution of some real world problems. Discussion of case studies in operations research is included. The instructor may select an area of interest in production or service systems and cover all related quantitative methods applied to this area. A group project is essential for this course. (Irreg.)

**G5713 Engineering Project Management.** Prerequisite: Engineering 3293 or permission of instructor. Review of the various technical and managerial aspects of project management. Introduction to extensions of CPM and PERT. Specific topics include network development and analysis, precedence constraints, resource allocation, time-cost trade-off, heuristics, criticality index, computer applications, design and analysis of engineering projects, and optimization techniques for project scheduling. (Sp)

**G5743 Management of the Engineering Function.** Prerequisite: 2823 or graduate standing. Explores major concepts of engineering management and how to apply these concepts in managing the engineering function in an enterprise. Intensive analysis of the specialized problems of engineering organizations which include technical human power. Procedures and design for the control of engineering projects. Specific examples and cases of management problems and experiences are used. A research project is required that involves at least one of the functions of engineering management. (F)

**G5753 Organization Systems.** Prerequisite: graduate standing or permission. The organization is examined as a complex of subsystems to accomplish production or service objectives. Individuals as members of the

subsystems are examined as human factor elements in contributing to the analysis of effectiveness and efficiency of systems. Organizations are viewed from a macro standpoint with emphasis on engineering organizations. Current trends and cases are reviewed with case presentations required. A research project evaluating and organization is required from an engineering management viewpoint. (Sp)

**G5813 Information Ergonomics.** Prerequisite: 2823. The measurement of human mental capabilities and limitations: perception, memory, decision making, communication, control of motor activity, learning. The design of controls, displays and information systems with regard to performance efficiency, health and safety. The human being as a consumer and generator of information. (F)

**G5823 Exercise Physiology (Crosslisted with Health and Sport Sciences, Physiology 5823).** Prerequisite: 4824; Zoology 3104 or 3133; Physiology 5016 or 5019; or permission. Advanced study of physiological responses, regulatory mechanisms and adaptations of human performance and health; factors affecting performance and health; and training and evaluative techniques. (F)

**G5833 Ergonomics in Safety Research and Practice.** Prerequisite: senior or graduate standing and 4824 or 5813 or permission of instructor.

Designed to introduce the student to concepts of product liability, workers' compensation, occupational safety and health, and systems safety from both a historical and current standards and practices perspective. Methods of controlling product liability losses and reducing workers' compensation cost are discussed. Safety concepts and methodologies as they relate to large-scale systems design are presented and discussed. (Sp)

**G5843 Biomechanics (Crosslisted with Health and Exercise Science 5843).** Prerequisite: 4824 or HES 3843 or permission. Review of muscle, bone and joint structure and function. Review of kinematic and kinetic principles as applied to human movement. Analysis of human movements using film, anthropometric, dynamometer, force platform, electromyographic and performance techniques. Application of human movement analysis to ergonomics, sport and rehabilitation. (F)

**G5853 Applied Research Methods (Slashlisted with 4853).** Prerequisite: 4553 and 4824. Experimental methodology for empirical investigation, including problem formulation. The development and measurement of performance criteria, experimental and oral communication. The measurement of human performance is typically the vehicle used for students in this course. No student may earn credit for both 4853 and 5853. (F)

**G5970 Seminar in Industrial Engineering.** 1 to 3 hours. Prerequisite: graduate standing or permission. May be repeated with change of content; maximum credit 12 hours. Special topics in the various fields of industrial engineering—engineering economy, operations research, ergonomics, production, manufacturing, simulation, engineering statistics and computer systems. (F, Sp, Su)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, six hours. (F, Sp, Su)

**G5990 Special Studies.** 1 to 4 hours. Prerequisite: senior standing, permission. May be repeated; maximum credit six hours. (F, Sp, Su)

**G6263 Artificial Intelligence Models for Industrial Engineering.**

Prerequisite: 3253, 5263. Formulation of artificial intelligence (AI) models for industrial engineering problems. A study and development of AI models for production planning, manufacturing systems, operations research, human factors, ergonomics, and engineering management. Students will undertake projects dealing with their specific areas of doctoral research.

**G6343 Design of Production Systems.** Prerequisite: 5323 and 5623. Modeling, criteria, constraints, decision making, and optimization applied to the design, re-design and operation of production systems (from single sites to entire supply chains). Industrial dynamics, facility location, inventory design, transportation network design, and integrated supply chain design. Emphasis will be on the rigorous application of exact and heuristic computational techniques to realistic classes of discrete production systems. Topics of current relevance are addressed through a major course project. (Sp)

**G6623 Nonlinear Programming.** Prerequisite: 5623. Theory and computational aspects of nonlinear optimization problems. Topics include: applications and problem formulation, convexity, Kuhn-Tucker conditions, duality, quadratic programming, unconstrained optimization techniques, direct search method, penalty function, optimization methods, feasible direction methods, separable programming, geometric programming. (Irreg.)

**G6643 Integer Programming.** Prerequisite: 5623. An introduction to the applications and computational techniques available for solving integer programming problems. Topics include: branch and bound, cutting plane methods, Bender's partitioning algorithm, set covering and set partitioning algorithms and knapsack method. (Irreg.)

**G6663 Advanced Simulation Topics.** Prerequisite: 5673, or permission of instructor. Advanced simulation topics; simulation language design; special purpose languages, continuous process simulation. (Irreg.)

**G6833 Ergonomic Issues in Product Design.** Prerequisite: 5813, 5833, or permission. The study of ergonomic issues in the design, manufacture and use of products. Product definition, developing a design data base, conceptual design, hazard analyses, prototype development and testing, final design, instructions/warnings and training for product use. **Laboratory** (Irreg.)

**G6853 Human Factors in Computer Systems.** Prerequisite: 5813 or permission of instructor. Important factors involved in designing the human/computer interface based on established principles of ergonomics, existing guidelines and current research. Topics include: identifying user characteristics, code design, menus, interactive dialog procedures, input and output devices, documentation, training and VDT workplace. Students may be required to make class presentations. (Sp)

**G6883 Case Studies in Human Factors.** Prerequisite: 4823, 5813. Case studies in the analysis and design of complex systems with regard to the allocation of function between people and machines. (Irreg.)

**G6933 Special Topics in Industrial Engineering.** Prerequisite: graduate standing or permission. May be repeated; maximum credit 12 hours. Evaluation and simulation of various industrial engineering systems emphasizing the system as an integrated structure. (Irreg.)

**G6980 Research for Doctoral Dissertation.** (F, Sp, Su)

**G6990 Special Studies in Industrial Engineering.** 1 to 4 hours. Prerequisite: graduate standing. May be repeated; maximum credit six hours. Special problems in the various fields of industrial management engineering. Special studies in data processing, engineering economy, engineering economic planning, engineering statistics and quality control, operations research, environmental engineering, person-machine systems, bionics or biotechnology. (F, Sp, Su)

## Interdisciplinary Perspectives on the Environment (IPE)

**1013 Consumption and the Environment.** An introduction to the interdisciplinary aspects of human consumption and the environment. Aspect of the production and consumption of food, energy, transportation, and housing are considered for their contributions to global climate change, air and water pollution, and habitat alteration, as well as other relevant topics regarding the environment. Students will learn how complex interactions between natural processes and human activities shape aspects of the global, regional and local environment. (F, Sp) [III-SS]

**3800 Environmental Internship.** 1 to 3 hours. Prerequisite: Junior standing and permission of IPE coordinator. Supervised work experience at a business, government or non-profit agency, dealing with an environmental issue. May require specific preparation, as appropriate. S/U grade based on completion of advance preparation, if any; evaluation by workplace supervisors; and coordinator's evaluation of a report on the issue dealt with during the internship. (F, Sp, Su)

**3810 Mark Coleman Fellowship.** 1 to 3 hours. Prerequisite: junior standing and permission of instructor. May be repeated once; maximum credit three hours. Research and field work leading to a written report and public presentation on a specific environmental issue relating to the state of Oklahoma. Students may be required to enroll for two consecutive semesters. (F, Sp)

**3913 Special Topics in Interdisciplinary Perspectives on the Environment.** Prerequisite: Junior standing or permission of instructor. May be repeated with change of content; maximum credit nine hours. Designed to permit the study of specific and changing issues and problems in environmental studies. (Irreg.)

**3960 Honors Reading.** Prerequisite: Admission to Honors program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. The topics will cover materials not usually presented in regular course work. (Irreg.)

**3980 Honors Research.** Prerequisite: Admission to Honors program. May be repeated; maximum credit six hours. Provides an opportunity for the honors candidate to work at a special project under the guidance of a professor on a specific environmental related issue. (Irreg.)

**4003 Practicum on Environmental Issues.** Prerequisite: Permission of IPE coordinator. Students work in small groups on an environmental problem facing central Oklahoma. A variety of skills and concepts will be applied to cooperatively propose a solution that incorporates the perspectives of the sciences, social sciences, and the humanities. (Sp)

**4970 Seminar.** Prerequisite: Junior standing or permission of instructor. May be repeated with a change of content; maximum credit six hours. Interdisciplinary topics with regard to the environment; May include field work, special presentations, or other activities not covered in regularly scheduled courses. (Irreg.)

**4990 Independent Study.** Prerequisite: junior standing or permission of instructor. May be repeated; maximum credit six hours. Contracted independent study for a topic not currently offered in regularly scheduled coursework. May include library and/or research and field projects. (Irreg.)

## Interior Design (I D)

**1011 Introduction to Interior Design.** Prerequisite: for majors only.

Introduction to interior design and issues and factors that define the quality of interior spaces, including an overview of design history, a discussion of current trends, and professional responsibility of interior designer. (F)

**1133 Design and Graphics I.** Prerequisite: for majors only. An introduction to visual communications for the design professions, including technical drawing, empirical perspectives and freehand drawing. Other topics include introduction to basic building materials; their history, sources, manufacture, properties, products and systems. **Studio/Laboratory** (F)

**1145 Design and Graphics II.** Prerequisite: 1133 with a grade of C or better. An introduction to basic principles and fundamental concepts for design professionals, with emphasis on color theory and application; materials and proportioning systems. Additional topics include cultural, social, and behavioral factors and their implications for the planning and design of the built environment. **Studio/Laboratory** (Sp)

**2535 Design and Graphics III.** Prerequisite: 1145 with a grade of C or better. Emphasis on issues of form and space, natural light, climate, and site. An introduction to issues of building design focused on landscape, interiors, and the building. Additional topics include theory, and methods of measured perspective; shade and shadow; and an introduction to computer graphics. **Studio/Laboratory** (F)

**2544 Design I: Architectural Design and Human Factors.** Prerequisite: 2535 with grade of "C" or better. Study of human needs and activities as design determinants; lectures and individual projects. Emphasis on the design implications of spatial relationships, scale and function. Additional emphasis on the relationship between architecture and interior design. **Studio/Laboratory** (Sp)

**2763 Computer Applications in Interior Design.** Prerequisite: Interior Design major or permission. Use of computer-aided design and its role in interior design professional practice. Applications to demonstrate design process and problem-solving solutions in two- and three-dimensional representation and modeling. (F, Su)

**2773 Interior Construction.** Prerequisite: 1011, 1145, and 2535 with a grade of "C" or better, or permission of instructor. Introduction to the building and finish materials used in the design of non-loadbearing interior construction. Intended to develop an accurate and efficient expression of selection and detailing of materials and assemblies in construction drawings. Additional topics include mechanical and electrical systems, building codes, and planning standards. Field trips required. **Studio/Laboratory** (Sp)

**2783 Interior Materials and Specifications.** Prerequisite: 1133, 1145, 2535, 2763 with a grade of "C" or better. Study of the basic characteristics and installation of materials and finishes used in the design of interiors, building codes, fire safety and regulations for accessibility. Emphasis on writing specifications for FF&E and non-loadbearing construction. (Sp)

**3724 Interior Design II: Lighting Design.** Prerequisite: 2544, 2773 with a grade of "C" or better, or permission of the instructor. Introduction to lighting design of interiors. Studio/lecture presentations; focus on design principles in lighting, lighting quality, lighting quantification codes, and energy conservation. Emphasis is on integration of lighting with interior

spaces, techniques in lighting design, fixture design, and exploration of computer visualization. **Studio/Laboratory** (F)

**3734 Interior Design III: Commercial Design.** Prerequisite: 3724, Architecture 2333 (or concurrent enrollment), or permission of instructor. Introduction to planning processes and the application of design principles to commercial design projects. Space planning process, design philosophy, specifications and oral presentations will be expected on each project.

**Studio/Laboratory** (Sp)

**3753 History of Interior Design, Early Civilization to 1800 (Crosslisted with Art History 3753).** Historical survey of architectural interiors and of the decorative arts from prehistory to 1800. Readings, lectures and discussion about the art, composition and aesthetic theories that give value to historical interiors. (F) [IV-WC]

**3763 History of Interior Design, 19th and 20th Centuries (Crosslisted with Art History 3763).** Prerequisite: 3753 or permission. History of interiors with emphasis on cultural and socioeconomic factors which led to their development. Emphasis on designers and patrons and on the major furnishings styles and design ideas of the nineteenth and twentieth centuries. (Sp)

**3773 Furniture Design.** Prerequisite: 2544, 2773 and 2783, or permission of instructor. The design and construction of furniture. Emphasis on ergonomics, design, and construction processes, working drawings, materials and methods for custom and manufactured furniture and casework. Other topics include the application of two- and three-dimensional design elements and principles in furniture design. Projects evolve from hand and CAD drawings to scaled models of furniture to full-scale furniture. Course requires material purchase and field trips. **Studio/Laboratory** (F)

**3783 Professional Practice I—Interior Materials and Specifications.** Prerequisite: 3724, 3773 or permission. Study of the basic characteristics and installation of finishes used in the design of interiors, building codes, fire safety and regulations for accessibility. Emphasis on writing specifications for FF&E for non-loadbearing construction. (Sp)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Will consist of topics in keeping with student's major program. The topics will cover materials not usually presented in the regular courses.

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Content deals with concepts not usually presented in regular coursework.

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Will provide an opportunity for work on special projects under guidance.

**4463 Interior Design Office Professional Practice.** Prerequisite: 2773, 3734, 3783 or permission. Study of the professional practice of interior design: office practice, business procedures and professional ethics. Contract practice, design project management, and project completion are important emphases of coursework. (F)

**4744 Interior Design IV: Institutional and Corporate Design.**

Prerequisite: 3734, 3783 or permission of instructor. Design projects develop conceptual and critical thinking in design of institutional and corporate interiors. Lighting, interior systems, construction detailing and scheduling integrated into design projects. **Studio/Laboratory** (F)

**4763 Advanced Computer Applications.** Prerequisite: Permission of the instructor. Computer graphics, three-dimensional computer modeling, animation, rendering and programming to provide representation strategies for interior design problem-solving and presentation. (Sp, Su)

**4776 Interior Design V.** Prerequisite: 4744 and 4463 with a grade of "C" or better. Capstone studio with projects that are specific design situations. Students work with interior design practitioners using real projects with FF&E from current markets. Emphasis on professional design experiences and a comprehensive overview of the major. **Studio/Laboratory** (Sp) [V]

**4783 Topics in Computer Applications.** Prerequisite: Permission of instructor. Emerging technology and its application to interior design problem-solving. (Irreg.)

**4940 Field Work.** 1 to 3 hours. Prerequisite: permission of instructor. Field study related to the student's major in a position approved by the instructor. One hour credit per 120 hours of field work or equivalent. Documentation and evaluation is required. (F, Sp, Su)

**4970 General Departmental Seminar.** 1 to 6 hours. Prerequisite: junior standing or permission of instructor. May be repeated with change in content; maximum credit twelve hours. Special topics in interior design. (F, Sp, Su)

**4990 Independent Study.** 1 to 3 hours. Prerequisite: permission of instructor and director. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in scheduled courses. Study may include research and/or field projects. (F, Sp, Su)

**G5960 Directed Readings.** 1 to 4 hours. Prerequisite: graduate standing; permission of instructor, adviser and dean. May be repeated; maximum credit six hours. (F, Sp)

**G5990 Special Studies.** 1 to 6 hours. Prerequisite: permission of instructor, adviser and dean. The opportunity is provided for students with above-average grades to do individual library or laboratory work on special problems not included in present courses. (F, Sp)

## *International Courses (INTL)*

**1000 Study Abroad.** 1 to 15 hours. Designed to facilitate student participation in study abroad and reciprocal exchange programs. (F, Sp, Su)

**2000 Study Abroad.** 1 to 15 hours. Designed to facilitate student participation in study abroad and reciprocal exchange programs. (F, Sp, Su)

**2001 Study Abroad.** May be repeated; Maximum credit three hours. Course is designed to facilitate student participation in study abroad. (F, Sp, Su)

**3000 Study Abroad.** 1 to 15 hours. Designed to facilitate student participation in study abroad and reciprocal exchange programs. (F, Sp, Su)

**3116 Graz, Austria Summer Program.** Prerequisite: junior standing or permission of International Exchange Programs office. Survey of the history and current political realities of south eastern Europe. Comprises Austrian history within a Balkan context, history of Yugoslavia, and study of the integration of south east European states in European institutions following the demise of communism. Experiential learning through field trips (Vienna, Zagreb, Ljubljana). Intensive German language course and fine arts component (concerts, opera, architectural monuments). (Su)

**4000 Study Abroad.** 1 to 15 hours. Designed to facilitate student participation in study abroad and reciprocal exchange programs. (F, Sp, Su)

**G5000 Study Abroad.** 1 to 15 hours. Prerequisite: permission of the graduate dean and the student's major department before enrollment. Designed to facilitate student participation in study abroad and reciprocal exchange programs. (F, Sp, Su)

**G6000 Study Abroad.** 1 to 15 hours. Prerequisite: permission of the graduate dean and the student's major department before enrollment. Designed to facilitate student participation in study abroad and reciprocal exchange programs. (F, Sp, Su)

## *International and Area Studies (IAS)*

**1303 Introduction to Latin American Studies.** Examines the recent history of Latin American societies from a multi-disciplinary standpoint. Traces the political and economic development of the region, from the Cuban revolution to the present. Readings include works from the disciplines of history, sociology, political science, journalism, and anthropology. (Sp) [IV-WC]

**2003 Understanding the Global Community.** The world today is an interdependent global community that requires an awareness of international politics and economics. This course seeks to enhance our understanding of the global community because of the impact of international relations on our lives and the lives of others around the world. (F, Sp) [III-SS]

**2413 Islam.** Survey of Islamic history and theology in the Near East, North Africa, and Asia from the advent of the prophet to the modern period. (Irreg.) [IV-NW]

**2603 Governments Around the World (Crosslisted with Political Science 2603).** Prerequisite: 1113. Gateway course in political science and international and area studies. Provides an introduction to the varieties of politics and governmental systems around the world. Students will develop skills in comparative analysis to understand why countries have distinct types of government. (F) [IV-WC]

**3000 Special Topics in International and Area Studies.** Prerequisite: junior standing or permission of instructor. May be repeated with change of content; maximum credit six hours. Special topics are courses of variable credit, typically one or two credit hours that examine international or global issues. An example would be an intensive short course taught by a visiting scholar. (Irreg.)

**3003 Topics in International and Area Studies.** Prerequisite: junior standing. May be repeated with change of content; maximum credit nine hours. Readings, analysis, and/or research on one or several selected topics in international and area studies. (Irreg.)

**3113 Gender in East Asia.** Prerequisite: junior standing or permission of instructor. The history of women and gender in China, Japan, Korea from 1800 to the present. Will also examine how the philosophies of Buddhism and Confucianism help determine gender and social relationships. (Sp)

**3213 European Union, NATO, and European Security.** Prerequisite: junior standing or permission of instructor. This course explores changes in security and foreign policy issues in eastern Europe. Specifically, it examines the enlargement of the European Union, expansion of NATO and the development of the European security and defense policy. (Irreg.)

**3313 Latin American International Relations.** Prerequisite: junior standing or permission of instructor. Examines international relations of Latin America in an interdisciplinary fashion. International relations is broadly defined in this course, and includes economic and cultural aspects as well. (Irreg.)

**3423 Politics and Society in Iraq.** Prerequisite: junior standing or permission of instructor. This course explains the historical, political, social, and economic background of current events in Iraq. The course borrows from political science, history, anthropology, and economics in its analysis. Students will be prepared to better comprehend the complexity of politics and society in this important Middle Eastern Country. (Irreg.)

**3433 International Relations in the Middle East.** Prerequisite: Junior standing or permission of instructor. This course examines the major wars of the region beginning with the First World War and ending with the US invasion of Iraq. The course covers the Arab-Israeli conflict, the cold war, and the contest for control of the Persian gulf and oil markets. It also investigates the role of the great powers as well as the major Middle Eastern states in shaping international relations in the region over the past century. (Irreg.)

**3853 Social Problems in Contemporary Russia and Eastern Europe (Crosslisted with Sociology 3853).** Prerequisite: junior standing or permission of instructor. Interdisciplinary study of social problems in Russia and Eastern Europe. Topics include human and physical geography, lingering aspects of Soviet life, privatization, the impact of the transition on social and governmental institutions, and the relationship between social structure and crime throughout the country. (Irreg.)

**3910 International Studies Internship.** Prerequisite: 45 completed hours and a minimum of a 2.75 overall GPA. May be repeated; Maximum credit six hours. This course allows students to receive academic credit for internship work with an internationally oriented public or private organization. The award of academic credit for the internship requires an element of reflection, research, and writing about the work undertaken. This academic component can strongly enhance what is gained from the internship opportunity and improve a student's ability to articulate knowledgeably the requirements, benefits and lessons of work in the public or non-profit sector. (F, Sp, Su)

**3960 Honors Reading.** 1 to 6 hours. Prerequisite: admission to Honors Program, permission of instructor and junior standing. May be repeated once with change of content. Independent study in international and area studies for students enrolled in the Honors Program. Will consist of topics not usually presented in regular courses. (F, Sp, Su)

**3970 Honors Seminar.** 3 to 6 hours. Prerequisite: admission to Honors Program. May be repeated once with change of content. Small group seminar on topics not covered by normal coursework. Restricted to students in the Honors Program. (Irreg.)

**3980 Honors Research.** 1 to 6 hours. Prerequisite: admission to Honors Program, permission of instructor and junior standing. May be repeated once with change of content. Provide international and area studies students an opportunity to work on an international research project. (F, Sp, Su)

**3990 Independent Study.** 1 to 6 hours. Prerequisite: permission of instructor and junior standing. May be repeated once with change of content. Independent study may be arranged to study a subject not available through regular course offerings. (F, Sp, Su)

**4013 Senior Capstone Seminar in International and Area Studies.** Prerequisite: international and area studies major and senior standing.

Devoted to analysis, research, writing, and synthesizing on one of several selected interdisciplinary topics in international and area studies. (F, Sp) [VI]

**G5213 Politics of the European Union.** Prerequisite: graduate standing or permission of instructor. Examines the historical process of European integration. Topics include the structure of the EU institution, the process of

law making in the EU, the international role of the EU, the trans-Atlantic relationship. (F)

**G5313 Mass Culture and Culture Industries in Modern Latin America.** Prerequisite: graduate standing or permission of instructor. Examines the complex process of modernization in Latin America: the emergence of commercial media and forging of mass cultures. Themes include the transformation of popular and elite cultures with the rise of modern media; the impact of state-led cultural projects; the changing social roles of intellectuals and other cultural producers; and the interaction of local, regional, and global media institutions. (Irreg.)

**G5930 Seminar in International Studies.** 1 to 4 hours. Prerequisite: graduate standing and permission of instructor. May be repeated with change of content; maximum credit nine hours. Analysis, research, and writing on one or several selected topics in international studies, international development, and/or international management. (Irreg.)

**G5940 Topics in International Studies.** 1 to 4 hours. Prerequisite: graduate standing or permission of instructor. May be repeated with change of content; maximum credit nine hours. Analysis of one or several selected topics in international studies, international development, and/or international management. (Irreg.)

**G5950 Research Problems.** 2 to 5 hours. Prerequisite: graduate standing. May be repeated with change of content; maximum credit six hours. Directed research and writing on selected topics in international relations, international development, and international management. (F, Sp, Su)

**G5960 Directed Readings.** 1 to 3 hours. Prerequisite: permission of instructor and graduate standing. May be repeated; maximum credit six hours. Directed individual readings on selected topics in international relations; international development, and international management. (F, Sp, Su)

**G5980 Research for Master's Thesis.** 2 to 6 hours. Prerequisite: permission of instructor and admission to M.A. in International Relations. May be repeated; maximum credit four hours. Directed individual research and writing on master's thesis. Student must be admitted to the M.A. in International Relations program. (F, Sp, Su)

**G5981 Thesis Writers' Seminar.** Prerequisite: admission to M.A. in International Relations. Provides guidance for Work on the master's thesis and discusses problems of research design, assembling bibliography, identifying sources, and effective written presentation of research findings. Students will present a thesis prospectus, working bibliography, and chapters for comment. (Irreg.)

**G5990 Independent Study.** 1 to 3 hours. Prerequisite: permission of instructor and graduate standing. May be repeated; maximum credit six hours. Directed individual work on topics in international relations, international development, and/or international management. (F, Sp, Su)

## Italian (ITAL)

**1115 Beginning Italian I.** An elementary course in understanding, speaking, reading and writing Italian. This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics.

**Laboratory.** (F, Sp) [I-FL]

**1225 Beginning Italian II.** Prerequisite: 1115. Fundamentals of Italian continued. This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics. **Laboratory.** (F, Sp) [I-FL]

**2113 Intermediate Italian.** Prerequisite: 1225. Develops reading skills and control of grammar while encouraging oral and written ability. Emphasis on expansion of vocabulary and re-enforcement of grammatical structures. Readings and discussions of texts of literary and cultural interest. Oral and written assignments. (F, Sp)

**2223 Intermediate Italian Continued.** Prerequisite: 2113. Emphasizes advanced reading skills and mastery of grammar. Emphasis on sophisticated vocabulary and understanding of grammatical structures. Literary and cultural texts discussed in oral and essay form. (Sp)

**3073 Italian Conversation.** Prerequisite: 2223. Intensive practice in speaking Italian on topics of everyday life. (Sp)

**3423 Advanced Italian Composition.** Prerequisite: 2223. The inculcation of proper writing habits, at an advanced level, toward the achievement of idiomatic Italian. (F)

**3853 Reading in Italian Literature.** Prerequisite: 2223. Designed to improve reading comprehension and to introduce the techniques of literary analysis. Representative works from the various literary genres will be studied. (Sp)

**3990 Independent Study.** 1 to 3 hours. Prerequisite: one course in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. (F, Sp)

**4990 Independent Study.** 1 to 3 hours. Prerequisite: one course in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. (F, Sp)

## Japanese (JAPN)

**1115 Beginning Japanese.** An elementary course in understanding, speaking, reading and writing Japanese. This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics. **Laboratory.** (F) [I-FL]

**1225 Beginning Japanese.** (Continued) Prerequisite: 1115. An elementary course in understanding, speaking, reading and writing Japanese. This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics. **Laboratory** (Sp) [I-FL]

**2013 Intermediate Conversation.** Prerequisite: 1225. To give intensive training in listening and speaking in Japanese for students who have taken first year Japanese. Through a systematic review of grammar and vocabulary taught in 1000-level Japanese coursework, the course develops students' understanding of functional ability to understand and speak Japanese and introduces unique features of Japanese language and culture, including formal and casual speech levels in Japanese. (F)

**2113 Intermediate Japanese.** Prerequisite: 1225. Combination of basic Japanese grammar and vocabulary and their application to spoken and written Japanese. **Laboratory** (F)

**2223 Intermediate Japanese.** (Continued) Prerequisite: 2113. Develops control of the grammar, vocabulary and idioms of spoken Japanese and provides a thorough introduction to the Japanese writing system as well as some grammatical structures peculiar to written Japanese. **Laboratory** (Sp)

**3113 Advanced Japanese Comprehension.** Prerequisite: 2223. This course trains students in advanced Japanese language skills of speaking, listening, reading, and writing and introduces new grammatical forms, vocabularies and expressions. The course prepares students to understand Japanese society. (Irreg.) (F)

**3123 Advanced Japanese Practice.** Prerequisite: 2223. This course trains students in advanced Japanese language skills in speaking, listening, reading and writing. Students learn grammatical forms and new vocabularies and expressions. Reading materials emphasize practice of Japanese everyday language. (Irreg.)

**3133 Advanced Japanese Culture.** Prerequisite: 2223. This course trains students in advanced Japanese language skills in speaking, listening, reading and writing. Reading material focuses on Japanese culture. (Irreg.)

**3223 Advanced Japanese Conversation and Composition I.** Prerequisite: 3113, 3123, and 3133 or equivalent. An advanced course in conversation and composition covering cultural topics. It develops listening and speaking skills to communicate orally in authentic Japanese and expands spoken and written vocabulary knowledge. Students will practice presenting their ideas in speech and composition effectively. (Irreg.)

**3990 Independent Study.** 1 to 3 hours. Prerequisite: 2223. May be repeated; maximum credit 12 hours. Contracted independent study for topic not currently offered in regularly scheduled courses. (F, Sp)

**4113 Advanced Japanese Reading and Writing.** Prerequisite: 3223. This course is designed to develop the advanced-level proficiency in reading and writing. Authentic reading materials on various topics will be used in combination with discussions, oral, and written reports. Emphasis is put on strengthening correct usage of grammar, increasing knowledge of Kanji and compound terms using expressions and idioms in Japanese. (Sp)

**4223 Advanced Japanese Conversation and Composition II.** Prerequisite: 3223. A continuation of 3223. An advanced course in conversation and composition covering cultural topics. Develops listening and speaking skills to communicate orally in authentic Japanese and expands spoken and written vocabulary knowledge. Students will practice presenting their ideas in speech and composition effectively. (F)

**4990 Independent Study.** Prerequisite: junior standing and permission of instructor. May be repeated with change of content; maximum credit six hours. Contracted independent study on one or more topics not currently

offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**G5990 Independent Study.** Prerequisite: Graduate standing and permission of instructor. May be repeated with change of content; maximum credit 12 hours. Contracted independent study on one or more topics not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory and field projects. (F, Sp, Su)

## Journalism and Mass Communication (JMC)

The school offers courses which are slashlisted so undergraduate students may take an undergraduate 4000-level course while graduate students may take a graduate 5000-level course. The lectures in a slashlisted course are the same. However, students in the 5000-level course have substantial additional requirements beyond those for students in the 4000-level course. These additional requirements are listed in the slashlisted course syllabus.

**0123 Fundamentals of Writing for the Media.** Emphasis will be on fundamentals of writing technique for journalists and other communicators, with a minimum of thirty writing assignments, most in a timed laboratory environment, but some on a take-home basis. Examination of information, logical arrangement of facts, and straightforward, literate writing of the material to prescribed length will be taught. Special attention given to fundamentals in grammar and syntax. Not acceptable for degree credit at the University of Oklahoma. **Laboratory** (F, Sp)

**1013 Introduction to Mass Communication.** Development, scope, functions and information resources of mass media, emphasizing the role of professionals in mass communication and in solving contemporary problems in the mass media. (F, Sp)

**2033 Writing for the Mass Media.** Prerequisite: 1013 or concurrent enrollment; passage of the school's writing skills test; sophomore standing. Introduction to journalistic writing: the expository and persuasive formats; supervised practice in writing for the print, broadcast and photographic media; study of professional demands of organizing and presenting information in the various media. **Laboratory** (F, Sp)

**2683 Survey of Broadcasting.** Prerequisite: 1013. Survey of radio and television media: units of technology, history, regulation, programming, advertising, management and production. (Sp)

**3011 Mass Media Practices.** Prerequisite: permission. May be repeated with change of content; maximum credit three hours, two hours may be in the same area. Restricted to the WIRE, *Oklahoma Daily*, Radio Station KGOU, Norman Cable News and The Sooner Yearbook student staff members. Discussion and analysis of current problems. (F, Sp, Su)

**3013 News Gathering and Presentation.** Prerequisite: 1013, 2033. Relation of reporter with news sources and execution of basic types of news coverage, including interviews, with emphasis in the laboratory on news gathering for the *Oklahoma Daily*. **Laboratory** (F, Sp)

**3023 Feature Writing.** Prerequisite: 1013 and 2033. Recognition and development of ideas for feature stories for various media. Instruction in background research and interviewing methods, writing and rewriting to develop an individual writing style. Students research, write and rewrite a minimum of eight feature stories. (Irreg.)

**3103 News Editing.** Prerequisite: 1013, 2033, 3013. Elementary desk work on newspapers, including correction of errors of fact and expression. The factors considered in selection of news. Good taste in editing copy, avoidance of libel; headline writing; techniques of copy control; newspaper makeup and arrangement. **Laboratory** (Sp)

**3143 Basic News Photography.** Prerequisite: 2033 and admission to school. Basic photographic skills needed to produce photographs suitable for newspaper and magazine publication. Content includes 35mm photography, darkroom techniques, news judgment, ethics, privacy issues, crime scene, courtroom and government protocol. 35mm camera required. **Laboratory** (F)

**3303 Introduction to Advertising.** Prerequisite: 1013, 2033 or permission. Survey of the field of advertising and career areas within the field with emphasis on the relationship between marketing and advertising and the media which serve as channels of advertising communication. (F)

**3333 Advertising Research.** Prerequisite: 1013, 2033, 3303. Introduction to concepts of research. Survey and use of secondary and primary data sources as basis for formulating basic advertising plans, including advertising and communications goals and objectives. (Sp)

**3353 Advertising Copy and Layout.** Prerequisite: 1013, 2033, 3303 or permission. Principles and their application in advertising design and copywriting. Stress on the analysis of appropriate appeals and the development of advertising concepts to convey these through the various media. Emphasis on practice in making rough layouts and writing finished copy. **Laboratory** (Sp)

**3363 Advertising Media.** Prerequisite: 1013, 2033, 3303. Characteristics of the major advertising media. Problems of rates, coverage and costs of using various media mixes. Emphasis on the planning of the media schedule and its relationship to the creative strategy. (F)

**3393 Advanced Copywriting.** Prerequisite: 1013, 2033, 3303, 3333, 3353. Extended practice in application of creative copy principles for major advertising media including newspapers, magazines, radio and television. (Irreg.)

**3413 Principles of Public Relations.** Prerequisite: 1013, 2033. The history, scope, ethics and functions of public relations. Particular attention given to ways of gaining public support for an activity, cause, movement or institution. (F)

**3423 Public Relations Writing.** Prerequisite: 1013, 2033, 3413. Fundamentals and practice in preparation of public relations copy for various media and channels, including news and feature stories, photo captions, public service broadcasts and telecasts, viewbooks, annual reports, plans-programs memos, speeches, letters and direct mail materials. Techniques in dealing with management and various publics, including the news media. **Laboratory** (Sp)

**3433 Public Relations Publications.** Prerequisite: 1013, 2033, 3413, 3423. Planning, writing and producing company and institution magazines with special emphasis on design, layout and content. **Laboratory** (F)

**3504 Introduction to Professional Writing.** Prerequisite: 1013, 2033 and instructor permission. Basic theory, orientation and fundamental techniques of fiction writing. (F, Sp)

**3514 Writing the Short Story.** Prerequisite: 1013, 2033, 3504 and permission. Techniques and theory of fiction writing and plots, with emphasis on current American short stories. (F, Sp)

**3534 Professional Writing: Magazine Writing.** Prerequisite: 1013, 2033, 3023 or 3504. Research, preparation, technical devices, marketing of the nonfiction article or book. Study of current trends, with emphasis on magazine nonfiction. (Irreg.)

**3622 Writing for Broadcast.** Prerequisite: 1013, 2033. Introduction to the various styles of writing news and non-news material for presentation on radio, television and motion pictures. Laboratory consists of time-bound practice in application of principles to different media. **Laboratory** (F, Sp)

**3632 Audio Production.** Prerequisite: 1013, 2033. Studies in the technology, capabilities and utilization of audio media and laboratory work in production/direction. One hour lecture, four hours laboratory per week. **Laboratory** (F, Sp)

**3642 Video Production.** Prerequisite: 1013, 2033, 3632. Studies the technology, capabilities and utilization of television medium. Units on video equipment, lighting, scenery, graphics, performance, production and direction. One hour lecture, four hours laboratory per week. **Laboratory** (F)

**3653 Radio News.** Prerequisite: 2033, 3622, 3632. Study and practice of writing, editing and preparation of radio newscasts. **Laboratory** (F)

**3663 Electronic News Gathering Techniques.** Prerequisite: 1013 and 2033. The history, theory and application of electronic news gathering techniques. Students learn to gather audiovisual information, evaluate it, edit it, and prepare the data for distribution through traditional and emerging news media. (F, Sp)

**3673 Radio-Television Sales.** Interpretation of sales, market and media data and use in making sales presentations on behalf of radio and television media. Emphasis is on creative use of these data regarding sales problems. (Irreg.)

**3703 Photojournalism.** Prerequisite: 1013, 2033 and permission. Assignments include preparation of portfolio involving techniques to add interest to photographic content and two photo stories submitted for sale to news and magazine editors. **Laboratory** (Irreg.)

**3713 Film History.** History and development of film as a communication medium. Varied critical perspectives are offered; exemplary films

presented, preceded by lectures on history and technique, followed by discussion periods. (Irreg.)

**3723 The Documentary Film.** Prerequisite: junior standing. History and development of film as a documentary medium. Varied perspectives are offered; exemplary films presented, preceded by lectures on history and technique, followed by discussion periods. (Irreg.)

**3773 Television News.** Prerequisite: 2033, 3622, and 3663 or 3642. Television news principles and practice in use of ENG (electronic news gathering), editing of video tape stories and preparation of television news programs. **Laboratory** (F, Sp)

**3800 Internship.** 2 to 3 hours. Prerequisite: 3.00 grade point average required with a total of 75 semester hours completed, 15 in journalism and mass communication courses. May be repeated; maximum credit five hours. Participation in supervised intern experience; grade of S or U based on work performance, regular reports, on-site supervisor evaluation and assigned readings. (F, Sp, Su)

**3813 Typography and Design.** General survey of development of graphic arts. Emphasizes techniques, processes and procedures for putting words and illustration into print media primarily, with particular attention to elements of effective design. **Laboratory** (Sp)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated with change of content; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program; covers materials not usually presented in regular courses. (F, Sp, Su)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated with change of content; maximum credit six hours. Projects vary; deal with concepts not usually presented in regular coursework. (F, Sp, Su)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated with change of content; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work at a special project in the student's field. (F, Sp, Su)

**G4013 Reporting Public Affairs.** Prerequisite: 1013, 2033, 3013. Coverage of government news at the local level with special attention on court procedures, assessments, taxes, budgets and current city, county, state and school problems. Practical experience on city hall and courthouse assignments. (F)

**4023 Advanced News Editing (Slashlisted with 5023).** Prerequisite: 3103. Studies and laboratory experience in creative editing and newsroom management for the daily newspaper or magazine, including photo selection and editing, copy handling procedures, assignments, edition planning, handling of special themes and areas of interest, personnel motivation and ethical problems of the editor. No student may earn credit for both 4023 and 5023. **Laboratory** (Irreg.)

**4043 Reporting in Specialized Fields.** Prerequisite: 2033. May be repeated with change of content; maximum credit six hours. Analysis of problems of news feature coverage by the media requiring specialized knowledge and techniques. Preparation of surveys of media performance and original articles dealing with a chosen field of specialization. **Laboratory** (Sp)

**4053 Advanced Reporting (Slashlisted with 5053).** Prerequisite: 3013. The development of Advanced skills in informational, feature and beat reporting, and the advanced study of news gathering, presentation and gatekeeping theory. No student may earn credit for both 4053 and 5053. (Sp)

**4103 Mass Communication Technology (Slashlisted with 5103).** Prerequisite: upper-division standing. An examination of new communication technologies and their impact on the mass communication industry and on society, in the framework of the information revolution. Topical areas include the electric revolution, print and broadcasting technologies, communication satellites and computers and their convergence, interactive communication systems, electronic age, and international impacts. No student may earn credit for both 4103 and 5103. (Sp)

**4303 International Advertising (Slashlisted with 5303).** Prerequisite: 3303. May be repeated with change of subject matter; maximum credit six hours. Designed to provide basic understanding of advertising and culture that applies to advertising in non-American locations. No student may earn credit for both 4303 and 5303. (Irreg.)

**G4313 Integrated Marketing Communication.** Prerequisite: permission of instructor or graduate standing. Designed to provide a basic understanding of the integrated marketing communication approach to senior-level and graduate students in any of the functional marketing

communication areas such as advertising or public relations, or students in marketing. Focuses on the use of the traditional marketing communication tools of advertising, marketing public relations, sales promotion, and direct marketing in a way that promotes both synergy and a continuing dialogue with the consumer as an individual. (Irreg.)

**4323 Advertising Account Planning (Slashlisted with 5323).** Prerequisite: 3303. Discussion and practice of the advertising agency function of representing the target audience. Emphasis on learning to think like a consumer. Incorporates creativity, market research, consumer behavior and critical thinking to help in understanding target audiences. No student may earn credit for both 4323 and 5323. (F)

**4333 Contemporary Problems in Advertising (Slashlisted with 5333).** Prerequisite: 1013, 2033, 3303, 3333. Survey of contemporary problems in advertising, including current social and economic criticisms, legal and self-regulation problems, and agency and media-related problems. No student may earn credit for both 4333 and 5333. (F)

**4343 Advertising Campaigns.** Prerequisite: 1013, 2033, 3303, 3333, 3353, 3363 and senior standing. This is the senior capstone course for the Advertising sequence. Working as members of competitive advertising agency teams, students research, plan, develop marketing, creative and media strategy and make formal presentations to a major client for a complete advertising campaign. **Laboratory** (F, Sp) [V]

**4403 Public Relations Campaigns-Capstone.** Prerequisite: 1013, 2033, 3413, 3423, 3433. Capstone course for the Public Relations sequence. Detailed analysis of current case studies in the planning, execution and evaluation of public relations programs and projects, including practical work in the field. Emphasis given to fact finding, researching publics, setting objectives, planning the program/project, execution and evaluation. (Sp) [V]

**4423 Public Relations Case Studies (Slashlisted with 5423).** Prerequisite: 1013, 2033, 3413. Designed to demonstrate how to apply public relations theory to a wide range of possible situations. Requires the student to adapt the communications and PR models learned in the public relations principles course to a number of case studies and problems. No student may earn credit for both 4423 and 5423. (Irreg.)

**4433 Sports Public Relations (Slashlisted with 5433).** Prerequisite: 1013, 2033, 3413. A study of public relations as it is practiced in the sports industry featuring guest and video presenters representing various sports publicity, promotion and public relations positions. Includes representatives of newspaper, television, and radio sports departments. No student may earn credit for both 4433 and 5433. (Irreg.)

**4443 Financial Public Relations (Slashlisted with 5443).** Prerequisite: 3413. Introduction and practice designed to develop and understanding of the investor relations function in public relations activity for corporations. Study of the stock market, the roles of the principal players on Wall Street and relevant regulatory powers. Analysis of annual reports and how they are produced as well as financial statements and communication efforts aimed at investors and the news media. No student may earn credit for both 4443 and 5443. (Irreg.)

**4453 Public Relations Research (Slashlisted with 5453).** Prerequisite: 3413. To build skills in the use of various public relations research methodologies available for exploratory, evaluation and management assessment of programs. No student may earn credit for both 4453 and 5453. (Sp)

**G4463 Public Relations Management.** Prerequisite: 3413 or graduate standing. Theory and concepts of public relations as a management function. Emphasis on practical applications and case studies. Topics explored, in seminar fashion, include social and organizational contexts of public relations management, systems and strategies for planning, implementing and evaluating public relations activities, and tasks involved in public relations management. (F, Sp)

**4503 Tutorial in Writing.** Prerequisite: 1013, 2033, 3504, 3514 and permission. May be repeated once for credit; maximum credit six hours. May accompany 3514 with permission. Individual conferences devoted entirely to preparation, criticism, editing and preparation for marketing of the student's original manuscript, both fiction and nonfiction. (F, Sp)

**4514 Writing the Novel.** Prerequisite: 1013, 2033, 3504 and 3514; or permission. May be repeated; maximum credit eight hours. Analysis of the practical creative problems involved in writing novels. Instruction in specific approaches and techniques useful in plotting, characterization, setting, scene, etc. Supervised writing of a novel by each student. (F, Sp)

**4563 Category Fiction (Slashlisted with 5563).** Prerequisite: 3504 and 3514, or permission of instructor. May be repeated once with change of content; maximum credit six hours. In-depth study of current popular

fiction genres and techniques used by category authors. Discussion of books in terms of fiction devices and application of such techniques to student's own work. No student may earn credit for both 4563 and 5563. (F)

**4573 Theories of Professional Writing.** Prerequisite: 4514 and senior standing. This is the senior capstone for the Professional Writing sequence. Study of significant theories of the writing process, the motivation to write, and intended effects of writing. Students will address aesthetics, philosophy and values relating to careers in writing. (Sp) [V]

**4594 Writing the Commercial Nonfiction Book (Slashlisted with 5594).** Prerequisite: 2033, 3504, and permission. May be repeated; maximum credit eight hours. Techniques, structure and elements of writing commercial nonfiction. Each student will work on an original book project and create a submittable book proposal with a list of suitable markets. No student may earn credit for both 4594 and 5594. (F)

**4613 Radio and Television Regulation (Slashlisted with 5613).** Prerequisite: ninety hours including twelve hours of journalism and mass communication. Study and research of the various laws and rules, regulations and industry codes which affect the radio and television media, their history and development. No student may earn credit for both 4613 and 5613. (Irreg.)

**4623 Remote-Based Production (Slashlisted with 5623).** Prerequisite: 3642. Introduction to the techniques of multi-camera, on-location production. Preparatory, practical, technical and theoretical issues regarding pre-production, production and directorial work for live television. No student may earn credit for both 4623 and 5623. (Sp)

**4633 Advanced Video Production.** Prerequisite: 2033, 3622, 3632, 3642, 3663. May be repeated once for credit. Advanced study of the technology, capabilities and utilization of the television medium. Units on aesthetics, lighting, visualization, picturization and the integration of sound and visual image. Intensive practice and skill development in television production techniques. **Laboratory** (F)

**4643 Advanced Audio Production.** Prerequisite: 3622, 3632. May be repeated once for credit. Advanced study of the technology, capabilities and utilization of audio media. Units on advanced audio techniques for radio, television and film. Intensive practice and skill development in audio production techniques. **Laboratory** (Irreg.)

**4653 Current Issues in Broadcasting.** Prerequisite: 1013, 2033, and 3683 or permission. Capstone course for Broadcasting and Electronic Media sequence. Identification, examination, and analysis affecting media and media industries. Course content varies. (Sp) [V]

**4663 Programming.** Prerequisite: 1013, 2033, 3683. Contemporary problems, issues, and policies in programming in the broadcast industry. (Irreg.)

**4673 Advanced Broadcast News (Slashlisted with 5673).** Prerequisite: 3773. Study of current requirements for and practice of public affairs programming, including news. Evolution of broadcast documentary form; writing, filming, editing techniques; budgeting and scheduling; actual preparation of public affairs programs of various types with emphasis on the extended-length news documentary. No student may earn credit for both 4673 and 5673. **Laboratory** (Sp)

**4683 Interactive Multimedia Design (Slashlisted with 5683).** Prerequisite: permission of instructor. Description and history of Interactive Multimedia. Explore current uses of these new technologies and receive instruction in practical application. Students conceive and design IAM programs, incorporating computer graphics, text, animation, audio and video. No student may earn credit for both 4683 and 5683. (F)

**4693 Broadcast Management (Slashlisted with 5693).** Prerequisite: 1013, 2033, 3683. Legal, economic and policy factors in station construction and operations management. No student may earn credit for both 4693 and 5693. (Irreg.)

**4734 Film Script Writing.** Prerequisite: 2033, 3504 or permission. May be repeated; maximum credit eight hours. Analysis of practical creative problems in writing the feature length narrative screenplay. Instruction in specific approaches and techniques including outlining, the three-act structure, format, dialogue, and characterization. Supervised writing of an original screenplay by each student. (Sp)

**G4803 History of Journalism.** Prerequisite: 2033. European background and development of the colonial press. Emergence of the partisan and penny newspapers. Evolution of personal and independent journalism. Major trends in printed and other communication media in the twentieth century. (F, Sp)

**4813 Mass Communication Law.** Prerequisite: ninety hours, including thirteen hours of journalism and mass communication. Capstone course for

the "Journalism" sequence. Examines the principles by which the mass media exercise their public functions and fulfill the mission of the First Amendment. Areas studied include: the right to know, truth and fairness, responsibility, libel, privilege, fair comment, privacy, contempt, copyright, regulation of advertising and the rules, regulations and industry codes which affect the broadcast media. (F, Sp) [V]

**4833 Journalism Ethics (Slashlisted with 5833).** Prerequisite: 12 hours of journalism and mass communication. Press criticism; organizational performance; reportorial performance; print/broadcast distinctions. No student may earn credit for both 4833 and 5833. (F)

**4843 Literature of Journalism (Slashlisted with 5843).** Prerequisite: ninety hours, to include twelve in journalism, or permission of instructor. Reading and discussion of influential books about journalism and mass communication to expose students to the ideas of classic and contemporary writers and thinkers in the field. The course connects a journalism education to broader social science concepts in a manner that should stimulate critical thinking about the role of the media in American and international societies. No student may earn credit for both 4843 and 5843. (Irreg.)

**4853 Race, Gender and the Media (Slashlisted with 5853).** Prerequisite: junior standing. Survey of past and present relationships between women and racial and ethnic minorities in the U.S. and the media. Media portrayal, employment, ownership and access will be studied. No student may earn credit for both 4853 and 5853. (Sp)

**4883 Newspaper Management (Slashlisted with 5883).** Prerequisite: 2033 and senior standing. Organization and management of the modern newspaper. Problems and tradeoffs in the conduct of the newspaper business. Management problem-solving techniques, from the standpoint of publisher and chief operating officer. No student may earn credit for both 4883 and 5883. (Irreg.)

**4970 Special Topics.** 1 to 3 hours. Prerequisite: permission of instructor. May be repeated with change of subject matter; maximum credit nine hours. Varied projects with experimental, innovative and creative approaches, to communicating through the mass media. (Irreg.)

**4990 Independent Study.** 1 to 3 hours. Prerequisite: three courses in general area to be studied; permission of instructor and department; 3.00 grade point average on all college work. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**G5001 Professional Practices.** Prerequisite: Graduate standing and permission. May be repeated with change of content; maximum credit six hours. Discussion and practice in specialized skills related to news and information, strategic communication, or media arts. (F, Sp)

**G5003 Fundamentals of Mass Media Management.** Prerequisite: admission to the M.A. program in journalism and mass communication. For students in their first semester of enrollment. Introduction to mass media management focus of graduate program in journalism and mass communication, with emphases on the literature, research methods and scholarship expectations of the field. Introduction to program requirements and procedures. (Sp)

**G5023 Advanced News Editing (Slashlisted with 4023).** Prerequisite: graduate standing and permission. Studies and laboratory experience in creative editing and newsroom management for the daily newspaper or magazine, including photo selection and editing, copy handling procedures, assignments, edition planning, handling of special themes and areas of interest, personnel, motivation and ethical problems of the editor. No student may earn credit for both 4023 and 5023. **Laboratory** (Irreg.)

**G5053 Advanced Reporting (Slashlisted with 4053).** Prerequisite: graduate standing and permission. The development of advanced skills in informational, feature and beat reporting, and the advanced study of news gathering, presentation and gatekeeping theory. No student may earn credit for both 4053 and 5053. (F)

**G5063 Readings in Mass Communication.** Prerequisite: Graduate standing and permission. Exploration of key works defining the field of mediated communication. Students will examine an area of inquiry of interest to them in depth through readings, discussion, and writing. Includes an examination of online resources, bibliographies, histories, theoretical concepts and issues, and critical biographies of key figures. (Sp)

**G5073 Conceptual Issues in Graduate Study in Journalism and Mass Communication.** Prerequisite: graduate standing. Introduction to key study areas in journalism and mass communication. Historical foundations, theoretical development and research trends will be outlined. Students will

meet graduate faculty members and discuss major ideas and issues in the field. (F)

**G5083 Mass Communication Theory.** Prerequisite: graduate standing or permission. Theoretical perspectives and issues in mass communication. Emphasis on processes and effects that affect mass communication practices and media. Exploration of contemporary research and its contribution to the growing body of knowledge about mass communication. No student may earn credit for both 5083 and 6083. (F)

**G5091 Thesis/Project Seminar.** Prerequisite: graduate standing. Choice and development of appropriate research topics and proposals for theses and professional projects. Discussion of the rigor and expectations for this research. (Sp)

**G5093 Introduction to Research Methods in Mass Communication.** Prerequisite: graduate standing. Introduction to research methods used in the study and practice of mass communication. Addresses how to formulate research problems and choose appropriate methods to study them, including both quantitative and qualitative approaches. (F)

**G5103 Mass Communication Technology (Slashlisted with 4103).** Prerequisite: graduate standing. An examination of new communication technologies and their impact on the mass communication industry and on society, in the framework of the information revolution. Topical areas include the electric revolution, print and broadcasting technologies, communication satellites and computers and their convergence, interactive communication systems, electronic age, and international impacts. No student may earn credit for both 4103 and 5103. (Sp)

**G5113 Qualitative Research Methods.** Prerequisite: graduate standing. Surveys a range of conceptual and methodological approaches appropriate for qualitative research in mass communication. Topics include conceptualization of research problems, framing research questions, the nature and sources of evidence, modes of interpretation, and conceptual framework from which evidence is analyzed in qualitative studies. No student may earn credit for both 5113 and 6113. (Sp)

**G5123 International Media Systems.** Prerequisite: graduate standing or permission of instructor. Introduction to world press systems and description of the broad dimensions of global mass media communication. Global controversies, questions and problems; regional media systems and technological similarities/differences of various countries' media systems. (Irreg.)

**G5133 Quantitative Research Methods.** Prerequisite: graduate standing. Quantitative research methods commonly used in the study of the process and effects of mass communication and the application of the scientific method to such inquiry. No student may earn credit for both 5133 and 6133. (Sp)

**G5143 Advertising and Consumer Behavior.** Prerequisite: graduate standing. Motivation and arousal; perception; learning and reinforcement; personal predispositions; group influences; the decision-making process. (Irreg.)

**G5153 Special Topics in Media Arts.** Prerequisite: Graduate standing and permission of department. May be repeated with change of content; maximum credit twelve hours. Investigation of a problem relating to such subjects as a significant trend, practice, medium, idea, critical principle, or significant person in television, film, book, and other artistic or entertainment media. (Irreg.)

**G5163 Special Topics in News and Information.** Prerequisite: Graduate standing and permission. May be repeated with change of content; maximum credit twelve hours. Investigation of a problem relating to such subjects as a significant trend, practice, medium, idea, critical principle, or significant person in journalism, news, and information fields. (Irreg.)

**G5173 Special Topics in Strategic Communication.** Prerequisite: Graduate standing and permission. May be repeated with change of content; maximum credit twelve hours. Investigation of a problem relating to such subjects as a significant trend, practice, medium, idea, critical principle, or significant person in advertising, public relations, and strategic communication fields. (Irreg.)

**G5303 International Advertising (Slashlisted with 4303).** Prerequisite: graduate standing. May be repeated with change of subject matter; maximum credit six hours. Designed to provide basic understanding of advertising and culture that applies to advertising in non-American locations. No student may earn credit for both 4303 and 5303. (Irreg.)

**G5313 Advertising Management.** Prerequisite: 5013 and graduate standing. Case-study approach to the problems in planning, developing, appraising and administering advertising and promotion activities. In-depth

analysis of the problems and functions involved in managing the advertising function within an agency or within an organization. (Irreg.)

**G5323 Advertising Account Planning (Slashlisted with 4323).**

Prerequisite: 3303. Discussion and practice of the advertising agency function of representing the target audience. Emphasis on learning to think like a consumer. Incorporates creativity, market research, consumer behavior and critical thinking to help in understanding target audiences. No student may earn credit for both 4323 and 5323. (F)

**G5333 Contemporary Problems in Advertising.** Prerequisite: graduate standing and permission. Survey of contemporary problems in advertising; including current social and economic criticisms, legal and self-regulation problems, and agency and media-related problems. No student may earn credit for both 4333 and 5333. (F)

**G5423 Public Relations Case Studies (Slashlisted with 4423).** Prerequisite: graduate standing and permission. To demonstrate how to apply public relations theory to a wide range of possible situations. Requires the student to adapt communications and PR models to a number of case studies and problems. No student may earn credit for both 4423 and 5423. (Irreg.)

**G5433 Sports Public Relations (Slashlisted with 4433).** Prerequisite: graduate standing. A study of public relations as it is practiced in the sports industry featuring guest and video presenters representing various sports publicity, promotion and public relations positions. Includes representatives of newspaper, television, and radio sports departments. No student may earn credit for both 4433 and 5433. (Irreg.)

**G5443 Financial Public Relations (Slashlisted with 4443).** Prerequisite: graduate standing and permission. Instruction and practice designed to develop an understanding of the investor relations function in public relations activity for corporations. Study of the stock market, the roles of principal players on Wall Street and relevant regulatory powers. Analysis of annual reports and how they are produced as well as financial statements and communication efforts aimed at investors and the news media. No student may earn credit for both 4443 and 5443. (Irreg.)

**G5453 Public Relations Research (Slashlisted with 4453).** Prerequisite: graduate standing and permission. To build skills in the use of various public relations research methodologies available for exploratory, evaluation and management assessment of programs. No student may earn credit for both 4453 and 5453. (Sp)

**G5503 Tutorial in Writing.** Prerequisite: graduate standing and permission. May be repeated once; maximum credit six hours. Individual conferences devoted entirely to preparation, criticism, editing and preparation for marketing of the student's original manuscript, both fiction and non-fiction. (F, Sp)

**G5514 Writing the Novel-Graduate.** Prerequisite: graduate standing and permission. May be repeated; maximum credit eight hours. Analysis of the concepts, principles and practical creative problems involved in writing novels. Instruction in specific approaches and techniques useful in plotting, characterization, setting, scene, etc. Supervised writing of a novel by each student. (F, Sp)

**G5553 Contemporary Problems in Professional Writing.** Prerequisite: eight hours in professional writing or equivalent, graduate standing. May be repeated once for credit with change in content. Extensive study of specific trends, shifts in public taste, and technical devices used by the authors. Discussion of books in terms of specific technical devices and how they can be used in the student's own work. (F)

**G5563 Category Fiction (Slashlisted with 4563).** Prerequisite: graduate standing and permission. May be repeated once with change of content; maximum credit six hours. In-depth study of current popular fiction genres and techniques used by category authors. Discussion of books in terms of fiction devices and application of such techniques to student's own work. No student may earn credit for both 4563 and 5563. (F)

**G5570 Special Topics in Professional Writing.** 1 to 3 hours. Prerequisite: graduate standing. May be repeated with change of subject matter; maximum credit nine hours. Variable topics related to theory and practice of fiction, nonfiction and dramatic writing. (Irreg.)

**G5594 Writing the Commercial Nonfiction Book (Slashlisted with 4594).** Prerequisite: graduate standing and permission. May be repeated; maximum credit eight hours. Techniques, structure and elements of writing commercial nonfiction. Each student will work on an original book project and create a submittable book proposal with a list of suitable markets. No student may earn credit for both 4594 and 5594. (F)

**G5613 Radio and Television Regulation (Slashlisted with 4613).**

Prerequisite: graduate standing and permission. Study and research of the various laws and rules, regulations and industry codes which affect the radio and television media, their history and development. No student may earn credit for both 4613 and 5613. (Irreg.)

**G5623 Remote-Based Production (Slashlisted with 4623).** Prerequisite: graduate standing, and 3642 or permission of instructor. Introduction to the techniques of multi-camera, on-location production. Preparatory, practical, technical and theoretical issues regarding pre-production, production and directorial work for live television. No student may earn credit for both 4623 and 5623. (Sp)

**G5673 Advanced Broadcast News (Slashlisted with 4673).** Prerequisite: graduate standing and permission. Study of current requirements for and practice of public affairs programming, including news. Evolution of broadcast documentary form; writing, filming, editing techniques; budgeting and scheduling; actual preparation of public affairs programs of various types with emphasis on the extended-length news documentary. No student may earn credit for both 4673 and 5673. **Laboratory** (Sp)

**G5683 Interactive Multimedia Design (Slashlisted with 4683).**

Prerequisite: permission of instructor. Description and history of Interactive Multimedia. Explore current uses of these new technologies and receive instruction in practical application. Students conceive and design IAM programs, incorporating computer graphics, text, animation, audio and video. No student may earn credit for both 4683 and 5683. (F)

**G5693 Broadcast Management (Slashlisted with 4693).** Prerequisite: 5013, graduate standing and permission of instructor. Legal, economic and policy factors in station construction and operations management. No student may earn credit for both 4693 and 5693. (Irreg.)

**G5734 Writing the Screenplay.** Prerequisite: graduate standing and permission. May be repeated; maximum credit eight hours. Analysis of the forma and structure of the narrative screenplay. Specific approaches and techniques useful in developing plotting, characterization, setting, scene, etc. Supervised writing of feature-length screenplay by each student. (Sp)

**G5800 Graduate Internship.** Prerequisite: Graduate standing and permission. May be repeated with change of content; maximum credit six hours. Professional work experience in mass communication with associated readings, analysis, and critical research. (F, Sp, Su)

**G5833 Journalism Ethics (Slashlisted with 4833).** Prerequisite: graduate standing and permission. Press criticism; organizational performance; reportorial performance; print/broadcast distinctions. No student may earn credit for both 4833 and 5833.(F)

**G5843 Literature of Journalism (Slashlisted with 4843).** Prerequisite: graduate standing. Reading and discussion of influential books about journalism and mass communication to expose students to the ideas of classic and contemporary writers and thinkers in the field. The course connects a journalism education to broader social science concepts in a manner that should stimulate critical thinking about the role of the media in American and international societies. No student may earn credit for both 4843 and 5843. (Irreg.)

**G5853 Race, Gender and the Media (Slashlisted with 4853).** Prerequisite: graduate standing and permission. Survey of past and present relationships between women and racial and ethnic minorities in the U.S. and the media. Media portrayal, employment, ownership and access will be studied. No student may earn credit for both 4853 and 5853. (Sp)

**G5880 Graduate Project.** 2 to 4 hours. Prerequisite: graduate standing in journalism and mass communication. For students electing the project track (nonthesis track). Students will develop, under their project committee's direction, a creative or professional project, such as a novel, a film, an advertising or public relations campaign, or a management plan for a media-related organization. (F, Sp, Su)

**G5883 Newspaper Management (Slashlisted with 4883).** Prerequisite: 5013 and graduate standing. Organization and management of the modern newspaper. Problems and tradeoffs in the conduct of the newspaper business. Management problem-solving techniques, from standpoint of publisher and chief operating officer. No student may earn credit for both 4883 and 5883. (Irreg.)

**G5970 Seminar.** 1 to 3 hours. May be repeated with change of subject matter; maximum credit 12 hours. Methods of research. Selection, evaluation and development of research problems. (Irreg.)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp, Su)

**G5990 Independent Study.** 1 to 3 hours. Prerequisite: graduate standing; permission of instructor. May be repeated with change of subject matter; maximum credit six hours. (F, Sp, Su)

**G6083 Advanced Mass Communication Theory.** Prerequisite: Graduate standing and permission. Advanced study of theoretical understandings in mass communication with attention to historical roots of the field. Exploration of a variety of perspectives such as the American progressives, the effects tradition, critical theory, and British cultural studies. (Sp)

**G6091 Ph.D. Seminar.** Prerequisite: Graduate standing and permission. May be repeated with change of content; maximum credit six hours. Discussion and presentation of research by doctoral students, faculty and visiting scholars. Designed to enhance faculty-student interaction and collaboration on research, and to provide preliminary feedback toward development of dissertation proposals. (F, Sp)

**G6113 Advanced Qualitative Methods.** Prerequisite: Graduate standing and permission. Advanced exploration of the nature of communication research and the place of qualitative methods in that research. Examination of a variety of qualitative techniques and their appropriateness for addressing particular issues in mediated communication. (Sp)

**G6133 Advanced Quantitative Methods.** Prerequisite: Graduate standing and permission. Builds upon introductory methods courses and provides a conceptual and practical framework for using multivariate statistics in mass communication research. Explores the most effective and efficient methods of creating and improving quantitative measures. Emphasis on analyzing data and interpreting results. (Sp)

**G6153 Advanced Topics in Media Arts.** Prerequisite: Graduate standing and permission. May be repeated with change of content; maximum credit twelve hours. Advanced investigation and analysis of a problem relating to such subjects as a significant trend, practice, medium, idea, critical principle, or significant person in television, film, book, and other artistic or entertainment media. (Irreg.)

**G6163 Advanced Topics in News and Information.** Prerequisite: graduate standing and permission. May be repeated with change of content; maximum credit twelve hours. Advanced investigation and analysis of a problem relating to such subjects as a significant trend, practice, medium, idea, critical principle, or significant person in journalism, news, and information fields. (Irreg.)

**G6173 Advanced Topics in Strategic Communication.** Prerequisite: Graduate standing and permission. May be repeated with change of content; maximum credit twelve hours. Advanced investigation and analysis of a problem relating to such subjects as a significant trend, practice, medium, idea, critical principle, or significant person in advertising, public relations and strategic communication fields. (Irreg.)

**G6183 Approaches to Teaching in Mass Communication.** Prerequisite: Graduate standing and permission. An overview of pedagogy related to teaching college classes, specifically in journalism and mass communication programs. Immediately helpful to graduate students with teaching assistantships, and ultimately helpful for all students interested in teaching careers. (F)

**G6980 Research for Doctor's Dissertation.** Prerequisite: graduate standing and permission. Research for Doctor's Dissertation. (F, Sp, Su)

**G6990 Independent Study.** Prerequisite: Graduate standing and permission. May be repeated with change of content; maximum credit eight hours. An individual course of intensive study with the area and problem to be determined by the student and the instructor responsible for supervising the study. (F, Sp, Su)

expansion are emphasized. Conversational practice and traditional oral texts are used to develop proficiency. (F)

## Knowledge Management (KM)

**G5023 Management of Information and Knowledge Organizations (Crosslisted with Library and Information Studies 5023).** Prerequisite: 5033. Theories, processes, behaviors, and issues that allow knowledge based institutions to transform themselves into ones that organize and share knowledge in an effective, efficient manner; leadership, motivation and organizational communication; management of knowledge workers, ethical and legal aspects of managing information and knowledge organizations. (F, Sp, Su)

**G5033 Information and Knowledge Society (Crosslisted with Library and Information Studies 5033).** Prerequisite: Graduate standing or permission of instructor. The nature of knowledge and information; National and global organizational information infrastructure. The role of information and knowledge professionals in the knowledge society; information policy; economics of information; information industries; legal and ethical considerations in information and knowledge system. This course is a prerequisite or corequisite for all courses required for the MLIS or MSKM and must be completed in a student's first semester of summer session as an MLIS or MSKM student. (F, Sp, Su)

**G5043 Organization of Information and Knowledge Resources (Crosslisted with Library and Information Studies 5043).** Prerequisite: 5033. Organization of internal and external sources of information; information services and tools; basic concepts of information storage and retrieval systems; design and structure of information systems; identification and organization of knowledge resources such as expertise, skills and competencies; knowledge organization methods such as classification, cataloguing taxonomies and metadata; search strategies and information retrieval. (F, Sp)

**G5053 Information Users in the Knowledge Society (Crosslisted with Library and Information Studies 5053).** Prerequisite: 5033. Information use by people in various roles, situations, and contexts, individually and in groups. Information behavior and the influence of learning and cognitive process; value systems; and situational, psychological, sociological, and political perspectives. Application of study of user information behavior to textual, graphical, and visual representation of knowledge. Includes both theoretical models and practical methodologies for study of uses and for user-centered design of information and knowledge systems and services. (F, Sp)

**G5223 Information Technology Management (Crosslisted with Library and Information Studies 5223).** Prerequisite: 5033 and 5603 or permission of instructor. Fundamentals of planning, designing, implementing, and managing information technology solutions; market and trend analysis; planning and assessment techniques and tools; human factors in technology management. (Irreg.)

**G5263 Organizational Learning and Learning Organizations (Crosslisted with Library and Information Studies 5263).** Prerequisite: 5033; 5053. Theories and models of individual, group, team, and organizational learning; creation and management of learning organization; organizational behavior and organizational culture; group team management; group team, and organizational leadership; conflict and agreement; change management. (Irreg.)

**G5413 Indexing and Abstracting (Crosslisted with Library and Information Studies 5413).** Prerequisite: 5033 and 5043. History, principles and techniques and applications of indexing, abstracting, and vocabulary control. Includes file organization and maintenance, information representation and coding, natural language processing, and thesaurus construction. (Irreg.)

**G5433. Design and Implementation of Web-Based Information Services (Crosslisted with Library and Information Studies 5433).** Prerequisite: 5033 and 5043. Design fundamentals for web-based information services. Emphasis on networked information, information architecture, and usability, based on analysis and evaluation of current connectivity infrastructure and characteristics and behavior of networked audiences. (F, Sp, Irreg. Su)

**G5473 Document and Records Management (Crosslisted with Library and Information Studies 5473).** Prerequisite: LIS 5033 and 5043. The systematic capture, acquisition, processing, storage, and control of

## Kiowa (KIOW)

**1713 Beginning Kiowa.** Introduction to the structure of the Kiowa language with special attention to its phonology, morphology, and syntax. Conversational practice, vocabulary-building, and the history and culture of the native speech community also are emphasized. (F, Sp) [I-FL]

**1723 Beginning Kiowa Continued.** Prerequisite: 1713. A continuation of the study of the structure of the Kiowa language with special attention to its phonology, morphology, and syntax. Conversational practice, vocabulary-building, and the history and culture of the native speech community are emphasized. (Sp) [I-FL]

**2733 Intermediate Kiowa.** Prerequisite: 1723. A systematic review of the structure of the Kiowa language. Syntactic control and vocabulary

documents in all formats, including their management as records throughout the life cycle from creation to final disposition. Introduction to principles, methodologies, administration, tools, and techniques in various settings. (Irreg.)

**G5523 Online Information Retrieval (Crosslisted with Library and Information Studies 5523).** Prerequisite: 5033 and 5053. Structure, content, and application of online databases for education, research, business, and public use. Principles and techniques for the evaluation of online databases and services. Document representation, information need specification, and query formulation for online information retrieval. (Alt. F, Irreg. Su)

**G5603 Information Systems and Networks (Crosslisted with Library and Information Studies 5603).** Prerequisite: 5033. Conceptual introduction to digital information technology, including historical origins and development. Introduction to systems, systems analysis, and nature and functionality of networks. Includes hands-on basic introduction to technical aspects of computer hardware and software. (F, Sp, Irreg. Su)

**G5643 Knowledge Representation (Crosslisted with Library and Information Studies 5643).** Prerequisite: 5033. Exploration and analysis of different approaches to knowledge representation from a variety of disciplines. Conceptual foundations, sources, challenges, and dissimilar types of knowledge. The process of generation, transfer, and internalization of knowledge in the context of the decision-making process. (Alt. Sp, Irreg. Su)

**G5653 Preservation of Information Materials (Crosslisted with Library and Information Studies 5653).** Prerequisite: 5033. Theory and practice of preservation conservation of intellectual content and physical artifacts, including paper, microfilm, and digital records. Emphasis on planning and administering disaster prevention and recovery, preservation, and digitization programs. (Alt Sp, Irreg. Su)

**G5663 Knowledge Management Design Project.** Prerequisite: LIS/KM 5023, LIS/KM 5043, LIS/KM 5113, LIS/KM 5453, and permission of instructor. Design and development of an operational prototype for a system to support knowledge management in a selected organizational setting. (F, Sp, Su)

**G5713 Research Methods (Crosslisted with Library and Information Studies 5713).** Prerequisite: 5023, 5033, 5043, 5053. Methods of investigation library and information problems; evaluating research studies in library and information science; developing original research designs. (Sp, Irreg. Su)

**G5823 Internship in Library/Information Centers (Crosslisted with Library and Information Studies 5823).** Prerequisite: Eighteen hours of knowledge management coursework and permission of adviser and supervising faculty. Provides an opportunity for student synthesis of principles and theories acquired in coursework and application of these principles and theories in an appropriate setting. Professional supervision; requires 135 hours. (F, Sp, Su)

**G5920 Directed Research (Crosslisted with Library and Information Studies 5920).** 1 to 3 hours. Prerequisite: 5713 and permission of instructor and adviser. May be repeated; maximum credit six hours. Faculty supervised research; requires a written report. (F, Sp, Su)

**G5940 Directed Project (Crosslisted with Library and Information Studies 5940).** 1 to 3 hours. Prerequisite: 24 hours of LIS/KM coursework and permission of instructor. May be repeated; maximum credit three hours. Design and implementation of a professional project that applies principles and theories acquired in coursework to the solution of professional problems in practical settings. Requires a project prospectus and a written report at conclusion of the project. Conducted under faculty supervision. May not be taken for credit toward the MSKM degree by students electing thesis option. (F, Sp, Su)

**G5960 Directed Readings (Crosslisted with Library and Information Studies 5960).** 1 to 3 hours. Prerequisite: Fifteen hours of knowledge management coursework and permission of instructor and adviser. May be repeated; maximum credit six hours. Faculty supervised exploration of an area of knowledge management not covered in regularly offered courses. (F, Sp, Su)

**G5980 Research Master's Thesis (Crosslisted with Library and Information Studies 5980).** 2 to 9 hours. Prerequisite: Permission of instructor. May be repeated; maximum credit applicable toward degree six hours. (F, Sp, Su)

**G5990 Special Problems (Crosslisted with Library and Information Studies 5990).** 1 to 3 hours. Prerequisite: Permission of instructor. May be repeated; maximum credit nine hours. Examination and discussion of current problems in knowledge management. (Irreg.)

## Landscape Architecture (L A)

### G4033 Project Documents (Crosslisted with Architecture 4033).

Prerequisite: Architecture 4575 or permission or CNS 4923. An introduction to the building construction and architectural project manual with emphasis on owner/contractor relationships. (Sp)

### G5033 Design Theory and Criticism (Crosslisted with Architecture 5033).

Prerequisite: graduate standing or permission of instructor. Historical and contemporary topics in design goals, concepts, theories and philosophies. (Sp)

### G5052 Professional Practice (Crosslisted with Architecture 5052).

Prerequisite: 5043 or permission of instructor. Survey of career options, internship, registration, firm organization, office management, professional conduct and ethics within the practice of architecture. (F, Sp)

### G5243 Landscape Architecture Technology: Materials and Construction.

Prerequisite: graduate standing and permission of instructor. Technical requirements and design characteristics of landscape construction materials. Brick, concrete, asphalt, stone, wood, paving curbs, walls, steps, small structures, site furnishings, lighting, and basic construction documentation.

### Laboratory (F)

### G5343 Landscape Architecture Technology: Site Issues.

Prerequisite: graduate standing and permission of instructor. Technical aspects of land and water interactions in site planning and landscape engineering. Introduction to contours, grading and earthwork; watershed and site drainage; horizontal and vertical curves; erosion control, and sedimentation. **Laboratory (Sp)**

### G5403 Research Methods in Landscape Architecture.

Prerequisite: graduate standing or permission of instructor. Introduces basic research methods applicable to landscape architecture. (F)

### G5513 Landscape Architecture Drawing and Graphics.

Prerequisite: graduate standing and permission of instructor. Basic techniques for visual thinking/seeing and basic graphic techniques for two- and

three-dimensional representation. Different methods of communication such as sketching, diagramming, plan, section and elevation drawing,

rendering, one and two point perspective, and axonometric drawing for

layout and composition. (F)

### G5515 Landscape Architecture Introductory Graduate Studio I.

Prerequisite: graduate standing and permission of the instructor. Small-scale problems in landscape architecture with particular emphasis on principles and elements of design, design of individual sites, design as a process including communication of site analysis, design, development and final design proposals. (F)

### G5525 Landscape Architecture Introductory Graduate Studio II.

Prerequisite: graduate standing and permission of instructor. Introduction to site planning at small to medium scales with particular emphasis on design process where consideration of natural and human factors influence design solutions. Subject matter varies and is reflective of a host of problems and issues common to landscape architecture. (Sp)

### G5535 Landscape Architecture Intermediate Graduate Studio III.

Prerequisite: 5515, 5525, graduate standing, and permission of instructor. Studio work concerned with park, recreation, and open space issues pertinent to contemporary needs. Subject matter may include park typologies and their design, recreation typologies, public education, greenways, scenic byways, eco-tourism, schools, art in the landscape, and community gardens. (F)

### G5545 Landscape Architecture Intermediate Graduate Studio IV.

Prerequisite: 5515, 5525, graduate standing, and permission of instructor. Focus on housing and community planning as related to site planning and site design with particular emphasis on urban environments, housing typologies, community participation, community facilities, and the landscape architect's approach to integration of proposed developments within natural and human contexts. (Sp)

### G5555 Landscape Architecture Advanced Graduate Studio V.

Prerequisite: 5515, 5525, 5535, 5545, graduate standing, and permission of instructor. Theoretical and essential processes common to developments in regenerative design and planning as related to sustaining health human and natural environments. Particular emphasis is placed upon inventory and analysis at the regional scale in which geographic land units such as watersheds, mountain ranges, islands, towns, cities, major neighborhoods, or urban districts are common subject matter. (F)

**G5613 Landscape Architecture Computer Applications.** Prerequisite: graduate standing and permission of instructor. A survey of computer applications common to the profession of landscape architecture including work processing, desktop publishing, computer image manipulation, computer-aided drafting, spreadsheets and databases with particular emphasis on computer image manipulation and computer-aided drafting. (Sp)

**G5713 Plant Material and Technology.** Prerequisite: graduate standing and permission of instructor. Identification and classification of native and ornamental woody evergreen and deciduous trees, shrubs, vines, and ground covers. Study of their morphology, cultural characteristics, landscape uses, pruning maintenance, planting and establishment. Includes basic horticultural principles, plant processes, and factors affecting plant growth. (F)

**G5723 Plant Material and Technology II.** Prerequisite: graduate standing and permission of instructor. A continuation of 5713. Identification and classification of natural and ornamental woody evergreen trees, shrubs, vines, and ground covers. Study of their morphology, cultural characteristics, landscape uses, pruning maintenance, planting, establishment, plant processes and factors affecting plant growth. (Sp)

**G5924 Planting Design.** Prerequisite: 4723, graduate standing or permission of instructor. An intensive lecture/studio emphasizing the use of plants in landscape design. **Laboratory** (F)

**G5940 Field Work.** 1 to 4 hours. Prerequisite: 4515 and permission of instructor. Studies in landscape architecture not suited to the conventional classroom setting. (F, Sp)

**G5943 History and Theory of 20<sup>th</sup> Century Landscape Architecture.** Prerequisite: graduate standing or permission of instructor. A survey of American landscape architecture trends and personalities through the late 20th century. Includes an overview of European and Asian landscape and garden design precedents. The framework of modern architecture, modern art, and public art which provide a context for and influence upon landscape architecture will be discussed in historical and theoretical terms. (F)

**G5950 Graduate Project Proposal.** 2 to 4 hours. Prerequisite: graduate standing and permission of instructor. Proposal development for terminal graduate project in landscape architecture. (F, Sp)

**G5960 Directed Readings.** 1 to 4 hours. Prerequisite: permission of instructor. May be repeated with change of content; maximum credit nine hours. Selected readings in landscape architecture. (F, Sp, Su)

**G5970 General Department Seminar.** 1 to 4 hours. Prerequisite: graduate standing and permission of instructor. May be repeated with change of topic; maximum credit nine hours. Advanced professional topics in landscape architecture and experimental course offerings. (Sp)

**G6596 Graduate Project.** Prerequisite: 6950 or permission of instructor. An approved individual project or thesis exploiting or integrating the student's specialization with landscape architecture. **Laboratory** (Sp)

**G6643 Urban Design Theory (Crosslisted with Architecture and Regional and City Planning 6643).** Prerequisite: graduate standing. A survey of theory relevant to the urban design process, including social and behavioral concepts, visual and aesthetic theory, spatial and geographic factors of urban form. (Sp)

**G6950 Applied Research in Landscape Architecture.** 1 to 4 hours.

Prerequisite: 6013 and permission of instructor. Approved individual research in landscape architecture coordinated with electives in preparation for the graduate project. (F)

**G6990 Graduate Special Studies.** 1 to 6 hours. Prerequisite: graduate standing and permission of instructor. May be repeated with change of content; maximum credit 12 hours. Selected topics in landscape architecture. (F, Sp, Su)

Covers in one semester the essentials of the material in Latin 1115 and 1215. Students who have completed 1115 and 1215 may not enroll in 1315. (F) [I-FL]

**2113 Intermediate Prose: Cicero, Livy, Pliny, Seneca.** Prerequisite: 1215, or equivalent, with a grade of C or better. May be repeated with change of subject; maximum credit six hours. Reading designed mainly to increase the student's proficiency in rapid translation, in excerpts from the prose writings of major Latin authors. (F, Sp)

**2213 Intermediate Poetry.** Prerequisite: 1215, or equivalent, with a grade of C or better. Reading selections from the major Latin poets; designed to improve the student's proficiency in translation and the understanding of Latin poetic technique. (F, Sp)

**2313 Latin Composition.** Prerequisite: 1215, or the equivalent, with a grade of C or better. Composition and translation designed to provide a systematic review of grammar and improve control in writing Latin.

**The prerequisite for 3000-level courses is one 2000-level course or the equivalent.**

**3113 Advanced Prose.** May be repeated with change of subject matter; maximum credit six hours. Readings from the works of major Latin prose authors. (Irreg.)

**3213 Advanced Poetry.** May be repeated with change of subject matter; maximum credit six hours. Selected readings from the works of the major Latin poets. (F, Sp)

**3313 Latin Composition.** Prerequisite: one intermediate level Latin course or the equivalent. In this course the student will learn to compose in Latin by translating sentences and continuous passages from English. (Sp)

**3510 Selected Topics.** Prerequisite: 2113 or 2213 or the equivalent. May be repeated with change of content; maximum credit six hours. A study of selected topics in Latin literature on subjects not offered in regularly scheduled courses. (Irreg.)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. Covers materials not usually presented in the regular courses. (F, Sp, Su)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. The projects covered vary. The content will deal with concepts not usually presented in regular coursework. (Irreg.)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work at a special project in the student's field. (F, Sp)

**3990 Independent Study.** 1 to 3 hours. Prerequisite: one course in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**The prerequisite for 4000-level courses is one 3000-level course or the equivalent.**

**4133 Historians: Livy, Tacitus, Caesar, Sallust (Slashlisted with 5133).**

May be repeated with change of subject matter; maximum credit nine hours. Introductory course in Roman history. Readings chosen to present memorable persons and episodes in the ascendancy of the Republic, the critical issues of the Civil Wars, and the social and political decadence of the Early Empire. No student may earn credit for both 4133 and 5133. (Irreg.)

**G4213 Horace.** May be repeated with change of subject matter; maximum credit six hours. Readings in the odes and epodes, with metrical analysis and explication. Biographical and historical aspects of the poems. Horace's place in the lyric tradition. (Irreg.)

**G4313 The Teaching of Latin.** Investigation of recurrent problems in Latin pedagogy; aims, traditional and experimental methods, evaluation and choice of texts, instructional aids and special problems in phonology and syntax. (F, Sp)

**4503 Latin Capstone Course.** Prerequisite: senior standing in major. Students work on an individual basis in conjunction with a Classics faculty member and write a senior paper on a topic to be chosen in consultation with the faculty member. The paper must demonstrate a comprehensive understanding of the Latin language and of one of the major areas of Greco-Roman civilization. [V]

## Latin (LAT)

**1115 Beginning Latin.** Introductory study of the vocabulary and grammar of the Latin language, with practice in the reading of sentences and connected prose from selected Latin authors. (F, Sp) [I-FL]

**1215 Beginning Latin.** Prerequisite: 1115, or the equivalent, with a grade of C or better. Introductory study of the vocabulary and grammar of the Latin language, with practice in the reading of sentences and connected prose from selected Latin authors. (F, Sp) [I-FL]

**1315 Intensive Introductory Latin.** Prerequisite: permission of Honors Program. Alternative to the Latin 1115 and 1215 introductory sequence.

**4990 Independent Study.** 1 to 3 hours. Prerequisite: three courses in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**The prerequisite for 5000-level courses is graduate standing or one 4000-level course or the equivalent.**

**G5990 Special Studies.** 1 to 4 hours. May be repeated; maximum credit eight hours. Reading and research, arranged and directed in consultation with the instructor, in specified areas of Classical philology. (F, Sp)

## Law (LAW)

### First-Year Required Courses

**5103/5203 Civil Procedure I/II.** (6 hours) Civil Procedure in state and federal courts; introductory survey of procedures by which questions of substantive law commonly are raised and determined; procedural and remedial background; law governing controversies in federal courts; details of procedure in a lawsuit, including forum selection, pleading, joinder of claims and parties, discovery, the pretrial conference, disposition without trial, trial before a judge or jury, post-trial motions and appeals; issue and claim preclusion.

**5113/5212 Contracts I/II.** (5 hours) Contract formation; enforceability and remedies, including offer, acceptance; interpretative problems; consideration and its substitutes; statute of frauds, actual and anticipatory breach; conditions; impossibility and frustration, third-party beneficiaries, assignment and delegation, and unconscionability.

**5122/5202 Legal Research, Writing & Advocacy I/II.** (4 hours) Instructions in the methods of legal research in various media integrated with legal writing and oral advocacy. Writings will include legal memoranda, briefs, pleadings and other practice legal documents.

**5134 Constitutional Law.** (4 hours) Selected issues, including: judicial review; the judicial process in construing and applying the United States Constitution; federal and state powers, federalism and separation of powers; an introduction to the concepts of equal protection and due process.

**5144/5242 Torts I/II.** (6 hours) An introduction to basic principles of civil liability, with study of selected issues, including intentional wrongs, negligence, strict liability, vicarious liability, defenses and immunities, comparative fault, assessment of damages, nuisance, products liability, misrepresentation, injuries to reputation, and alternative compensation systems.

**5223 Criminal Law.** General principles of criminal responsibility and the elements of common law, statutory crimes, and defenses. Emphasis is placed on the subject of criminal intent.

**5234 Property.** Introduction to basic property concepts, including: adverse possession; estates in land; landlord and tenant; concurrent estates; nonpossessory interests (including easements, licenses, covenants and equitable servitudes); and real estate transactions.

### Upper Division Required Courses

**5303 Criminal Procedure I.** The administration of criminal justice, including rights of accused persons, initiation of prosecution, preliminary examinations, and an overview of procedural steps. Emphasis is placed on the privilege against self-incrimination, rules on arrest, search and seizure, and the exclusionary rule.

**5314 Evidence.** Presentation of evidence; judicial control and legal reasoning in the determination of issues of fact; admissibility of evidence, including relevancy, testimonial and real evidence; and the exclusion of evidence, including hearsay and privileged communications.

**5323 Professional Responsibility.** The nature of law as a profession; problems facing the profession and the individual lawyer. Fundamentals of legal ethics and responsibilities, with emphasis on the Model Rules of Professional Conduct of the American Bar Association.

### Elective Courses

**5403 Administrative Law.** Basic considerations relating to administrative agencies, including nondelegation doctrine, fact versus law distinction,

agency rule making, adjudication, due process requirements, information gathering, and judicial review.

**5410 Bankruptcy.** (3 or 4 hours) Rights and remedies of debtors and creditors; bankruptcy including liquidation, reorganization, and wage earner plans; attachment, judgment execution; garnishment, fraudulent conveyances, bulk sales and collection remedies including compositions and assignments.

**5424 Introduction to Commercial Law.** The fundamental concepts of the Uniform Commercial Code; freedom of contract; good faith and fair dealing; bona fide purchase; basic principles involved in secured transactions; selected coverage of issues relating to bankruptcy, consumer law, sales and leases of goods, payments, letters of credit and documents of title; and investment securities.

**5433 Corporations.** This course provides an introduction to corporate law. Brief coverage is given to factors bearing on the choice of organization, the process of corporate formation, and corporate capital structure. Close examination is given to the governance structure of the corporation and the fiduciary obligations of directors and officers. The course also addresses forces that serve to discipline directors and officers, such as voting rights and the market for corporate control.

**5443 Family Law.** The rights, obligations, and liabilities arising from marital and nonmarital relations; divorce; marital property alimony, child support. Family Law is a prerequisite to Children and the Law.

**5450 First Amendment.** (3 hours) Prerequisite: Constitutional Law. Individual rights of expression, assembly, association and religion; permissible government restrictions and regulations in relation to activities protected by the First Amendment.

**5463 Individual Income Tax.** This course provides an essential understanding of the tax problems that you and your future individual and business clients are likely to face. In particular, we study the tax consequences of torts, compensation for services, marriage and divorce, gifts and inheritances, simple business operations, and elementary real estate transactions. There are no prerequisites, and no facility with mathematics or accounting is needed. This course is a prerequisite for corporate tax and partnership tax.

**5470 Wills & Trusts.** (3 or 4 hours) Intestate succession, execution, interpretation, amendment, revocation and contest of wills, rights of decedent's family, will substitutes and the avoidance of probate; creation, validity, funding, amendment and termination of trusts and the fiduciary obligation.

**5520 Alternative Dispute Resolution.** (2 or 3) Negotiation, mediation and arbitration; includes court-ordered arbitration, mini-trials, summary jury trials and other formal and informal means of resolving disputes short of formal court adjudication.

**5530 Civil Pretrial Litigation.** (2 or 3 hours) The study of litigation tactics and techniques prior to trial. Included are discovery, motion practice, witness preparation, settlement, alternate dispute resolution, pretrial conferences, mini-trials, summary jury trials, and other related areas.

**5533 Conflict of Laws.** The law relating to transactions with elements in more than one state or nation, jurisdiction of courts and enforcement of foreign judgments, choice of law problems, constitutional issues, and the theoretical basis of choice of law, including an introduction to the problems of *renvoi* and characterization.

**5543 Federal Courts.** Examines concepts of case or controversy, federal subject matter jurisdiction; supplemental jurisdiction; venue; removal; substantive law applied in federal courts; and the relationship of the state and federal courts.

**5553 Remedies.** (2 or 3 hours) The basic purpose of this course is to develop an understanding of the "anatomy" of a lawsuit in law or in equity by focusing on the legal evaluation of facts, the characterization of causes of action, and determination of selection of the most efficacious remedial alternative available. The study of Remedies considers the common law, statutory, and constitutional sources of legal and equitable rights and the means by which rights are enforced and violations of rights are prevented, redressed, or compensated. The course involves analysis of the four principal remedies available at law and in equity: (a) injunctions and specific performance, (b) compensatory and punitive damages, (c) restitution, and (d) declaratory relief. The defenses, adjustments, and limitations on those remedies are also considered as well as the study of the right to jury trial and attorney's fees.

**5600 Comparative Indigenous Peoples Law Seminar.** (2 hours) The seminar will examine the differences and similarities between Canadian, United States and Australian laws affecting native peoples. Participants in

the seminar will include students from the University of Ottawa Law School and the Monash University Faculty of Law ( Australia ) attending via television. Professors Brad Morse of the University of Ottawa Law School and Melissa Castan of the Monash University Faculty of Law will co-moderate. Paper required. Federal Indian Law is not a prerequisite, but recommended.

**5600 Tribal Courts and Tribal Law Seminar.** (2 hours) This course examines the history and development of tribal justice systems, the application of traditional and modern tribal laws and norms, and the roll of tribal courts in governmental and international affairs.

**5610 Federal Indian Law.** (2 or 3 hours) The law governing the relationship between the Indian tribes, the states and the United States . Topics include the history of federal Indian Law and policy; the federal-tribal relationship; tribal sovereignty, federal supremacy and states rights; the jurisdictional framework; criminal jurisdiction; civil jurisdiction; taxation and regulation of reservation economic development, including environmental regulation and regulation of Indian gaming; Indian religion and culture; water rights; fishing and hunting rights.

**5612 Indian Land Titles.** Indian Land Titles explores the interface between real property law and federal Indian law to examine how Indian land ownership is treated "differently" by virtue of its status. The course combines historical, jurisprudential and practical perspectives in confronting such issues as the differing role private ownership of land plays in Anglo American versus Native American institutions, the development and progression of that role from the time of discovery to the present, the nature of Indian land title and federal control over its parameters, and the mechanics of acquiring, retaining, and transferring parcels of real property owned by tribes or their members. There are no prerequisites to the course.

**5702 Agency & Partnership.** Legal principles concerning association in business by agency, partnership, and other unincorporated forms.

**5703 Antitrust Law.** Federal and state antitrust laws approached on the basis of type of conduct, i.e., monopolies, mergers, price control by private business, exclusive dealing contracts, fair trade pricing, agreements not to compete; discrimination in distribution and refusals to deal; and unfair trade practices. This is an analysis of basic market operation and how the antitrust laws affect business behavior. This course is a prerequisite for antitrust II offered in the spring.

**5720 Corporate Finance.** (2 or 3 hours) Prerequisite: Corporations. This course provides an introduction to financial and valuation theories, including portfolio theory, efficient capital markets theory, and asset pricing models. The course will address the principles underlying the capital structure of a corporation and the distinctive aspects of corporate securities. Mathematical competence at the high school algebra-level will be assumed.

**5732 Insurance.** Life, health, property, and liability insurance, including the nature of insurance, insurance interest, interests of the named insured and others, subrogation, the insured event, exceptions, warranties, representations, concealment, formation of the contract, and waiver and estoppel.

**5753 Federal Securities Regulation.** Recommended: Prior or concurrent enrollment in Corporations. This course provides an introduction to the regulation of the issuance and trading of securities. Topics include requirements regarding the registration of securities, exemptions from registration, and civil liabilities under the Securities Act of 1933 and the Securities Exchange Act of 1934, with special attention to liability for fraud and insider trading.

**5810 Capital Punishment and the Judicial Process.** (2 or 3 hours) The study of the death penalty in the United States, including: the history of capital punishment; arguments supporting and opposing capital punishment; constitutional issues under the Eighth and Fourteenth Amendments; the role of mitigating and aggravating evidence in guiding the sentencer's decision to impose; exclusion of jurors; use of psychiatric experts in capital trials; state post-conviction remedies; the scope of federal habeas review; constitutional challenges to the arbitrary imposition of the death sentence of those deserving of death; the recently-expanded federal death penalty; and international law and capital punishment.

**5820 Forensic Evidence Seminar.** (2 hours) Prerequisite: Evidence. A study of technical and legal aspects of the use of forensic science techniques in criminal law cases. Specific topics may include forensic pathology, ballistics, forensic serology, fingerprint analysis, and the various tests for intoxication. Legal issues of admissibility and of limitations of the permissible forms of expert testimony will be explained in depth.

**5930 Legislation & the Courts.** (2 or 3 hours) Development of statutory law from common law antecedents, legal processes, jurisprudential theories of

legislation and relationship to "judge-made" law. Rules and Canons of statutory construction.

**5932 Jurisprudence Seminar.** Religion and democracy. Are religion and democracy compatible? In the United States in 2004, many commentators suggested that the electoral divide was between religious and non-religious people. Iraq is now experimenting with an Islamic democracy. The focus of this seminar will be on the role of religion in democracy and whether the two concepts are compatible. This will NOT be a Church-State course in that we will not focus on the First Amendment religion clauses or the Supreme Court's opinions in this area. Instead, we will focus on the underlying philosophical questions of whether religion and democracy are compatible, and, if so, how religion can and ought to influence the public square in a pluralistic democracy. This seminar will satisfy the graduation writing requirement.

**6000 International Trade Law.** (3 hours) The multilateral rules and institutions that regulate the conduct of states and other public entities as they in turn regulate cross-border commerce in goods, services, and the use of intellectual property rights. The primary focus is on the World Trade Organization, with attention also paid to NAFTA, the European Community, and other regional systems. Although the subject matter of the course is of great importance to transactions between private parties, the course (unlike the course in International Business Transactions) is not devoted to detailed study of private conduct.

**6000 NAFTA and Other Regional Trade Agreements.** (2 or 3 hours) This course examines the North American Free Trade Agreement (NAFTA). The course explores the nature of international law generally and the economic basis of free trade, and reviews the history and legal framework of the NAFTA. It examines its main obligations, structure and coverage with respect to trade in goods, services, investment and intellectual property, dispute settlement mechanisms, impact of NAFTA in selected industries among others. A comparison is made with regional integration processes in South America (Common Market of the South -MERCOSUR) and Europe (The European Union).

**6000 Selected Problems in International Law.** (1 to 4 hours). Subject matter and course credit will be included with the enrollment instructions.

**6010 British Constitutional Law.** Oxford (1 or 2 hours). The fundamental law of the United Kingdom of Great Britain — civil, criminal, public, and private — together with those rules of conduct laid down to govern the exercise of state power by the official organs of the state.

**6020 Comparative Law.** (2 or 3 hours) Introduction to the study of foreign legal systems, primarily the characteristic features of the institutions, procedures, rules, and legal culture of legal systems (particularly France , Germany , Japan and Mexico ) that constitute part of the so-called "civil law tradition" which forms the basis of legal systems in most of continental Europe, many parts of Asia and Africa, and nearly all of Central and South America. Also includes some more limited study of aspects of the Chinese and Islamic legal systems. Particular emphasis will be placed on judicial structures and procedures, and less on substantive rules. A goal of the course is to analyze structural and procedural problems common to all legal systems, and to compare the solutions attempted in foreign legal systems with those in the United States. This course does not have any formal prerequisites; however an interest in history is highly recommended.

**6030 European Economic Community.** Oxford (1 or 2 hours). The structures and institutions of European communities, their lawmaking processes, and administration. The interaction and conflict between community law and national law and the growing role of the European court in mediating between the nations and the communities. The processes of the court and parallels between American constitutional development and that in Europe . Substantive areas of European law, in particular those regulating competition and antitrust; the harmonization of national law; the establishment of enterprises; and the free movement of goods, services, persons, and capital. The European Convention on Human Rights and its enforcement in national and European Courts.

**6040 International Business Transactions.** (2 or 3 hours) This course will focus on the legal aspects of business activity that takes place in two or more countries. For example, you will examine the sale of goods and services across national boundaries, licensing of intellectual property, foreign investment, and the resolution of international business disputes. Although regulation of international trade (the World Trade Organization, NAFTA, etc.) is an element in the course, it is not the central focus. The course will include study of fundamental principles of international taxation and antitrust law; however, there are not any course prerequisites and the instructor will not assume that students have taken courses in these or other

specific subjects. The course will be graded primarily on the basis of an end-of-semester examination, with a possible class participation component.

**6050 International Human Rights.** (3 hours) Human rights law is that body of international law that regulates the relationship between human beings (either as individuals or groups) and their own governments. This course will be an introduction to human rights law: its rules, institutions, and procedures. A distinctive feature of the fall 2005 course is that it will include a three week component (in September) taught by a law professor from Tunisia , Dr. Abdelhamid Abed, who is a specialist in Middle Eastern legal systems. He will focus on the topic "Human Rights in Text and in Practice: the Arab World Response". The course will be graded primarily on the basis of an end-of-semester examination, with a possible class participation component. There are no prerequisites for the course, although students choosing between this course and Public International Law are advised to take the latter course (other factors being equal).

**6060 Public International Law.** (3 hours) Public International Law, sometimes also called the "Law of Nations," is concerned with the definition of legal rights and duties among nation states (including those individuals who act on their behalf) and international organizations. This course offers a survey of the norms, rules and institutions that make up the international legal system and which regulate interaction among states, and between states and individuals. An understanding of the basic principles of public international law is fundamental for anyone interested in taking further courses in international law.

**6100 Adoption Law Practicum.** (2 hours) Limited to third year students. Students will examine Oklahoma Statutes, the U.S. Code and the Hague Convention, all in the context of domestic, interstate and international adoption issues. Each student will be assigned a different adoption case scenario and will individually draft the necessary pleadings for their particular adoption case. During one class session, an adoption judge will preside over an actual adoption proceeding. There will be no final exam. Final grades will be determined by averaging weekly grades based on attendance, written work, class demonstrations and class discussion. No absences will be allowed, and failure to be prepared for discussion will result in a weekly grade of zero.

**6100 American Legal History.** (3 hours) The development and characteristics of American legal institutions and basic themes in American law and legal philosophy.

**6100 Antitrust II.** (3 hours) Prerequisite: Antitrust. This course will cover virtually all aspects of the antitrust laws including an introduction to the application of Sections 1 (acts in unreasonable restraint of trade), 2 (monopolizing or attempting to monopolize) of the Sherman Act, and Section 3 (exclusive dealing arrangements) of the Clayton Act to business practices in the commercial marketplace. It will also cover additional substantive areas such as the Robinson-Patman Act (price discrimination) and mergers and acquisitions under Section 7 of the Clayton Act. Finally, it will deal with the special problems of antitrust enforcement, litigation tactics, trial and settlement of antitrust cases and other similar subjects. It will also deal with exemptions from the antitrust laws such as the State Action Doctrine and Noerr-Pennington Doctrine. The course will employ the use of a casebook which is "litigation oriented". The professor will incorporate many year's of practical experience in the antitrust courtroom as background material.

**6100 Civil Appellate Procedure.** (2 hours) Rules of Procedure in Oklahoma which govern appeals and certiorari proceedings and the principles of advocacy in noncriminal cases.

**6100 Energy Law.** (2 hours) The course examines the regulatory structure involved in the development and delivery of alternative sources of energy, such as hydroelectric, coal, and nuclear power. Special attention is directed to the role of economics as it impacts on the administrative and political processes.

**6100 European Union Law.** (3 hours) This course is an introduction to the legal system of the European Union. The primary emphasis will be on the EU's constitutional structure: its institutions, including the European Court of Justice, and the relationship between EU law and the legal systems of the member states. Attention will be given to selected substantive law issues. Grading will be on the basis of an examination at the end of the semester. There are no prerequisites.

**6100 Interviewing, Counseling and Negotiation.** (2 hours) This course will deal with skills involved in interpersonal relationships necessary for the successful practice of law with an emphasis on client development, evaluation of witnesses and negotiating techniques. The course will

concentrate on specific verbal and non-verbal communications, fact-gathering, listening skills and body language interpretation. Emphasis will be placed on classroom participation. Enrollment is limited to third year students.

**6100 Mergers and Acquisitions.** (3 hours) Prerequisite: Prior or concurrent enrollment in Corporations. Recommended: Federal Securities Regulation. The course provides an understanding of the issues arising in business acquisition (and divestiture) transactions. Coverage is given to theories underlying acquisitions, alternative acquisition techniques and planning considerations that bear on the choice among those techniques.

**6100 Native American Natural Resources Seminar.** (3 hours) After an overview of the history of U.S. native policy and the basic doctrines of Indian law, this course covers a variety of issues relating to tribal interests in and jurisdiction over environmental resources. Course coverage includes tribal rights to land; land use and environmental protection in Indian country; economic and natural resource development issues (including grazing, minerals, timber and taxation); water rights; hunting and fishing rights; as well as international perspectives on indigenous resources. Throughout the course, students will consider the roles of the tribal, federal, and state governments in resource regulation and use.

**6100 Selected Legal Problems.** (1 to 4 hours) Subject matter and course credit will be included with the enrollment instructions.

**6100 Supreme Court Decision-Making.** (3 hours) In this advanced constitutional law and appellate advocacy course, students act in turn as lawyers, arguing selected cases pending in the United States Supreme Court, and as justices, deciding those cases in conferences and drafting judicial opinions. This is both a substantive course, examining in depth key constitutional questions and other issues of national importance before the Court, and a skills course, developing students' advocacy skills as lawyers and jurists. Due to the organization of the course, enrollment will be limited. Grading for the course will be based primarily on a substantial written opinion, and secondarily on class participation, particularly in oral argument. Students may satisfy the graduation writing requirement through this course.

**6100 Trademarks.** (2 or 3 hours) This course examines the relevant laws that impact and protect trade identity (commercial good will). The course primarily focuses on the Lanham Act. Trademark infringement (for registered and unregistered trademarks), unfair competition, dilution and anticybersquatting, validity, infringement, defenses, remedies and internet trademark related issues are examined.

**6113 Children and the Law.** Prerequisite: Family Law. This class will cover custody and visitation with children, including problems of interstate jurisdiction and international child abduction. The course will cover problems of parentage, particularly when new reproductive techniques are used, as well as problems of child abuse and neglect and the juvenile court system.

**6130 Education Law.** (2 or 3 hours) A survey of legal issues affecting education, including students' rights, teachers' rights, desegregation, special education, educational finance, and church-state relations.

**6140 Employment Law.** (3 hours) A survey of state and federal regulation of the employment relationship in the private sector, including federal labor statutes, collective bargaining, arbitration, and other employee rights recognized by law.

**6150 Equal Employment Opportunity.** (3 hours) Federal laws prohibiting employment discrimination including Title VII of the Civil Rights Act of 1964 and federal regulations mandating affirmative action by federal contractors.

**6170 Gender Based Discrimination.** (3 hours) Survey course on the law of gender, or sex-based discrimination, including constitutional standards, family, employment, education and criminal law.

**6180 Health Care Organization, Delivery and Management.** (2 or 3 hours) Legal problems connected with health care organization, delivery and management; problems encountered by practicing business or corporate lawyers in the health care field; private and public health insurance; Medicare, Medicaid and other complex regulatory environments created by federal and state health care programs.

**6190 Health Law.** (2 or 3) The legal aspects of medicine; civil liability of medical professionals and health care providers; organization and regulation of the medical profession; uses of medical science in litigation; selected health sciences and public policy issues such as human reproduction, the right to treatment, and mental health problems.

**6210 Immigration Law.** (3 hours) Constitutional, statutory, and regulatory framework for the admission, exclusion, and deportation of non-citizens

who seek immigrant and non-immigrant status in the United States; refugee and asylum law and policy, and citizenship acquisition.

**6230 Mass Media Law.** (3 hours) The legal frame work governing the gathering, preparation, and dissemination of information and entertainment to broad audiences by means of print and electronic media. Restraints on publication; access to governmental and judicial proceedings and records; defamation and invasion of privacy; and regulation of broad casting and cable television. In addition to federal and Oklahoma law, the courts may also draw upon examples from international and comparative communications law.

**6250 Military Law Seminar.** (2 hours) The law of judicial and nonjudicial punishment under the Uniform Code of Military Justice: pretrial, trial, and appellate procedures; evidentiary rules, alternative disposition of offenses; administrative solutions; sources and purposes and military law; duties of military counsel and judges.

**6260 Sports Law.** (2 or 3 hours) Legal problems involved in sports, including amateurism and its regulation contracts, gender discrimination, antitrust, and labor issues; review of player contracts and methods of compensation; liability for injuries to players and spectators.

**6272 Workers' Compensation.** Historical and current principles of compensation for worker injuries, disease, or death arising out of employment, including coverage and procedures of relevant Oklahoma and federal statutes, types of disabilities and benefits, prerequisite for entitlement to benefits, defenses and rules against third parties.

**6311 American Indian Law Review.** Prerequisite: American Indian Law Review membership. Production of a written note or comment for the Review or other approved activities associated with production of the Review.

**6313 Child Abuse Clinic.** Prerequisite: prior completion of or concurrent enrollment in Family Law and Children and the Law. Each student enrolls for an entire academic year for three hours each semester.

**6320 Directed Legal Research.** (1 or 2 hours) Legal research and writing under the supervision of a faculty member. The student must write a paper of sufficient quality to be considered for publication in a law review or other publication. A student may enroll in one or two credit hours with supervising faculty member's permission.

**6321 Competitions.** Students who participate on a trial or appellate advocacy competition team sponsored by the College of Law and directly supervised by a faculty member or the Competition Director may enroll in this course.

**6322 Criminal Litigation Skills.** Basic information on Oklahoma criminal law and procedure; basic lawyering skills, including interviewing, counseling, and negotiation; basic trial techniques.

**6323 Criminal Defense Clinic.** Prerequisites: Civil Procedure Evidence, Professional Responsibility, and Legal Intern License. Clinical experience providing students opportunity to represent indigent defendants charged with municipal, misdemeanor and felony offenses in Cleveland and McClain Counties . Students handle every aspect of the defense of a criminal case, including interviewing, investigating, negotiating, litigating motions and conducting the trial.

**6363 Civil Clinic.** Prerequisites: Civil Procedure, Evidence, Professional Responsibility, and intern license. Student interns, working from an office located in the Law Center, participate in the actual representation of low-income clients in civil matters. Experience is acquired through court appearances, jury and non-jury trials, interviewing, discovery, drafting of pleadings and appeals under the supervision of the clinical legal education staff. Students are required to maintain an active caseload and office hours.

**6372 Civil Practice Skills.** Classroom instruction associated with Civil Clinic designed to prepare students to assist and represent clients in civil cases; basic lawyering skills, including office procedures and law office management, interviewing, counseling, negotiation, mediation, fact investigation, discovery procedures, trial preparation, and professional responsibility.

**6391 Oklahoma Law Review.** Prerequisite: Oklahoma Law Review membership. Production of a written note or comment for the Review or other approved activities associated with production of the Review.

**6400 Consumer Products Safety Externship.** (Up to 12 hours) This clinical program allows students to work for one semester at the Consumer Product Safety Commission in Washington , D.C. Interns are expected to participate in weekly substantive presentations and meetings on significant litigation and policy matters and are required to complete an independent writing project.

**6400 Federal Indian Law Externship.** (Up to 12 hours) This program allows students to work for one semester for federal attorneys engaged in Indian law litigation and policymaking in Washington , D.C. Students have interned at the United States Department of Justice and the Bureau of Indian Affairs. Interns are expected to participate in weekly substantive presentations and meetings on significant litigation and policy matters and are required to complete two independent writing projects.

**6400 Lawyering Skills.** (4 hours) This course is team taught by members of the practicing bar and the bench, covering important areas of practice for the single practitioner and small office practitioner. This course addresses law office management, ethics, civility, and practical drafting, plus practice pointers by specialists in areas of general practice in which the new attorney may be involved if he or she practices alone or with one or two other lawyers. Limited to third year student enrollment.

**6400 Oklahoma Journal of Law and Technology (OKJOLT).** (1 hour) Electronically published law review dedicated to the convergence of law and technology.

**6400 Selected Legal Problems of Applied Nature.** (1 to 4 hours) Subject matter and course credit will be included with the enrollment instructions.

**6403 Practice Court.** Prerequisites: Evidence, Civil Procedure. Practical training in the preparation and presentation of two jury trials based on an actual occurrence. Emphasis is on specific trial techniques, pleadings, motion practice, and jury trial procedures.

**6410 Trial Techniques.** (2 or 3 hours) Prerequisite: Evidence. An introduction to basic trial techniques under simulated trial situations.

**6500 Agricultural Biotechnology Law.** (2 or 3 hours) This course explores the laws and regulations that impact agricultural biotechnology. The course has four main components: one week that introduces the science of agricultural biotechnology, four weeks on intellectual property issues regarding plants and animals, five weeks on comparative regulations of agricultural biotechnology in the United States and Europe , four weeks on international treaties that impact agricultural biotechnology. At the end of each major unit – in week 5, week 9, and week 14 – students have an open book, take-home examination. These three take-home examinations are the evaluation method for the course. Students select one of two questions to answer. Student answers must not exceed 1,000 words. Students may deliver the answers by email attachment. There are no prerequisites.

**6500 Agricultural Environmental Law.** (2 hours) Addresses environmental issues in the agricultural sector. Topics include wetlands, concentrated animal feeding operations, agricultural non-point source pollution, farm bill environmental programs (e.g. conservation reserve, swambuster, sodbuster), and pesticide regulation. This course complements and deepens understanding of the environmental laws studied in the Environmental Law survey course. However, there are no prerequisites for enrollment.

**6500 Selected Problems in Agriculture.** (1 to 4 hours) Selected issues in agricultural law. Subject matter and course credit will be included with the enrollment instructions.

**6520 Intellectual Property.** (2 or 3 hours) The nature of the rights, acquisition and enforcement of, and property and contract interests in patents, trademarks, and copyrights.

**6523 Environmental Law.** This is a survey course designed to introduce students to the common law and statutory approaches pertaining to environmental issues such as population, economic growth, energy and pollution. The primary focus is on the major federal environmental protection statutes including the National Environmental Policy Act, Clean Air Act, Clean Water Act, Resource Conservation and Recovery Act, Comprehensive Environmental Response Compensation and Liability Act, as well as statutes regulating pesticides and dealing with the testing of hazardous substances. Course coverage also includes examination of the administrative process and the role of courts in environmental litigation. Certain recurring themes animating the development of federal environmental law are emphasized, including the role of public interest, economics, scientific uncertainties and risk factors, and the government's need for relevant information regarding the effects of pollution on the environment in order to regulate effectively.

**6530 Land Use Control.** (3 hours) Judicial, statutory, and administrative restrictions on use and development of land; zoning; restrictive covenants, subdivision regulations, land use planning, doctrines of nuisance and eminent domain; utilization of air space and historic preservation.

**6540 Oil and Gas.** (3 or 4 hours) Nature of property interests in oil and gas; conveyancing of interests in oil and gas; a detailed study of the oil and

gas lease – its options, conditions, and express and implied covenants; and the conservation and regulation of oil and gas. No prerequisites.

**6550 Oil and Gas Contracts/Tax.** (2 or 3 hours) Examination of contracts used in the oil and gas industry for exploration, production, and development of oil and gas properties and for investment therein; the nature of the relationships created by such contracts, the rights and duties of the parties thereto, the income tax consequences and governmental regulation of such contracts.

**6552 International Petroleum Transactions.** This course considers the legal issues and transactions relating to the exploration, production, and marketing of petroleum – the largest and most important commodity traded worldwide. Coverage includes how countries settle competing claims to oil and gas reserves, how host governments or state-owned oil and gas companies contract with private companies to explore and develop oil and gas resources, and the contracts that parties engaged in such activities enter into with each other. This course also covers the international marketing of crude oil and natural gas.

**6560 Title Examination and Assurance.** (2 or 3 hours) Conveyances, with emphasis on the examination of abstracts of title to real property.

**6570 Real Estate Transactions.** (3 hours) The first two-thirds of the course studies the terms and legal issues involved in drafting, executing, and enforcing residential real estate contracts, including obtaining and evaluating title evidence prior to closing and recovery for breach of title guarantees. The last third of the course will introduce certain basic commercial real estate transactions, including processes and issues involved in housing subdivisions, condominiums, shopping centers, and commercial leases.

**6580 Water Law.** (2 or 3) The system of water rights; riparian, appropriation, and prescriptive rights; stream, surface, and ground water; transfer and termination of rights; injuries caused by water; development of water supplies; federal-state, interstate, and intrastate conflicts; water pollution control; federal and Indian rights and federal water resource problems.

**6602 Church-State Relations Seminar.** The Establishment Clause and Free Exercise Clauses; historical and current relationships between government and religious, secular, and anti-religious interests.

**6612 Civil Rights & Liberties.** An in-depth examination of constitutional litigation under 42 U.S.C. Section 1983, the primary civil rights enforcement statute. Particular attention will be paid to the state action doctrine, qualified and absolute immunities, and the varying standards of care governing Section 1983 claims.

**6630 Communications and Law of Torts Seminar.** (2 hours) Tort liability arising from communications, especially mass media and other public communications. This includes "communications torts," such as defamation, invasion of privacy, and infringement of the right of publicity; and application to communications of economic torts, negligence and other theories of tort liability.

**6632 Constitutional Law Seminar.** Selected topics and issues of constitutional law.

**6660 Criminal Procedure Seminar.** (2 hours) Prerequisite: Criminal Law. This course addresses the rights of those charged with committing a crime. Students will examine what occurs between arrest and disposition. Topic areas include discovery; motion practice; plea bargaining; pretrial release and detention; prosecutorial discretion; speedy trial; sentencing options and procedures; stating the appellate process; and related matters. This seminar will satisfy the graduation writing requirement.

**6680 Family and Law Torts Seminar.** (2 hours) The subject "The Family and the Law of Torts" encompasses tort liability within the family, family tort liability to third parties, injuries to family members, interference with family relationships, wrongful birth, and related topics. The relevant family relationships can include information and non-traditional relationships, as well as traditional relationships, and perhaps even relationships with domestic animals. Students in the seminar will undertake research in topics of their choice (as approved by the professor), complete a research paper, and make a presentation to the seminar on their research topic. The paper can fulfill the graduation Writing Requirement.

**6690 International Law - Common Law Systems.** (1 or 2 hours) The practical introduction to the laws and legal systems of common law countries, other than the United States (England, Ireland, Canada, Australia, New Zealand, and most other countries that once were part of the British Empire), with emphasis on legal research, to gain experience in the use of foreign legal materials that are relevant to American legal problems, as well as international problems.

**6700 Bioethics & Law Seminar.** (2 hours) This seminar examines selected legal, ethical, social and policy problems posed by advances in biomedical technologies. Specific coverage and paper topics will depend upon student interest. Typically, coverage includes issues concerning human reproduction and birth, human genetics, organ transplantation, definition of death and life and death decisions, and regulation of research involving human subjects. All students must submit a paper meeting the College of Law's graduation writing requirements.

**6700 Lawyering in the 21st Century Seminar.** (2 hours) Prerequisite: Professional Responsibility. This advanced course in the law and ethics of lawyering considers current issues at the forefront of the modern legal profession. Specific topics vary, but may include in-depth consideration of legal malpractice and lawyer discipline, multi-disciplinary and multi-jurisdictional practices, lawyering on the internet, and innovations in the delivery of legal services. The course satisfies the required professionalism component for legal externs, and papers of suitable length may satisfy the graduation writing requirement.

**6700 Selected Legal Problems Seminar.** (1 to 4 hours) Involves current legal problems. Subject matter and course credit will be included with the enrollment instructions.

**6700 Special Education Law Seminar.** (2 hours) This course will familiarize students with current issues in the field of special education law. Students will gain an appreciation for the contemporary public debate over the nature of the state's relationship to students with special needs education in education.

**6700 Terrorism, National Security and Civil Liberties Seminar.** (2 hours) This course focuses on a wide range of issues related to terrorism and governmental responses. Topics include the framework of separate branches of government with shared national security power; fighting terrorists and international criminals; and protecting national security information in a democratic society.

**6712 Products Liability Seminar.** Regulation and civil liability of manufacturers and distributors of defective products. Development of the concept of recovery for injuries caused by products; survey of civil actions for harm resulting from defective and dangerous products; study of problems associated with hazard identification and the process of evaluation of risk; government regulation of dangerous and defective products; review of Consumer Products Safety Act and current legislation dealing with injuries and remedies in specific areas.

**6810 Estate Planning.** (3 hours) Prerequisites; Wealth Transfer Taxation. Maximization, preservation, and administration of wealth and its tax-conscious transfer through use of wills, trusts, future interests, and inter vivos gifts.

**6820 Income Taxation of Corporations.** (3 hours) Prerequisite: Individual Income Tax, but it may be taken concurrently or waived on permission of the professor. This is the basic course on business taxation. This course looks at the tax consequences of organizing and running businesses as corporations and as tax-free small business corporations. Also, the course looks at the tax consequences of mergers, acquisitions, and liquidations. This course is essential for business lawyers: even if you do not plan to be a tax lawyer, you need to appreciate the harsh tax realities that your clients face.

**6822 Income Taxation of Trusts & Estates.** Prerequisite: Income Tax. Subchapter J of the Internal Revenue Code, involving income taxation of trusts, estates, and beneficiaries.

**6830 Pensions and Employee Benefit Plans.** (2 or 3 hours) Planning, establishment, and administration of pension, health care and other employee benefit plans under the tax and labor laws.

**6832 Partnership Tax.** Prerequisite: Individual Income Tax. Subchapter K of the Internal Revenue Code, involving taxation of partnerships and partners.

**6843 Wealth Transfer Taxation.** Federal estate, gift, and generation-skipping transfer taxes, applicable to gratuitous transfers.

**6920 Torts III.** (2 or 3 hours) Tort remedies for interference with family relations, economic relations, and public rights, misuse of judicial process; economic and business torts, including interference with contractual relations, injurious falsehood, unfair competition, and misappropriation; publicity and privacy. The Kutner & Reynolds Advanced Torts casebook is used.

## ***Legal Studies (L S)***

**3003 Introduction to Law and Legal Reasoning.** Prerequisite: junior standing or permission of department. An introduction to Anglo-American law, emphasizing Anglo-American legal history, comparative legal systems, the interdisciplinary nature of law, and critical legal reasoning. [IV-WC]

**3323 Legal Environment of Business.** Prerequisite: junior standing. The legal environment of business organizations with ethical considerations and the social and political influences affecting such environments. (F, Sp, Su)

**4113 The Law of Employment.** Prerequisite: 3323. Overview of the legal, ethical, social, and political issues associated with the employer-employee relationship. Topics include employment and employment-like relationships, at-will employment and exceptions; workers' compensation; employee privacy, employee disabilities, and equal employment opportunity. (Sp)

**G4413 The Law of Business Organizations.** Prerequisite: 3323. Law and the form of the business unit; formation, promotion, and organization; financing, devices for raising capital, inducements of investors; management of the business unit, keeping the unit within the powers; distribution of the powers; duties of members and representatives in management; responsibility for torts and crimes; adjustment of the rights of creditors; dissolution of the business unit. (F, Sp, Su)

**G4523 The Law of Commercial Transactions.** Prerequisite: 3323. A comprehensive survey of commercial transactions, including the law of sales, warranties, risk of loss, negotiable instruments, bank collections and deposits, electronic fund transfers, secured transactions and bankruptcy. (Sp)

**G4613 Real Property Law.** Prerequisite: 3323. General law of real property; historical development, acquisition of title to personal property, estates in land, landlord and tenant relations, easements, deeds, mortgages, adverse possession, wills and trusts. (F, Sp)

**4710 Special Topics in Legal Studies.** 1 to 6 hours. Prerequisite: 3323 or permission. May be repeated with change of subject matter.

**4713 The Law of International Business Transactions.** Prerequisite: 3323. Examines the legal and ethical environment of international business. Topics include international treaties and conventions, comparative legal systems, extraterritoriality of U.S. and foreign laws, the Act of State Doctrine and the resolution of international business disputes.

**4813 International Petroleum Transactions.** Prerequisite: 3323, 4523, 4613, Petroleum Engineering 4103, senior standing, Energy Management major, and permission. The international oil and gas business covering: the sovereign rights to minerals; how crude oil is bought and sold on the world market; various types of host government contracts to assign development rights to private companies; how disputes between a private company and host government are resolved; contracts between private companies engaged in exploration and production operations. (Irreg.)

**4823 Oil and Gas Contracts and Tax.** Prerequisite: 3323, 4523, 4613, Petroleum Engineering 4103, and senior standing. Examination of contracts for the oil and gas industry. Covers exploration, production and development of oil and gas properties, investments, relationships created by such contracts, rights and duties of the parties, income tax consequences, and governmental regulation. (Irreg.)

**G5323 The Legal and Regulatory Environment of Business.** Prerequisite: graduate standing. A survey of the basic framework of the American and international legal systems, with particular emphasis on the common law, comparative law, courts, civil procedure, constitutional law, administrative regulation, topics in business law, and the regulatory environment. Examines the ethical issues confronting business managers and provides a systematic method for recognizing and resolving these issues. (F, Sp)

**G5523 Contemporary Commercial Law.** Prerequisite: 5323, graduate standing. Examines the current state of commercial law in the U.S., with particular emphasis on the Uniform Commercial Code (sales, negotiable instruments, letters of credit and secured transactions) and the Federal Bankruptcy Act. (Su)

**G5713 International Business Law.** Prerequisite: 5323. Study of international and domestic regulations affecting multi-national enterprises and international business transactions. Examines and compares inter-governmental organizations, world legal systems, business structures, and regulatory and tax systems, and provides students with practical legal knowledge of how international transactions are carried out. (F)

**G5970 Topics in Legal Studies.** 1 to 6 hours. Prerequisite: 5323 or permission. May be repeated with change of subject matter.

## ***Letters (Ltrs)***

**3003 The American Novel as Social History.** Prerequisite: junior standing or permission of instructor. Main currents of social development from the mid-nineteenth century as reflected in literature. The course integrates changes as historians approach them with responses to change as writers record them. Topics included the anti-slavery impulse, the Civil War, urbanization, race relations, and the impact of modern war and consumerism. (Irreg.) [IV-WC]

**3013 Documentary Oklahoma.** Prerequisite: junior standing or permission of instructor. The means whereby Oklahoma's history and culture have been documented through literature, film, photography, and both oral and written memoirs. Particular emphasis is given both to the diversity of the state's cultural heritage and to its image as reflected in national media. (Irreg.) [IV-WC]

**3023 Classical Italy and Umbria.** Prerequisite: 45 hours and permission of instructor; priority enrollment will be given to those students participating in the Perugia program. An introductory survey of the evolution of Italy from the pre-Roman Italic and non-Italic peoples and civilizations through the Roman era, papal rule, the Renaissance, Spanish and French domination, and ultimate unification into a modern country. Because of the tremendous influence of ancient Rome on Italy, more time will be spent on the Roman era than any other. Course consists of internet research on selected and chronological topics followed by essays and class discussion using internet technologies. (Su)

**3510 Topics in Letters.** Prerequisite: Forty-five credit hours or permission of instructor or department. May be repeated with change on content; Maximum credit six hours. Discussion of selected interdisciplinary topics in letters. (Irreg.)

**4003 Life and Letters in the American South.** Prerequisite: junior standing or permission of instructor. An examination of social change and the literature that reflects it in the American south since the Civil War. Topics include the evolution of southern race relations, forms and expressions of political power, and the south's place in defining an overall American culture. (Irreg.)

**4013 Literary and Cinematic Explorations of Power.** Prerequisite: junior standing or permission of instructor. Examines ways in which American writers and film makers have addressed power relationships in the century. Pairing particularly insightful novels with significant motion pictures, topics include black-white relations, immigration, gender roles in transitional societies, class and dispossession, military power, and the ethics of political power. (Irreg.)

**4503 Letters Capstone Course.** Prerequisite: senior standing in major. Students write a senior paper on a topic chosen in consultation with the instructor. Papers will demonstrate students' abilities to synthesize material drawn from among two or more of the areas included in the Letters program. [V]

**4990 Independent Study.** Prerequisite: Junior standing or permission of instructor or department. May be repeated; Maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. (F, Sp)

## ***Liberal Studies (LSTD)***

**1003 Intro to Interdisciplinary Study.** An introductory study of the concepts and practices of interdisciplinary inquiry, writing, critical thinking and problem solving across disciplines, and techniques for solving problems and writing papers from an interdisciplinary perspective. (F, Sp, Su)

**1210 Humanities Independent Study.** 0 to 15 hours. An interdisciplinary approach to study in the humanities available through directed independent study or internet courses.

**1213 Creativity in the Arts.** Students will learn about the literary, visual and performance arts by viewing, reading and listening to some of the most famous examples of the arts. Students will also learn about the creative process through the production of their own art. (F, Sp, Su)

**1223 A History of the United States.** A general historical overview of the United States with a particular focus on the role that the humanities played in shaping this country. (F, Sp, Su)

**1230 Humanities Seminar.** 0 to 15 hours. An intensive, full-time seminar concerned with the organization and interrelatedness of knowledge around a central theme, problem or topic within the humanities. The seminar is taught by one or more faculty members from the humanities area.

**1310 Social Sciences Independent Study.** 0 to 15 hours. An interdisciplinary approach to study in the social sciences available through directed independent study or internet courses.

**1313 What in the World are the Social Sciences?** Discusses what comprises the social sciences and how we perform research in the different areas, including addressing ethical questions. (F, Sp, Su)

**1323 Governing Ourselves.** An analysis of the differing ideologies governing autocratic vs. democratic systems of government, the structure of the United States government, and the role of extra-governmental elements such as lobbyists and the pacs on the process of governing. (F, Sp, Su)

**1330 Social Sciences Seminar.** 0 to 15 hours. An intensive, full-time seminar concerned with the organization and interrelatedness of knowledge around a central theme, problem or topic within the social sciences. The seminar is taught by one or more faculty members from the social sciences.

**1410 Natural Sciences Independent Study.** 0 to 15 hours. An interdisciplinary approach to study in the natural sciences available through directed independent study or internet courses. Includes some laboratory learning experiences. (F, Sp, Su)

**1413 Mathematics in Liberal Studies.** Prerequisite: **Norman Campus students only**—MATH 0123 at OU or satisfactory score on the placement test or satisfactory score on the ACT/SAT. Designed to enhance the student's ability to utilize mathematical tools in their daily lives. Covers such topics as use of statistics, evaluating others' use of statistics, mathematics in finance, and use of exponents and logarithms in scientific calculations. (F, Sp, Su)

**1423 Introduction to Interdisciplinary Physical Sciences.** Emphasis on physics and chemistry, including topics such as the laws of motion, elements of thermodynamics, wave forms and properties, structure of atoms, and the formation of chemical bonds. (F, Sp, Su)

**1430 Natural Sciences Seminar.** 0 to 15 hours. An intensive, full-time seminar concerned with the organization and interrelatedness of knowledge around a central theme, problem or topic within the natural sciences. The seminar is taught by one or more faculty members from the natural sciences area.

**2210 Humanities Independent Study.** 0 to 15 hours. An interdisciplinary approach to study in the humanities available through directed independent study or internet courses.

**2213 Humanistic Tradition: Prehistory through Renaissance.** An overview of the humanities from a historical perspective. Emphasis will be placed on what the humanities mean and why they are important. This course is the foundation for all subsequent interdisciplinary study of the humanities in the BLS programs. (F, Sp, Su)

**2220 Issues in Humanities.** 1 to 6 hours. May be repeated with change of content; maximum credit twelve hours. Specific course content will be defined each time the course is offered. A problem-oriented approach to issues in humanities, employing an interdisciplinary approach.

**2223 The Humanistic Tradition: Renaissance-Modern World.** An overview of the humanities from a historical perspective. Emphasis will be placed on what the humanities mean and why they are important. This course is the second part of the foundation for all subsequent interdisciplinary study of the humanities in the BLS programs. (F, Sp, Su)

**2230 Humanities Seminar.** 0 to 15 hours. An intensive, full-time seminar concerned with the organization and interrelatedness of knowledge around a central theme, problem or topic within the humanities. The seminar is taught by one or more faculty members from the humanities area. (Irreg.)

**2310 Social Sciences Independent Study.** 0 to 15 hours. An interdisciplinary approach to study in the social sciences available through directed independent study or internet courses. (F, Sp, Su)

**2313 The Human Experience: The Role of Culture.** A critical discussion of prejudice, discrimination, gender identity and crime and deviance from the perspective of the social sciences. (F, Sp, Su)

**2320 Issues in Social Sciences.** 1 to 6 hours. May be repeated with change of content; maximum credit 12 hours. A problem-oriented approach to issues in social sciences, employing an interdisciplinary approach. Specific course content will be defined each time the course is offered.

**2323 Human Groups and Distribution of Resources.** A study of culture from a social sciences perspective, including investigating topics such as ethnocentrism, cultural relativism and personal identity within the context of being American. (F, Sp, Su)

**2330 Social Sciences Seminar.** 0 to 15 hours. An intensive, full-time seminar concerned with the organization and interrelatedness of knowledge around a central theme, problem or topic within the social sciences. The seminar is taught by one or more faculty members from the social sciences area. (Irreg.)

**2410 Natural Sciences Independent Study.** 0 to 15 hours. An interdisciplinary approach to study in the natural sciences available through directed independent study or internet courses. This course includes some laboratory learning experiences. (F, Sp, Su)

**2413 Interdisciplinary Life Sciences.** A study of the integration of biological systems at the cellular level. It includes discussions of metabolism, chromosome structure and function and the structure and function of the DNA molecule. (F, Sp, Su)

**2420 Issues in Natural Sciences.** 1 to 6 hours. May be repeated with change of content; maximum credit twelve hours. Specific course content will be defined each time the course is offered. A problem-oriented approach to issues in natural sciences, employing an interdisciplinary approach.

**2423 Science as a Process.** Analysis and criticism of the scientific method, design of experiments and collection and interpretation of data in scientific investigation. (F, Sp, Su)

**2430 Natural Sciences Seminar.** 0 to 15 hours. An intensive, full-time seminar concerned with the organization and interrelatedness of knowledge around a central theme, problem or topic within the natural sciences. The seminar is taught by one or more faculty members from the natural sciences area. (Irreg.)

**2700 Special Topics in Liberal Studies.** May be repeated with change of content; maximum of nine credit hours. Specific course content will be defined each time the course is offered. A problem-oriented approach to interdisciplinary studies. Reading and research, arranged and directed in consultation with the instructor, in specified areas of liberal studies. (F, Sp, Su)

**2750 Interdisciplinary Seminar.** May be repeated with change of content; maximum credit 12 hours. An intensive seminar concerned with the organization and inter-relatedness of knowledge around a central theme, problem or topic in interdisciplinary studies. (F, Sp, Su)

**2800 Investigative Studies in Liberal Studies.** May be repeated with change of content; maximum of nine credit hours. Investigation in problems not covered in existing courses and utilizing an interdisciplinary approach to problem-oriented studies. Will culminate in a written report of investigation. Specific course content will be defined each time the course is offered. Reading and research, arranged and directed in consultation with the instructor, in specified areas of liberal studies. (F, Sp, Su)

**3210 Interdisciplinary Study in the Humanities.** 0 to 15 hours. Prerequisite: 3502 or equivalent. An interdisciplinary approach to study in the humanities available through directed independent study, internet courses, or weekend classes. Classes include team project assignments that are planned and guided by a professor from the humanities area. (Irreg.)

**3223 Renaissance Art.** Prerequisite: 1213, 1223, or equivalent. A critical discussion of the art of the Italian Renaissance. The focus of this course will be on explicating religious textual narratives and exploring how artists translated these ideas into visual form to create an effective message. The course will deal with painting, sculpture and architecture and will highlight well-known artists. (F, Sp, Su)

**3230 Comprehensive Humanities Seminar.** 0 to 15 hours. Prerequisite: 3502 or equivalent. An intensive, full-time seminar concerned with the organization and interrelatedness of knowledge around a central theme, problem or topic in the humanities. The seminar is taught by one or more faculty members from the humanities area. (Irreg.)

**3233 Special Topics in the Humanities of the Ancient World.** Prerequisite: 1213, 1223, or equivalent. Students will explore a broad variety of cultural themes found concurrently in both western and non-western cultures from Antiquity through the Middle Ages. (F, Sp, Su)

**3243 Special Topics in the Humanities of the Modern World.** Prerequisite: 1213, 1223, or equivalent. Students will explore a broad variety of cultural themes found concurrently in both western and non-western cultures from the Renaissance through the Enlightenment and into the Modern World. (F, Sp, Su)

**3253 Foundations of Ethics in Liberal Studies.** Prerequisite: 1213, 1223, or equivalent. A foundation for the scholarly research and discussion of ethics. Topics will include historical and philosophical grounding in the consideration of ethics. The course will utilize an interdisciplinary approach to the inquiry of ethics. (F, Sp, Su)

**3310 Interdisciplinary Study in the Social Sciences.** 0 to 15 hours. Prerequisite: 3502 or equivalent. An interdisciplinary approach to study in the social sciences available through independent study, internet courses, or weekend classes. Classes include team project assignments that are planned and guided by a professor from the social sciences area. (Irreg.)

**3330 Comprehensive Social Sciences Seminar.** 0 to 15 hours. Prerequisite: 3502 or equivalent. An intensive, full-time seminar concerned with the organization and interrelatedness of knowledge around a central theme, problem or topic in the social sciences. The seminar is taught by one or more faculty members from the social sciences area. (Irreg.)

**3333 Human Arrangements: Troubled Institutions, Problems of Inequalities.** Prerequisite: 1313, 1323, or equivalent. Issues affecting institutions from family through those affecting the national population, including health care, education, the economy, and the interaction of government with all such questions. Problems arising from inequality among groups in the society, including poverty, elderly and young, minority and majority, and gender concerns. (F, Sp, Su)

**3343 Challenges in a Changing World.** Prerequisite: 1313, 1323, or equivalent. Conformity and deviance in societies. Topics addressed include sexual behavior, drug use and crime and violence. It also looks at social problems expressed on a broader scale, including those associated with increased problems and associated urbanization and the outbreaks of war, terrorism and international conflict arising from inequalities occurring on an international scale. (F, Sp, Su)

**3353 Women and Consumer Culture.** Prerequisite: 1313, 1323, or equivalent. Analysis of the relationship of women to consumption and consumer culture. At the end of the course, students will be able to take a position and defend it with respect to various controversial arguments or ideas about women's relationship to consumption and consumer culture. (F, Sp, Su)

**3363 Ethics in Social Sciences.** Prerequisite: 1313, 1323, or equivalent. Concepts, principles and case studies involved in ethics in the social sciences, with a particular emphasis on business ethics. Students will examine core values in light of social conditioning, short-term profiteering and the need for affiliation. (F, Sp, Su)

**3410 Interdisciplinary Study in the Natural Sciences.** 0 to 15 hours. Prerequisite: 3502 or equivalent. An interdisciplinary approach to study in the natural sciences available through independent study, internet courses, or weekend classes. Classes include team project assignments that are planned and guided by a professor from the natural sciences area. (Irreg.)

**3423 Chemistry for Changing Times.** Prerequisite: 1413, 1423, or equivalent. An overview of chemistry, with fundamentals and organic processes explained. The course investigates chemicals found in everyday life and on the earth with the aim of understanding how chemical processes are at work, both in the environment around us and in energy, air, water, biochemistry, drugs, poisons and chemicals. It is ideal for the generalist and the interdisciplinary student, although it also provides excellent material for specialists. (F, Sp, Su)

**3430 Natural Sciences Seminar.** 0 to 15 hours. Prerequisite: 3502 or equivalent. An intensive, full-time seminar concerned with the organization and interrelatedness of knowledge around a central theme, problem or topic in the natural sciences. The seminar is taught by one or more faculty members from the natural sciences area. (Irreg.)

**3433 The Dynamic Universe.** Prerequisite: 1413, 1423, or equivalent. Select topics including the Big Bang, formation of matter and its association into stars and planets, plate tectonics and the physics and chemistry of the atmosphere. (F, Sp, Su)

**3443 Ecology and Evolution.** Prerequisite: 1413, 1423, or equivalent. A study of the interactions of genetic change in organisms with environmental stress, and contributions of these interactions to evolution. (F, Sp, Su)

**3453 Physics for Poets...Fundamentals of Physics.** Prerequisite: 1413, 1423, or equivalent. The goal of this course is to introduce non-science students to the conceptual development and philosophical implications of some aspects of physics with a minimum amount of mathematics. The topics covered in this course will include motion, energy conservation laws, electricity, optics, atoms, the nucleus, special relativity, and elementary

particles. A solid foundation in high school algebra is required for entry into this course. (F, Sp, Su)

**3502 Introductory Seminar.** Prerequisite: admission to the Bachelor of Liberal Studies degree program. An interdisciplinary introduction to liberal inquiry. Problems of epistemology and methodology in the humanities, social sciences and natural sciences are demonstrated.

**3503 Interdisciplinary Inquiry.** Prerequisite: junior standing or permission. Will focus on adult learning theory and development, assessment of prior learning, development of self-directed learning skills, educational and career planning and writing of portfolios and learning contracts. Designed for the returning, adult learner. Will also focus on preparation for academic writing and argumentation. (F, Sp, Su)

**3530 Comprehensive Area Seminar.** 15 hours equivalence. Prerequisite: completion of the Comprehensive Area independent study. An intensive three-week seminar relating concepts of the areas of the humanities, the social sciences and the natural sciences to a central theme, problem or topic. The seminar is directed by one faculty member who is joined each week by a different faculty member from a discipline in each of the separate areas.

**3613 Leadership in Organizations.** Prerequisite: 1213, 1313, or equivalent. The general purpose of this course is to learn about contemporary thinking regarding leadership in organizations and the applications of these insights for growth as a leader. (F, Sp, Su)

**3623 Conflict Resolution.** Prerequisite: 1213, 1313, or equivalent. This course reviews several contemporary theories of the nature of conflict and how best to manage it. Students will examine the communication process and will practice effective communication skills through exercise. (F, Sp, Su)

**3663 Ethics in Leadership.** Prerequisite: 1213, 1313, or equivalent. This course will explore various concepts, principles and case studies involved in ethics in the social science, with a particular emphasis on business ethics. Students will examine core values in light of social conditioning, short-term profiteering, and the need for affiliation. (F, Sp, Su)

**3953 Study in Depth Prospectus.** Prerequisite: 1213, 1313, 1413, or equivalent. This course helps prepare the student for the senior capstone study in depth paper. Content will focus on upper division level writing, research and argumentation. (F, Sp, Su)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors' Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major. The topics will cover materials not usually presented in the regular courses. (Irreg.)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors' Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted Honors' candidate to work on a special project under the guidance of a professor in the student's field. (Irreg.)

**4213 A Critical Review of the Bible as a Literary Work.** Prerequisite: 1213, 2213, or equivalent. Examines the Bible as a work of literature, approaching it without concern for the doctrines of any particular religion. The aim of the course is to make students biblically familiar with both the Old and New Testaments. (F, Sp, Su)

**4233 Personal and Family Narratives.** Prerequisite: 1213, 2213, or equivalent. Offers students ways of exploring their own or their family's past with larger cultural and historical contexts. (F, Sp, Su)

**4243 Road Trip of the Mind.** Prerequisite: 1213, 2213, or equivalent. Various points of view and mindsets in the global community with an end to developing writing skills, enhancing creative problem-solving abilities, improving an understanding of cultural diversity and conflict resolution, and enhancing awareness of how values, ethical positions, perspectives manifest themselves and how they evolve over time. (F, Sp, Su)

**4253 Culture and Science.** Prerequisite: 1213, 2213, or equivalent. The history of the relations between science and culture in the last two centuries. Students will learn more about the methods and procedures of science, and the way science has been perceived and misperceived in the modern world. (F, Sp, Su)

**4263 Environment and Philosophy.** Prerequisite: 1213, 2213, or equivalent. Philosophical arguments and considerations of environmental policy and practice in the modern world. Students will become conversant in the issues and concerns of environmental conservation and ecology. (F, Sp, Su)

**4290 Special Problems in Humanities.** 1 to 6 hours. Prerequisite: permission of instructor and dean. May be repeated with change of content; maximum credit 12 hours. Investigation into problems not covered in existing courses and utilizing an interdisciplinary approach in

the humanities. Will culminate in a written report of investigation. Specific course content will be defined each time the course is offered.

**4323 History of Slavery.** Prerequisite: 1313, 2313, or equivalent. A discussion of slavery as it has occurred and is occurring in various civilizations, from the ancient world to modern times. The goal of the course is to increase familiarity with the brutal history of bondage and to build skills in analyzing past events, especially through writing, and to gain an understanding of the basic methods employed in historical research. (F, Sp, Su)

**G4390 Special Problems in Social Sciences.** 1 to 6 hours. Prerequisite: permission of instructor and dean. May be repeated with change of content; maximum credit 12 hours. Investigation into problems not covered in existing courses and utilizing an interdisciplinary approach in the social sciences. Will culminate in a written report of investigation. Specific course content will be defined each time the course is offered.

**4433 Satellite Imagery.** Prerequisite: 1413, 2413, or equivalent. Fundamentals of satellite imagery, as well as how to process data. Students will learn basics of spectral processing and the ideas behind the conversion of spectral digital information into color-keyed information sets. (F, Sp, Su)

**4443 Earth's Climate.** Prerequisite: 1413, 2413, or equivalent. This course explores the way climate changes over time. Students will focus on the greenhouse effect, pangaea, the different ice ages, and the snowball earth hypothesis. (F, Sp, Su)

**G4490 Special Problems in Natural Sciences.** 1 to 6 hours. Prerequisite: permission of instructor and dean. May be repeated with change of content; maximum credit 12 hours. Investigation into problems not covered in existing courses and utilizing an interdisciplinary approach in the natural sciences. Will culminate in a written report of investigation. Specific course content will be defined each time the course is offered.

**4510 Inter-Area Studies.** 0 to 15 hours. Prerequisite: 3502 or equivalent. This course serves to integrate knowledge the student has gained by studying in the three previous study areas: humanities, social sciences and natural sciences. The course places emphasis on the integration of the three areas and the contributions all the areas can make toward the understanding of relevant problems. Students use every background resource they have acquired to illuminate, judge and criticize their current study assignment. This course is available through independent study, internet courses, or weekend classes. Classes include team projects. (Irreg.)

**4530 Inter-Area Seminar.** 0 to 15 hours. Prerequisite: completion of three prior areas of interdisciplinary study or permission of the dean. An intensive, full-time seminar concerned with the integration of subject matter from all three areas and the application of this knowledge to a broad theme or problem. (Irreg.)

**G4590 Special Problems in Integrative Studies.** 1 to 6 hours. Prerequisite: permission of instructor and dean. May be repeated with change of content; maximum credit 12 hours. Investigation in problems not covered in existing courses and utilizing an interdisciplinary approach to problem-oriented studies. Will culminate in a written report of investigation. Specific course content will be defined each time the course is offered.

**4633 Cultural Diversity in the World.** Prerequisite: 1213, 1313, 2313, or equivalent. At the end of this course, the learner will be able to apply an in-depth understanding of cultural diversity to issues in human relations and in achieving true diversity in organizations. The course will provide learners with a conceptual framework from which to analyze historical and current legal approaches to cultural diversity, with an emphasis on gaining an understanding of how and why affirmative action programs are implemented. (F, Sp, Su)

**4643 Quality Initiatives in Organizations.** Prerequisite: 1213, 1313, 2313, or equivalent. Understanding quality initiatives is the focus of this course. Students will discuss tools that can be used in order to build teams and a good environment in the workplace. (F, Sp, Su)

**4650 Study in Depth.** 0 to 4 hours. Prerequisite: three BLS areas. A scholarly paper on a specialized topic or an artistic or literary creation of the quality and extent comparable to a senior thesis. The study should reflect the student's originality, competence and achievement in sustained research or creative endeavor involving a specific or limited field in some depth. (F, Sp, Su) [V]

**4670 Special Topics in Leadership.** Prerequisite: 1213, 1313, 2313, or equivalent. May be repeated with change of content; maximum credit nine hours. Investigation into problems of leadership not covered in existing courses, and utilizing an interdisciplinary approach. Will culminate in a written report of investigation. Specific course content will be defined

each time the course is offered. Reading and research, arranged and directed in consultation with the instructor, in specified areas of liberal studies. (F, Sp, Su)

**4680 Advanced Topics in Liberal Studies.** Prerequisite: 1213, 1313, 2313, or equivalent. May be repeated with change of content; maximum credit nine hours. Focuses on advanced topics of interdisciplinary study. Directed readings arranged with individual faculty each time the course is offered. (F, Sp, Su)

**4700 Advanced Topics in Liberal Studies.** Prerequisite: 2213, 2313, 2413, or equivalent. May be repeated with change of content; maximum credit nine hours. Specific course content will be defined each time the course is offered. A problem-oriented approach to interdisciplinary studies. Reading and research, arranged and directed in consultation with the instructor in specified areas of liberal studies. (F, Sp, Su)

**4750 Advanced Interdisciplinary Seminar.** Prerequisite: 2213, 2313, 2413, or equivalent. May be repeated with change of content; maximum credit nine hours. An intensive seminar concerned with the organization and inter-relatedness of knowledge around a central theme, problem or topic in interdisciplinary studies. Reading and research arranged and directed in consultation with the instructor, in specified areas of liberal studies. (F, Sp, Su)

**4800 Investigative Studies in the Liberal Studies.** Prerequisite: 2213, 2313, 2413, or equivalent. May be repeated with change of content; maximum credit nine hours. Investigation in problems not covered in existing courses and utilizing an interdisciplinary approach to problem-oriented studies. Will culminate in a written report of investigation. Specific course content will be defined each time the course is offered. Reading and research arranged and directed in consultation with the instructor, in specified areas of liberal studies. (F, Sp, Su)

**4950 Internship in Liberal Studies.** Prerequisite: 2213, 2313, 2413, or equivalent. May be repeated with change of content; maximum credit nine hours. Field experience in issues related to a student's area of study. Students will gain knowledge through experiential and on-the-job practice. (F, Sp, Su)

**4953 Study in Depth.** Prerequisite: 2213, 2313, 2413, 3953, or equivalent. A scholarly paper on a specialized topic, or an artistic or literary creation of the quality and extent comparable to a senior thesis. The study should reflect the student's originality, competence and achievement in sustained research or creative endeavor involving a specific or limited field in some depth. (F, Sp, Su)

**G5003 Introduction to Graduate Interdisciplinary Studies.** Prerequisite: graduate standing. Intensive seminar providing orientation to advanced interdisciplinary study, appreciation for standards of performance and scholarship appropriate to graduate study, development of skills necessary for success in academic research and writing in a graduate interdisciplinary program. (F, Sp, Su)

**G5013 Interdisciplinary Foundations.** Prerequisite: graduate standing or permission of the dean. Selected readings designed to reinforce the interdisciplinary approach to graduate studies and to introduce the concept of paradigms as an organizing principle for understanding and interpreting information. (F, Sp, Su)

**G5210 Directed Study in Humanities.** 1 to 9 hours. Prerequisite: 5503. Nine hours required. Individual study in the humanities arranged in consultation with faculty. May include reading assignments, projects, field experiences, or other activities appropriate to the goals of the study program. Faculty to arrange appropriate method of reporting and evaluation for each student. (F, Sp, Su)

**G5213 Interdisciplinary Study in the Humanities.** Prerequisite: 5503 or permission of the dean. May be repeated twice with change of content; maximum credit nine hours. Individual study in the humanities arranged in consultation with faculty. May include reading assignments, projects, field experiences, or other activities appropriate to goals of study program. Faculty arrange appropriate method of reporting and evaluation for each student. (F, Sp, Su)

**G5220 Advanced Directed Study in Humanities.** 1 to 9 hours. Prerequisite: 5530. Nine hours required for degree. Advanced directed study, collection of data, preparation and completion of the thesis in the humanities. (Sp, Su)

**G5226 Advanced Study in the Humanities.** Prerequisite: 5534. Thesis or project research and preparation. Independent study, collection of data, and completion of thesis or project in the humanities. (F, Sp, Su)

**G5310 Directed Study in Social Sciences.** 1 to 9 hours. Prerequisite: 5503. Nine hours required for degree. Individual study in social sciences arranged in consultation with faculty. May include reading assignments, projects, field experiences, or other activities appropriate to goals of study program. Faculty to arrange appropriate method of reporting and evaluation for each student. (F, Sp, Su)

**G5313 Interdisciplinary Study in the Social Sciences.** Prerequisite: 5503 or permission of the dean. May be repeated twice with change of content; maximum credit nine hours. Individual study in the social sciences arranged in consultation with faculty. May include reading assignments, projects, field experiences, or other activities appropriate to goals of study program. Faculty arrange appropriate method of reporting and evaluation for each student. (F, Sp, Su)

**G5320 Advanced Directed Study in Social Sciences.** 1 to 9 hours. Prerequisite: 5530. Nine hours required for degree. Advanced directed study, collection of data, preparation and completion of the thesis in the social sciences. (Sp, Su)

**G5326 Advanced Study in Social Sciences.** Prerequisite: 5534. Thesis or project research and preparation. Independent study, collection of data, and completion of thesis or project in the social sciences. (F, Sp, Su)

**G5410 Directed Study in Natural Sciences.** 1 to 9 hours. Prerequisite: 5503. Nine hours required for degree. Individual study in natural sciences arranged in consultation with faculty. May include reading assignments, projects, field experiences, or other activities appropriate to goals of study program. Faculty arrange appropriate method of reporting and evaluation for each student. (F, Sp, Su)

**G5413 Interdisciplinary Study in Natural Sciences.** Prerequisite: 5503 or permission of the dean. May be repeated twice with change of content; maximum credit nine hours. Individual study in the natural sciences arranged in consultation with faculty. May include reading assignments, projects, field experiences, or other activities appropriate to goals of study program. Faculty arrange appropriate method of reporting and evaluation for each student. (F, Sp, Su)

**G5420 Advanced Directed Study in Natural Sciences.** 1 to 9 hours. Prerequisite: 5530. Nine hours required for degree. Advanced directed study, collection of data, preparation and completion of the thesis in the natural sciences. (Sp, Su)

**G5426 Advanced Study in Natural Sciences.** Prerequisite: 5534. Thesis or project research and preparation. Independent study, collection of data, and completion of thesis or project in the natural sciences. (F, Sp, Su)

**G5523 The World of a Museum.** Prerequisite: LSTD 5513 or permission of college. Baseline course introducing all aspects of museums and museum careers including history, structure, operations, and theoretical underpinnings. (F, Sp, Su)

**G5530 MLS Colloquium.** 1 to —6 hours. Prerequisite: 5210, 5310, or 5410. An intensive full-time colloquium designed to explore in-depth an appropriate theme, to provide a better understanding of the nature and meaning of liberal inquiry, to provide experience in the preparation and evaluation of research papers, to extend the student's knowledge concerning the form of theses, and to assist the student in developing a thesis prospectus with the guidance and direction of the major professor. Six hours required for program. (Sp, Su)

**G5540 MLS Advanced Seminar.** 1 to 4 hours. Prerequisite: 5220, 5320 or 5420. An intensive seminar designed to explore in-depth an appropriate theme or problem and to provide opportunity for each student to present and defend the master's thesis before the seminar group. (Sp, Su)

**G5552 Museology Readings.** Prerequisite: 5553 or permission of the dean. May be repeated twice with change of content; maximum credit six hours. Individual studies in museology in consultation with faculty. May include reading assignments, projects, field experiences or other activities appropriate to the study program. Faculty arrange appropriate method of reporting and evaluation for each student. (F, Sp, Su)

**G5553 The History and Architecture of Museums.** Prerequisite: 5523 or permission of the dean. The course explores the history of museums with special emphasis on the architectural development and the special facilities requirements of museums; it will look at the physical requirements in terms of museum missions, functions, collections, and operations. (F, Sp, Su)

**G5560 Museum Project.** Prerequisite: 5523 or permission of college. May be repeated with change of subject; maximum credit four hours. Students will develop a project in their home museum or organization under the direction of an OU faculty member with an on-site supervisor or can come to OU for a project at one of the OU museums or special collections. (F, Sp, Su)

**G5563 Museum Management and Leadership.** Prerequisite: LSTD 5523 or permission of college. In-depth study of the philosophy, policies, and practices of museum governance, including such topics as ethics, board development, institutional mission and organization. (F, Sp, Su)

**G5570 Special Problems in Museology.** Prerequisite: LSTD 5523 or permission of college. May be repeated with a change of content; maximum credit four hours. Topics offered under this course number will include but not be limited to: education and public programs; legislation and museum policies; exhibitions; museum stores, volunteers, and associations. (F, Sp, Su)

**G5573 Museums, Cultures, and Communities.** Prerequisite: LSTD 5523 or permission of the college. The course will focus on the complex issues between museums, diverse populations, and other public factors such as public and education programs, fundraising, public relations, marketing, etc. (F, Sp, Su)

**G5583 Collections Management.** Prerequisite: LSTD 5523 or permission of college. This course will consider the place of collections in the life of a museum; how collections mesh with the museum mission; collections policies and stewardship. It will relate theoretical ideas on collection development and maintenance to the actualities of museum situations. (F, Sp, Su)

**G5590 MLS Special Studies.** 1 to 9 hours. Prerequisite: permission of instructor and dean. May be repeated with change of content; maximum credit nine hours. Interdisciplinary study at the graduate level of specialized problems defined in consultation with student and instructor. Specific course content will be defined each time course is offered. (F, Sp, Su)

**G5623 Theories of Management and Leadership.** Prerequisite: 5003, 5013 or permission of the dean. This course explores and analyzes the concept of leadership including such topics as leadership theory, changing leadership roles, power, decision-making, empowerment, vision, communication, diversity, and ethics. (F, Sp, Su)

**G5633 Cultures of Organizations.** Prerequisite: 5623 or permission of dean. The course looks at the meaning of organizational culture and its significance for leadership behavior, ways of thinking about organizations and the structure of organizations, the implications for leaders, and other relationships between organizations and aspects of leadership. (F, Sp, Su)

**G5643 The Individual and Leadership.** Prerequisite: 5633 or permission of dean. This course explores the social, psychological, and behavioral characteristics of leadership, personal skills that enhance leadership ability, and strategies for dealing with interpersonal problems in organizations. (F, Sp, Su)

**G5654 Ethics and Leadership.** Prerequisite: 5643 or permission of dean. The course introduces the nature of ethics, the relationship between ethics and morals, and the function of ethics in a social context. Major emphasis is on the effect of ethical decision-making on successful leadership and the role that ethical behavior plays in the success of organizations. (Irreg.)

**G5663 Perspectives on Leadership.** Prerequisite: 5013 or permission of the dean. May be repeated with change of content; maximum credit 6 hours. The course content will vary to include in-depth examination of relevant topics in leadership that meet student interests and add value to the program. (F, Sp, Su)

**G5673 Special Problems in Leadership.** Prerequisite: 5013 or permission of the dean. May be repeated with change of content; maximum credit 6 hours. Individual readings course on select leadership topics; in-depth literature and/or research review of problems in leadership selected for investigation. (F, Sp, Su)

**G5790 Advanced Topics in Interdisciplinary Studies.** Prerequisite: 5013 or permission of the dean. Intensive research on a topic related to the student's program of study; variable topics. (F, Sp, Su)

**G5890 Investigative Interdisciplinary Studies.** Prerequisite: 5013 or permission of the dean. May be repeated with change of content; maximum credit 9 hours. Exploration of special issues and/or problems related to the student's program of study; variable content. (F, Sp, Su)

**G5903 Research Methods in Interdisciplinary Studies.** Prerequisite: 5013 or permission of the dean. Theories and techniques of research designed to prepare MLS students to carry out individual research on a topic within an interdisciplinary program of study. (F, Sp, Su)

**G5904 MLS Colloquium.** Prerequisite: permission of the dean. An intensive seminar designed to explore a topic from an interdisciplinary perspective. (Sp, Su)

**G5931 Research Prospectus in Liberal Studies.** Prerequisite: 5213, or 5313, or 5413. Development of thesis, project or internship topic

including a literature review, research plan, and the thesis, project or internship program. (F, Sp, Su)

**G5940 Research Project in Liberal Studies.** Prerequisite: 5531 or 5533 or 5931 or permission of college. May be repeated; maximum credit six hours. Development of creative or applied research project related to MLS study focus. The final form will vary according to topic and purpose of the project but must include a written component. Comprehensive examination over the research project is required. (F, Sp, Su)

**G5943 MLS Advanced Seminar.** Prerequisite: 5940 or 5950 or 5980 or permission of the dean. An advanced seminar on an interdisciplinary topic selected by the faculty. (F, Sp, Su)

**G5950 Internship in Liberal Studies.** 2 to 9 hours. Prerequisite: 5531 or 5533 or 5931 or permission of college. May be repeated; maximum credit six hours. 450 hours of field experience directly related to study focus in the MLS program. Requirements include journal, reports, written summary, and comprehensive examination over these materials. (F, Sp, Su)

**G5960 Directed Readings in Interdisciplinary Studies.** Prerequisite: 5013 or permission of the dean. May be repeated with change of content; maximum credit 9 hours. In-depth study of literature on a topic related to the student's program of study; variable content. (F, Sp, Su)

**G5980 Research for Master's Thesis.** Prerequisite: 5531 or 5533 or 5931 or permission of college. May be repeated; maximum credit six hours. Research and writing of a thesis for completion of the MLS degree. (F, Sp, Su)

a working environment. Under professional supervision, the student will complete 135 hours emphasizing general understanding of the specific assignment and completion of a focused project. (F, Sp)

**4920 Directed Research.** 1 to 3 hours. Prerequisite: 4003, 4103, senior standing, and permission of instructor and advisor. May be repeated; maximum credit three hours. Faculty supervised research; requires written report. (Irreg.)

**4940 Directed Project.** 1 to 3 hours. Prerequisite: 4003, 4103, senior standing, and permission of instructor and advisor. May be repeated; maximum credit three hours. Faculty supervised design and implementation of an information project that applies principles and theories acquired in coursework to solution of information problems in practical settings. Requires a project prospectus and written report. (Irreg.)

**4960 Directed Readings.** 1 to 3 hours. Prerequisite: Junior standing and permission of instructor. May be repeated; maximum credit three hours. Faculty supervised exploration of an area of information studies not covered in regularly offered courses. (Irreg.)

**4990 Special Problems.** 1 to 3 hours. Prerequisite: Permission of instructor. May be repeated; maximum credit nine hours. Examination and discussion of current problems in information studies. (Irreg.)

#### **G5023 Management of Information and Knowledge Organizations**

(Crosslisted with **Knowledge Management 5023**).

Prerequisite: 5033. Theories, processes, behaviors, and issues that allow knowledge-based institutions to transform themselves into ones that organize and share knowledge in an effective, efficient manner; leadership, motivation and organizational communication; management of knowledge workers, ethical and legal aspects of managing information and knowledge organizations. (F, Sp)

#### **G5033 Information and Knowledge Society (Crosslisted with**

**Knowledge Management 5033).** Prerequisite: graduate standing or permission of instructor. The nature of knowledge and information; national and global organizational information infrastructure; the role of information and knowledge professionals in the knowledge society; information policy; economics of information; information industries; legal and ethical considerations in information and knowledge systems. This course is a prerequisite or corequisite for all courses required for the MLIS or MSKM and must be completed in a student's first semester or summer session as an MLIS or MSKM student. (F, Sp, Su)

#### **G5043 Organization of Information and Knowledge Resources**

(Crosslisted with **Knowledge Management 5043**).

Prerequisite: 5033. Organization of internal and external sources of information; information services and tools; basic concepts of information storage and retrieval systems; design and structure of information systems; identification and organization of knowledge resources such as expertise, skills and competencies; knowledge organization methods such as classification, cataloguing, taxonomies and metadata; search strategies and information retrieval. (F, Sp)

#### **G5053 Information Users in the Knowledge Society (Crosslisted with**

**Knowledge Management 5053).** Prerequisite: 5033. Information use by people in various roles, situations, and contexts, individually and in groups. Information behavior and the influence of learning and cognitive processes; value systems; and situational, psychological, sociological, and political perspectives. Application of study of user information behavior to textual, graphical, and visual representation of knowledge. Includes both theoretical models and practical methodologies for study of uses and for user-centered design of information and knowledge systems and services. (F, Sp)

#### **G5123 Literature and Methods for Readers' Advisory Services.**

Prerequisites: 5033 and 5053. Examination of value and role of leisure reading in U.S. public libraries; interview techniques, support processes, and bibliographic resources for providing services to adults and older adolescent readers. (Irreg.)

#### **G5143 Government Publications (Crosslisted with History 5143).**

Prerequisite: 5013 or permission of instructor. Acquaints the student with the basic reference sources that provide access to the publications of governmental organizations. United States government publications are stressed. Topics include: the basic catalogs and indexes; depository system; acquisition, selection, organization, use and on-line retrieval of government publications. (Sp)

**G5153 Science and Technology Information Sources.** Prerequisite: 5013. Information sources and systems in science and technology, with emphasis on information-seeking behaviors and search strategies, and on the use of print and on-line sources to meet the needs of different clienteles. (F)

## Library and Information Studies (LIS)

**1013 Use of the Library and Information Resources.** The general process of defining information needs in selecting appropriate information sources. Intended to make students more knowledgeable consumers of information. Exercises in the use of information resources stressing the full range of sources and services available in libraries and information centers. (F, Sp)

**2003 The Information Environment.** Explores the definition, impact, and history of information and information transmission. Introduces technology used to create, read, store, retrieve and transmit information. Analyzes societal institutions, techniques, and processes for the creation, distribution and management of information. Assesses the role of the information professions and information systems in culture and society. (F)

**3003 Object-Oriented Information Systems.** Prerequisite: junior standing. Data and information structures; information architecture; information representation; information needs assessment; flow analysis; programming concepts and languages. (Sp)

**4003 Information Systems and Networks.** Prerequisite: junior standing. Management of information technology; fundamental issues in operations and services associated with networked, digital resources; computers and communications in the digital age; storage and retrieval of text, images, and sound; understanding the use and users of networked information. (F)

**4103 Design and Implementation of Networked Information Services.** Prerequisite: junior standing. Design fundamentals for networked information services; implementation of storage, access, and distribution systems; knowledge representation methods; metadata and information structures; connectivity infrastructure; characteristics and behavior of networked audiences; systems use and usability. (F)

**4223 Information Technology Management (Slashlisted with 5223).** Prerequisite: 4003 or permission of instructor. Fundamentals of planning, designing, and managing information technology solutions; market and trend analysis; planning and assessment techniques and tools; human factors in technology management. No student may earn credit for both 4223 and 5223. (Irreg.)

**4303 Children's Literature.** Prerequisite: junior standing. Survey, evaluation and selection of materials for children; interests and needs of various age groups; methods of stimulating reading and listening. Reading of books for children is emphasized. (Correspondence)

**4663 Information Studies Field Project.** Prerequisite: 2003, 3003, 4003, 4103, and senior standing. Capstone course for the Bachelor of Arts in Information Studies; design and development of an operational prototype information system in a selected organizational setting. (F, Sp, Su)

**4823 Internship in Information Studies.** Prerequisite: 4003, 4103, and a grade of B or better in 4663 or permission of instructor and adviser. Provides an opportunity for student synthesis of principles and theories acquired in coursework and application of these principles and theories in

**G5173 Social Science and Humanities Information Sources.**

Prerequisite: 5013. Information sources and systems in selected social science and humanities disciplines, with emphasis on information-seeking behaviors and search strategies, and on the use of print and on-line sources to meet needs of different clienteles. (Su)

**G5183 Books and Materials for Children.** Prerequisite: 5033. Seminar involving in-depth criticism of children's materials; thematic/issues approach to reading guidance; contemporary trends; recent literature; children's information literacy and critical thinking skills; and selection/evaluation. (F, even-numbered years)

**G5193 Books and Materials for Young Adults.** Prerequisite: 5033. In-depth criticism of young adult material; seminar involving thematic/issue approach to reading guidance; contemporary trends; recent literature; young adult's information literacy and critical thinking skills; and selection/evaluation. (Irreg.)

**G5223 Information Technology Management (Slashlisted with 4223; Crosslisted with Knowledge Management 5223).** Prerequisite: 5033 and 5603 or permission of instructor. Fundamentals of planning, designing, implementing, and managing information technology solutions; market and trend analysis; planning and assessment techniques and tools; human factors in technology management. (Irreg.)

**G5243 Academic Library Administration.** Prerequisite: 5023, 5033. Historical, sociopolitical, technological, fiscal and organizational factors affecting academic librarianship. Emphasis on institutional analysis, planning, and evaluation. (Alt. Sp, Irreg. Su)

**G5253 Community Relations and Advocacy.** Prerequisite: 5023, 5033. Examination of the communication process by which the library/information center personnel satisfy user needs and provide/transmit information about the program objectives and functions to develop public awareness and support. Involves as audiences: the users, the library/information center staff, general public, governance entities, political representatives, educational and service agencies, and professional organizations. (Alt. F, Irreg. Su)

**G5263 Organizational Learning and Learning Organizations (Crosslisted with Knowledge Management 5263).** Prerequisite: 5033; 5053. Theories and models of individual, group, team, and organizational learning; creation and management of learning organization; organizational behavior and organizational culture; group team management; group team, and organizational leadership; conflict and agreement; change management. (Irreg.)

**G5273 Public Library Administration.** Prerequisite/Corequisite: 5023, 5033. Historical, sociopolitical, technological, fiscal and organizational factors affecting public libraries and librarianship. Emphasis on community analysis, planning, and evaluation. (Alt. F, Irreg. Su)

**G5283 School Library Media Center Administration.** Prerequisite: 5023, 5033. History and role of school library media centers in the educational program; planning, organizing and administering library programs in the elementary and secondary schools. (Alt. Sp, Irreg. Su)

**G5293 Special Library and Information Center Administration.** Prerequisite: 5023, 5033. Historical, sociopolitical, technological, fiscal and organizational factors affecting special librarianship. Emphasis on institutional analysis, planning, and evaluation. (Alt. Sp, Irreg. Su)

**G5323 Adult Services in Library and Information Centers.** Prerequisite: 5013. An overview of adult services with the purpose of deciding upon appropriate service strategies for libraries. Various research studies will be examined to enhance understanding of the nature of adults as readers, learners and users of libraries. (Alt. Su)

**G5333 Multicultural Librarianship.** Prerequisite: 5033. Awareness of and sensitivity to multicultural heritages; diverse information needs of multiethnic populations; information needs assessment and analysis; program and service planning. (Sp, even-numbered years)

**G5343 History of Information Transfer and Information Agencies.** Overview of development of graphic records, focusing on print culture, libraries and librarianship, and the production, distribution, storage and retrieval of information agencies in their social, cultural, and political contexts, including multicultural, interdisciplinary and international aspects. (Alt. F)

**G5403 Cataloging and Classification.** Prerequisite: 5033, 5043. Detailed study of principles and practices of cataloging and classification according to current standards. Instruction covers original descriptive cataloging, subject analysis and classification. (Alt. F, Irreg. Su)

**G5413 Indexing and Abstracting (Crosslisted with Knowledge Management 5413).**

Prerequisite: 5033 and 5043. History, principles, techniques and applications of indexing, abstracting, and vocabulary control. Includes file organization and maintenance, information representation and coding, natural language processing, and thesaurus construction. (Irreg.)

**G5423 Archives.** Prerequisite: 5033, 5043. Introduction to the principles and practice of collecting, servicing, and arranging archival holdings. Includes appraisal, acquisition, arrangement and description, preservation, and administration of institutional archives. Attention to issues of preservation, intellectual property, and service in both physical and digital environments. (Alt. F, alt. Sp., irreg. Su)

**G5433 Design and Implementation of Web-based Information Services (Crosslisted with Knowledge Management 5433).** Prerequisite: 5003 and 5043. Design fundamentals for web-based information services. Emphasis on networked information, information architecture, and usability, based on analysis and evaluation of current connectivity infrastructure and characteristics and behavior of networked audiences. (F)

**G5463 Information Uses and Services.** Prerequisite: 5013. Information needs and information-seeking behaviors of different clienteles; client expectations and professional standards for the design and operation of information services. (Alt. Su)

**G5473 Document and Records Management (Crosslisted with Knowledge Management 5473).** Prerequisites: 5033, 5043. The systematic capture, acquisition, and processing, storage, and control of documents in all formats, including their management as records throughout the life cycle from creation to final disposition. Introduction to principles, methodologies, administration, tools, and techniques in various settings. (Irreg.)

**G5503 Information Literacy and Instruction.** Prerequisites: 5033 and 5053. Instructional methods and materials for the acquisition and development of information literacy skills; theories of instruction and current trends in information literacy instruction. (Irreg.)

**G5513 Information Sources and Services.** Prerequisite: 5033, 5053. Characteristics and use of information sources and systems; policies and procedures for the provision of user-centered service in libraries and other information agencies. Introduction to basic reference tools in both print and electronic formats. (F, Sp, Irreg. Su)

**G5523 Online Information Retrieval (Crosslisted with Knowledge Management 5523).** Prerequisite: 5033 and 5053. Structure, content, and application of online databases for education, research, business, and public use. Principles and techniques for the evaluation of online databases and services. Document representation, information need specification and query formulation for online information retrieval. (Alt. F, Irreg. Su)

**G5533 Introduction to Instructional Technology (Crosslisted with EIPT 5533).** Prerequisite: graduate standing or permission of instructor. Examination of theoretical and critical issues regarding educational technologies. Practical application and development of skills utilizing technology tools. (F)

**G5543 Collection Development and Management.** Prerequisite: 5033, 5053. Examination of the acquisition and evaluation processes used for building and maintaining collections in all formats. Formulation and implementation of collection development policies, identification of user needs, selection methods and tools, storage alternatives, publishing and intellectual freedom, administrative and legal issues including licensing and contract negotiation. (F, Sp, Irreg. Su)

**G5603 Information Systems and Networks (Crosslisted with Knowledge Management 5603).** Prerequisite: 5033. Introduction to digital information technology, including historical origins and development. Introduction to systems, systems analysis, and nature and functionality of networks. Includes hands-on basic introduction to technical aspects of computer hardware and software. (F, Sp, Irreg. Su)

**G5613 Biomedical Bibliography and Reference Materials.** Prerequisite: 5013 or permission of instructor. Provides an in-depth study of the organization of medical reference departments; reference sources in the health sciences; and the major textbooks in the basic sciences, clinical sciences, and related specialties. Medical audiovisuals, periodicals, indexes and abstracts are included as is automated searching of medical literature. Basic medical terminology is an integral part of the course and given special consideration. (Su)

**G5623 Biomedical Data Bases.** Prerequisite: 5613 or permission of instructor. An in-depth approach to the on-line data bases supplied by the National Library of Medicine and to the biomedical data bases supplied by commercial companies. Deals with all aspects of searching, including

development of effective policies and procedures. Differences and similarities among the data bases are emphasized. (F)

**G5643 Knowledge Representation (Crosslisted with Knowledge Management 5643).** Prerequisite: 5033. Exploration and analysis of different approaches to knowledge representation from a variety of disciplines. Conceptual foundations, sources, challenges, and dissimilar types of knowledge. The process of generation, transfer, and internalization of knowledge in the context of the decision-making process. (Alt. Sp, Irreg. Su)

**G5653 Preservation of Information Materials (Crosslisted with Knowledge Management 5653).** Prerequisite: 5033. Theory and practice of the preservation and conservation of intellectual content and physical artifacts, including paper, microform, and digital records. Emphasis on planning and administering disaster prevention and recovery, preservation, and digitization programs. (Alt. Sp, Irreg. Su)

**G5703 Electronic Access to Social Science Research Resources.** Prerequisite: graduate standing or permission of instructor. Introduction to the structure of the knowledge domains, literatures, and metadata systems of the disciplines of the social sciences and their related professional fields. Includes overview of major indexing and document delivery systems and developments of strategies for identification and evaluation of information. Emphasis on retrieval of relevant information sources in all formats and delivery modes through use of digital access systems. (F, Sp, Su)

**G5713 Research Methods (Crosslisted with Knowledge Management 5713).** Prerequisites: 5023, 5033, 5043, 5053. Methods of investigating library and information problems; evaluating research studies in library and information science; developing original research designs. (Sp, Irreg. Su)

**G5823 Internship in Library/Information Centers (Crosslisted with Knowledge Management 5823).** Prerequisite: 18 hours of LIS/KM coursework, including one-half of the required courses, and permission of the supervising instructor. Provides an opportunity for student synthesis of principles and theories acquired in coursework and application of these principles and theories in an outstanding library/information center. Under professional supervision, the student will complete 135 hours. (F, Sp, Su)

**G5920 Directed Research (Crosslisted with Knowledge Management 5920).** 1 to 3 hours. Prerequisite: LIS/KM 5713, permission of instructor and adviser. May be repeated; maximum credit six hours. Research under faculty supervision; requires a written report. (F, Sp, Su)

**G5940 Directed Project (Crosslisted with Knowledge Management 5940).** 1 to 3 hours. Prerequisite: 24 hours of LIS/KM coursework and permission of instructor and adviser. May be repeated; maximum credit three hours. Design and implementation of a professional project that applies principles and theories acquired in coursework to the solution of professional problems in practical settings. Requires a project prospectus and a written report at conclusion of the project. Conducted under faculty supervision. May not be taken for credit toward the MLIS degree by students electing thesis option. (Irreg.)

**G5960 Directed Readings (Crosslisted with Knowledge Management 5960).** 1 to 3 hours. Prerequisite: 15 hours of LIS/KM coursework and permission of instructor and adviser. May be repeated; maximum credit six hours. Exploration of an area of library and information studies not covered in regularly offered course. (F, Sp, Su)

**G5980 Research for Master's Thesis (Crosslisted with Knowledge Management 5980).** Prerequisite: permission of instructor. Variable enrollment, two to nine hours; maximum credit six hours. (F, Sp, Su)

**G5990 Special Problems (Crosslisted with Knowledge Management 5990).** 1 to 3 hours. Prerequisite: permission of instructor. May be repeated; maximum credit nine hours. Examination and discussion of current problems in librarianship. (Irreg.)

and different from, one another in their use of speech sounds, logical structures and mechanisms that integrate events, objects and speakers in spatio-temporal contexts. The relationship between language and culture; language acquisition and language change. (F, Sp) [I-O]

**3033 Phonetic Description (Crosslisted with Anthropology 3033).** Prerequisite: 2303. Study of the basic principles in forming the phonetic description of human speech. (Sp)

**3043 Linguistic Semantics.** Prerequisite: 2303. An introduction to basic ideas and concepts in the field of linguistic semantics. Includes discussion of current issues and representative theoretical approaches. (F)

**3053 Grammar: Phonology (Crosslisted with Anthropology 3053).** Prerequisite: Anthropology or Linguistics 3033. Description of human speech sounds. Analysis of speech sound systems: study of the varied ways human communities use speech sounds to convey and share information. Principled development of writing systems for unwritten languages. Includes the description and analysis of non-Indo-European language materials. (Irreg.)

**3063 Language and Culture (Crosslisted with Anthropology 3063).** Prerequisite: 2303. The relationships between language and the rest of culture, with emphasis on diachronic as well as synchronic problems. Such crucial issues as the limitation of language on thought and perception and language and conceptualization are also considered. (Sp)

**3353 Syntax (Crosslisted with Anthropology 3353).** Prerequisite: 2303. An introduction to the fundamental concepts of Chomskyan syntax. Includes theory of categories and constituents, basic syntactic relations, case theory, and binding theory. (F)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program and will cover materials not usually presented in regular coursework. (F, Sp)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work on a special project in his/her field. (F, Sp)

**4023 Second Language Acquisition Theory (Slashlisted with 5023).** Prerequisite: 2303 or four semesters foreign language. Multidisciplinary approach to second language acquisition. Treats child language, interlanguage, universal grammar, input, interaction, output, non-language influences and formal instruction. No student may earn credit for both 4023 and 5023. (F)

**4053 Morphology (Slashlisted with 5053; Crosslisted with Anthropology 4053).** Prerequisite: 3053 and 3353. Introduces and develops theories and concepts of morphology including word formation, derivation, inflection, non-concatenative morphs, covert categories, prosodic phenomena, morphosyntactic categories and clitics. Data from non-Western languages will be prominent. No student may earn credit for both 4053 and 5053. (Irreg.)

**4313 Techniques of Historical Linguistics.** Prerequisite: Anthropology or Linguistics 3053, or permission. Brief survey of the development of historical linguistics, the comparative methods, internal reconstruction, types of linguistic change, relationships between linguistic and cultural change, new developments in the field of historical linguistics. (Irreg.)

**4330 Topics in Linguistics (Slashlisted with 5330).** 1 to 4 hours. Prerequisite: nine hours of linguistics. May be repeated with change of content; maximum credit nine hours. Topic areas will vary across theoretical and applied areas of linguistics. Some topics that are appropriate include socio-linguistics, psycho-linguistics, language acquisition, advanced syntax, advanced phonology, field phonetics, pragmatics, and comparative readings of twentieth-century theorists. No student may earn credit for both 4330 and 5330 on the same topic. (Irreg.)

**4363 Linguistic Field Methods (Crosslisted with Anthropology 4363).** Prerequisite: 2303, 3053, and 3353. An introduction to all phases of linguistic field techniques, including training in the selection of informants, the use of recording devices, and most important, the actual collection and analysis of linguistic materials. (Irreg.)

**4533 Philosophy of Language (Crosslisted with Philosophy 4533; Slashlisted with 5533).** Prerequisite: eight hours of philosophy or permission. Survey of major philosophical views on the nature and workings of language. Topics covered include: meaning and truth, sense and reference, speech acts, and communication. No student may earn credit for both 4533 and 5533. (Irreg.)

## Linguistics (LING)

**1203 Language Across Cultures (Crosslisted with Anthropology 1203).** Theories of language family origins and their relationship to human migration; types of human languages; linguistic concept of genetic relatedness; writing systems development; non-Western sociolinguistic and usage phenomena; cultural and scientific importance of endangered languages; how languages become endangered; factors involved in preservation. This course may not count for major credit. (Sp) [IV-NW]

**2303 General Linguistics (Crosslisted with Anthropology 2303).** Humanistic and formal study of natural languages: how they are similar to,

**4543 Philosophy of Mind (Crosslisted with Philosophy 4543);**

**Slashlisted with 5543.** Prerequisite: eight hours of philosophy or permission. Survey of major philosophical views on the nature of the mind. Topics covered may include: the nature and unity of consciousness, the mind-body problem, personal identity, the emotions, actions and intentions, self-knowledge, and other minds. No student may earn credit for both 4543 and 5543. (Irreg.)

**4550 Linguistic Structures of North America (Crosslisted with Anthropology 4550).** 3 to 6 hours. Prerequisite: Anthropology or Linguistics 2303. An examination of the structure of a number of Native American languages which is intended to provide the major in linguistics or anthropology with a detailed knowledge of several important Indian tongues. (CE)

**4983 Senior Essay.** Prerequisite: 3033, 4353. Development of a research paper which relates the linguistics major coursework to general knowledge. (F, Sp) [V]

**4990 Independent Study.** 1 to 3 hours. Prerequisite: three courses in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or research and field projects. (F, Sp)

**G5023 Second Language Acquisition Theory (Slashlisted with 4023).**

Prerequisite: 2303 or four semesters foreign language. Multidisciplinary approach to second language acquisition. Treats child language, interlanguage, universal grammar, input, interaction, output, non-language influences and formal instruction. No student may earn credit for both 4023 and 5023. (F)

**G5053 Morphology (Slashlisted with 4053; Crosslisted with Anthropology 5053).** Prerequisite: 3053 and 3353. Introduces and develops theories and concepts of morphology including word formation, derivation, inflection, non-concatenative morphs, covert categories, prosodic phenomena, morphosyntactic categories and clitics. Data from non-Western languages will be prominent. No student may earn credit for both 4053 and 5053. (Irreg.)

**G5143 Symbolic Logic II (Crosslisted with Philosophy 5143).**

Prerequisite: 12 hours of philosophy. Further study of first order predicate logic: identity, axiomatic development. Various metatheorems; soundness, consistency and completeness. (Sp)

**G5330 Topics in Linguistics (Slashlisted with 4330).** 1 to 4 hours.

Prerequisite: graduate standing. May be repeated with change of content; maximum credit twelve hours. Topic areas will vary across theoretical and applied areas of linguistics. Some topics that are appropriate include socio-linguistics, psycho-linguistics, language acquisition, advanced syntax, advanced phonology, field phonetics, pragmatics, and comparative readings of twentieth-century theorists. No student may earn credit for both 4330 and 5330 on the same topic. (Irreg.)

**G5363 Linguistic Anthropology (Crosslisted with Anthropology 5363).**

Prerequisite: Anthropology or Linguistics 4353, or permission of instructor. Linguistic principles and their applications in anthropology. Topics vary and may include cognitive anthropology, the structural analysis of folklore, the ethnography of speech events, sociolinguistics. (F)

**G5533 Philosophy of Language (Crosslisted with Philosophy 5533);**

**Slashlisted with 4533.** Prerequisite: graduate standing. Survey of major philosophical views on the nature and workings of language. Topics covered include: meaning and truth, sense and reference, speech acts, and communication. No student may earn credit for both 4533 and 5533. (Irreg.)

**G5543 Philosophy of Mind (Crosslisted with Philosophy 5543);**

**Slashlisted with 4543.** Prerequisite: graduate standing. Survey of major philosophical views on the nature of the mind. Topics covered may include: the nature and unity of consciousness, the mind-body problem, personal identity, the emotions, actions and intentions, self-knowledge, and other minds. No student may earn credit for both 4543 and 5543. (Irreg.)

**G5990 Independent Study.** 1 to 3 hours. Prerequisite: graduate standing, permission of instructor. May be repeated; maximum credit twelve hours. Independent reading on one or more topics under the general direction of a faculty member. (F, Sp)

**G6590 Fieldwork in American Indian Languages (Crosslisted with Anthropology 6590).**

3 to 6 hours. Prerequisite: graduate standing and permission of instructor. Advanced field experience in the recording and analysis of Native American languages, including a discussion of problems in selecting and effectively utilizing informants. (Sp)

## Management (MGT)

**3013 Principles of Organization and Management.** Prerequisite: junior standing. An introductory course presenting the basic concepts and practices of management, both private and public. Historical development of management; basic definitions and philosophy; fundamental managerial functions, including planning, organizing, staffing, directing, and controlling; a survey approach to quantification in organizational life; current trends in management; possible future developments in organization and administration. (F, Sp, Su)

**3363 Organizational Behavior.** Prerequisite: 3013 and senior standing, or permission. Covers the structure of organizations and the dynamics of behavior within organizations. Included are such topics as job design, perception, communication, decision making, motivation, groups, leadership, and organizational change and effectiveness. (F, Sp)

**3513 Human Resource Management Practice.** Prerequisite: 3013. A survey course that focuses on developing students' understanding of human resource issues and the practical application of methods for solving these issues. Topics covered include job analysis, recruitment, interviewing, selection, performance appraisal, training, compensation, and equal employment opportunity. Issues are reviewed within the context of historical and current social, labor market, legal and global economic conditions influencing practice. (F, Sp)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to study materials not usually presented in regular courses. (F, Sp, Su)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work at a special project in the student's field. (F, Sp, Su)

**G4123 Industrial Relations.** Prerequisite: 3513 or permission. Survey of history and theory of trade union, labor law, factors in the labor market, contract negotiations and administration. Identification and definition of the role of management, unions and government in the industrial relations process. (F, Sp)

**4133 Leadership.** Prerequisite: Business major and junior standing. This course is designed to expose students to a variety of leadership perspectives and practices in order to enhance individual development and effectiveness as a leader. Focus will be on a repertoire of practical and theoretical leadership principles. This course will offer opportunities for students to improve their leadership skills through exercises and simulations. (F, Sp)

**G4153 Current Issues in Human Resource Management.** Prerequisite: 3513 or permission. An in-depth coverage of selected human resource issues. Issues covered include human resource costing, equal employment opportunity, recruiting, interviewing, selection, training and development, and performance appraisal. Focus is on the application of research results to problems and opportunities presently confronting human resource practices. (F, Sp, Su)

**4163 Organizational Management of Professional Sport.** Prerequisite: Student must be approved for degree candidacy by Price College. Study of the management principles of both collegiate and professional athletics. This class will cover the management of every major department of a collegiate athletic department and of a professional sport team. Guest speakers from the industry as well as field trips to witness the operation of a sporting event are a vital part of this class. (F, Sp, Su)

**4183 Negotiation.** Prerequisite: Business major and junior standing. This course explores the principles behind effective negotiation and mediation while helping students develop and refine their own unique styles. Students will learn negotiation strategies in a non-threatening classroom context. The readings and lectures will provide students with a framework for analyzing negotiations and tools and concepts useful in negotiating more effectively. (F, Sp)

**4323 Cross-Cultural Issues of Managerial Behavior.** Prerequisite: 3013 and Business Administration 3513. Introduces students to the work values and behaviors of individuals in countries around the world. Some of the topics covered in the cross-cultural comparisons discussed in this will include: approaches to motivation, communication decision-making, and negotiation. Particular emphasis will be placed on the developed and developing regions of the world that are important participants in today's global economy. (Irreg.)

**4373 Compensation Issues in Management.** Prerequisite: 3513.

Designed to help future managers understand and use human resource compensation systems. Students will be exposed to theories from labor economics and psychology that guide modern compensation systems. Compensation practices covered include job analysis, relevant legislation design, limited financial resources. (F, Sp)

**G4513 Organizational Design and Theory.** Prerequisite: 3513, 3523. An advanced course in the area of theory and practice of organization and administration, both private and public, from earliest times to the present day. Managerial patterns and techniques as influenced by changing social concepts and the impact of technology. Consideration of individual organizations and managerial personalities. (F, Sp)

**G4523 History of Management.** Prerequisite: senior standing or permission. The historical development of the theory and practice of organization and administration, both private and public, from earliest times to the present day. Managerial patterns and techniques as influenced by changing social concepts and the impacts of technology. Consideration of individual organizations and managerial personalities. (F, Sp)

**G4710 Special Problems in Management.** 1 to 3 hours. Prerequisite: junior standing and permission. May be repeated with change of subject matter; up to six hours with 18-hour major and three hours with 15-hour major. (F, Sp, Su)

**G5083 Human Resource Management and Organizational Behavior.** Prerequisite: permission (Director, PCB Graduate Programs); graduate standing. Survey of theory, practice and research in the major functional areas of human resources management to include planning, staffing, performance appraisal, compensation, labor relations, and training and development. Also examines the organizational behavior literature relevant to the implementation of human resource programs and activities. Includes such topics as motivation, communication, group dynamics, conflict management and organizational change. (F, Sp)

**G5113 Organizational Behavior and Administration.** Prerequisite: permission (Director, CBA Graduate Programs); graduate standing. Explores the factors that affect human behavior in organizational settings by examining the impact of alternative administrative practices on organizational effectiveness and member satisfaction. Topics include: perception, motivation, communication, decision making, groups, leadership and organizational development. (Sp)

**G5313 Industrial Relations.** Prerequisite: Graduate standing. Relations of management and labor; principles and techniques of collective bargaining; types of union agreements; federal and state labor laws and administrative regulations and requirements; future development of management-labor relations. (F, Sp)

**G5323 Business, Government and Society.** Prerequisite: Business Administration 5313 (may be taken concurrently) or permission of instructor. An examination of business in society and the interaction of business with the economic, ethical, global, political-legal, social and technological environments. The course also addresses emerging issues which are likely to affect the conduct of business in the future. (Irreg.)

**G5353 Interpersonal and Group Dynamics.** Prerequisite: Graduate standing. Through completion of this course, students should become more aware of: 1) what is known about the way groups function, 2) how the management of group dynamics enhances or detracts from organizational effectiveness, and 3) how their personal interaction patterns are likely to affect the groups to which they belong. In addition, students should develop their ability to observe the dynamics of group interaction and increase their own personal skills. (Irreg.)

**G5373 International Management.** Prerequisite: Graduate Standing. Examines the relationship between organizational involvement in international business and the resulting impact on human resource management. The primary focus is selection, training, compensation, and evaluation of home, host, and third world country nationals working in international assignments. The course also examines the impact of multinational corporations on the environments in which they operate. This section of the course centers on the economic mission of the company relative to its social responsibility in the foreign country. (F, Sp).

**G5383 Compensation Theory and Administration.** Prerequisite: permission (Director, CBA Graduate Programs). Topics on administration will include job analysis, descriptions, specifications, and evaluation; wage determination; rate ranges, wage surveys, performance appraisal, incentive plans, benefits and compensation laws. Topics from theory underlying the administration will include motivation, job satisfaction, job design, wage

criteria, communications group processes, employment exchange and micro- and macro-economics. (F)

**G5513 Planning, Staffing and Development.** Prerequisite: permission (Director, CBA Graduate Programs); graduate standing. Detailed analysis of the process which gets individuals from the labor market into the organization, how they are utilized, and how they are trained and developed professionally and personally. Topics include forecasting, recruiting, placement, test fairness and career management. (Sp)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. The only passing grade given is the neutral grade of S. (F, Sp, Su)

**G6101 Seminar on the Academic Profession (Crosslisted with Marketing 6101).** Prerequisite: graduate standing and permission of director CBA graduate programs. May be repeated; maximum credit five hours. Socialization of doctoral students in marketing and management to the education profession. Focus will be on developing and understanding of quality efforts in teaching, research, and service. (F, Sp)

**G6213 Seminar in Strategic Management.** Prerequisite: graduate standing and permission of director CBA graduate programs. Reviews the major theories, concepts and frames of reference regarding strategic management. (Irreg.)

**G6253 Seminar in Organizational Theory.** Prerequisite: graduate standing. A consideration of major topics in organization structure and macroorganization theory. Emphasis will be given to applications in a wide variety of organizational and administrative contexts. (F, Sp)

**G6273 Seminar in Organizational Behavior (Crosslisted with Marketing 6273).** Prerequisite: graduate standing and permission of director of Price College of Business graduate programs. Addresses personal and interpersonal issues in marketing and management. Application of social science theory to explain the behavior of organization members. (F, Sp)

**G6293 Strategic Marketing and Management (Crosslisted with Marketing 6293).** Prerequisite: graduate standing and permission of director CBA graduate programs. Reviews the major theories, concepts, and frames of reference regarding strategic marketing and management. (Irreg.)

**G6503 Development of Management Thought.** Prerequisite: graduate standing and permission. A history of the significant contributions to management theory and practice includes management concepts as they developed in light of the economic, social and political environment of management. (F)

**G6513 Global Business and the Environment (Crosslisted with Marketing 6513).** Prerequisite: graduate standing and permission of director of CBA graduate programs. Examines the complex relationship between an organization and the multiple markets it operates in globally. Includes organizational structure, adaptation of business functions to effectively compete in global markets, assessing opportunities in overseas markets, and assessing the performance of organizations in global markets. (F)

**G6960 Readings in Selected Fields of Management.** 1 to 4 hours. Prerequisite: 12 hours of management, graduate standing and permission. Guided reading in selected fields of management theory and application, conducted on a conference basis by staff. Scope of reading and credit to be arranged on entry into course. The only passing grade in this course is the neutral grade of S. (F, Sp, Su)

**G6973 Seminar.** Prerequisite: graduate standing and permission. May be repeated with change of topic; maximum credit 12 hours. A seminar for graduate students with topics to be announced each time course is offered. (F, Su)

**G6980 Research for Doctor's Dissertation.** (F, Sp, Su)

## *Management Information Systems (MIS)*

**2013 Programming Concepts and Practice.** Prerequisite: undergraduate major in Business. May be repeated once with change of topic; maximum credit six hours. Introduces the basic principles of structured programming and design. Topics covered are language syntax, algorithm development, flowcharting, logical relationships, math functions, and job control statements. (F, Sp, Su)

**2113 Computer-Based Information Systems.** Prerequisite: undergraduate major in business, Business Administration 1001 or concurrent enrollment .

Covers theory and practice for design and use of computer-based information systems in organizations. Project work includes using a relational database and designing a personal web page. Students demonstrate their ability to use a personal computer for word-processing, spreadsheet, database, and presentation applications by passing a competency exam. **Laboratory** (F, Sp, Su)

**3023 COBOL.** Prerequisite: 2113 and junior standing. A course in programming and design using procedural languages and techniques. (Irreg.)

**3033 Non-Procedural Programming Languages.** Prerequisite: student must be approved for degree candidacy by Price College, 2013 or 3013; 2113; and 3353 or concurrent enrollment in 3353. May be repeated once with change of topic; maximum credit six hours. Various emerging programming languages and tools relevant to MIS applications. The basic syntax, code construction, and business use of the language will be covered. Possible languages could include C ++ , FOCUS, VISUAL BASIC, SMALLTALK, POWERBUILDER, or others. (F, Sp, Su)

**3043 Topics in Advanced Non-Procedural Programming.** Prerequisite: 3033 and junior standing, or permission. May be repeated once with change of topic; maximum credit six hours. An intensive second course in programming and design using non-procedural languages and techniques. (F, Sp, Su)

**3113 Information Systems Theory and Structure.** Prerequisite: 2003 or permission. Provides a rigorous introduction to theory, concepts and principles from a number of disciplines that underlie information systems in goal-oriented organizations. Topics include: history of information processing; language; formal grammars; mathematical information theory; decision theory; information economics; systems theory; feedback control; human information processing models; basic computer science; information system conceptual frameworks; and management issues. (F, Sp)

**3213 Business Data Analysis.** Prerequisite: student must have been approved for degree candidacy by Price College. This course will cover the use of end user computing tools such as spreadsheets to analyze various business problems. Examples will come from application areas of business including finance, accounting, marketing and management. The course will introduce fundamental principles of business analysis and computer programming to develop solutions. (F, Sp)

**3353 Accounting Information Systems/Databases (Crosslisted with Accounting 3353).** Prerequisite: Student must be approved for degree candidacy by Price College, or permission. A study of the structure, flow and use of financial and non-financial data in computer-based environments with a heavy emphasis on ensuring data integrity. Conceptual data modeling using business rules, normalization, structured query language (SQL), and physical database design and data administration. Course includes cross-functional team project with phased deliverables. (F, Sp)

**3363 Information Systems Infrastructure.** Prerequisite: 2113. Study of information system architecture including networks, processors, clients, operating systems, middleware, database management systems, information warehouses, groupware, EDI, DSS, systems management, interoperability, benchmarking, security, and disaster protection. The focus is to enable the student to understand, design, and analyze current and proposed information technology configurations. (F, Sp)

**3373 Systems Analysis and Design Theory.** Prerequisite: 3353 or permission. A study of the structure and application of tools, technologies, and models for analyzing, designing, and evaluating information systems. Topics include: case tools, structured analysis, I/O design, rapid application development, simulation models, prototyping, human factors, alternatives, cost/benefit analysis, recommendations for a new system, implementation and post-evaluation. (F, Sp)

**3483 Information Technology and Ethical Issues.** Prerequisite: 2113 and junior standing, or permission. Covers information technology and ethical issues including: issues of information privacy, information accuracy, information access, and information property rights. A foundation in moral theory is provided as a basis for evaluation of the ethical issues concerning information technology. Ethical scenarios, cases and current event items are used to provide a broad, practical awareness of the ethical issues. (Irreg.)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to study materials not usually presented in regular courses. (F, Sp)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work at a special project in the student's field. (F, Sp)

**4213 Introduction to Data Warehousing.** Prerequisite: concurrent enrollment or completion of 3373, or permission. The course covers the fundamentals of developing and using a data warehouse. Students learn to develop requirements, create a dimensional model and generate population and maintenance plans for a warehouse. Students also learn to manipulate the data in the warehouse for update, maintenance and data extraction and to generate effective business intelligence output. (F, Sp)

**4223 Telecommunications and Distributed Processing.** Prerequisite: 3363 or permission. A study of the basic concepts of telecommunications and distributed processing, including data communication equipment, protocols, local and wide area networks and the associated topologies. Stresses structure, interoperability, load analysis, and performance analysis. Taught in a laboratory environment. (F, Sp)

**4413 Object-Oriented Systems Development (Slashlisted with 5413).** Prerequisite: 3373 or permission. Presents object-oriented theory, concepts, and practice for systems development. Concepts such as abstraction, identity, encapsulation, polymorphism, inheritance, and reuse are discussed. The unified modeling language (UML) is used for practice in object-oriented analysis (OOA) and object-oriented design (OOD). No student may earn credit for both 4413 and 5413. (F, Sp)

**4423 Expert Systems/Artificial Intelligence.** Prerequisite: 3373 or permission. Study of the use of expert systems and artificial intelligence in a business environment. Topics include: what if analysis, knowledge engineering, artificial intelligence models, and management science models. Students design, build, and evaluate an actual expert system. (Irreg.)

**4433 Project Management.** Prerequisite: concurrent enrollment or completion of 3373 or permission. Presents the technical, managerial and organizational concepts and tactics associated with managing software development and/or acquisition projects. A project management software tool will be introduced and used at a very basic level. (Irreg.)

**4443 Advanced Database Management.** Prerequisite: 3353. Advanced topics in database design and management such as data administration, security, multi-user access, file organization, and backup and recovery procedures. (F, Sp)

**4453 Technology Management.** Prerequisite: Student must be approved for degree candidacy by Price College, all 3000-level Business core courses, or be upper-division student in the College of Engineering. This course examines current issues and approaches to the management of technology. Using case studies, assigned readings and class discussions, students will examine the complexity of issues involved in the management of technology. An underlying theme of this course is that the successful management of technology rest on understanding of a number of issues, including the nature of competition, the interaction of new technologies with existing technologies, the evolution of markets and the processes through which organizations generate and absorb technological innovations. (F, Sp)

**4473 Group Support Systems.** Prerequisite: 3363 and junior standing, or permission. Explores the dimensions of information technology support for work groups or project teams including traditional group support systems, computer systems for collaborative work, and electronic meeting systems. Issues addressed include the design and implementation of these systems as well as their organizational and economic impact on people, groups, projects, firms, virtual firms and society. (Irreg.)

**4483 Electronic Business.** Prerequisite: Student must be approved for degree candidacy by Price College or permission. The application of information technology in enabling business processes (e.g., supply chain management and customer relationship management) across business enterprises. The course will cover applicable business domains as well as enabling technological infrastructures and functional software technologies. (Irreg.)

**4493 International Issues of Information Technology.** Prerequisite: 2113 and junior standing, or permission. A study of the practice, issues and benefits using information technologies in international and cross-culture environments. Subjects include: international telecommunications and computing infrastructures, policies, laws and practices; and, the effects of it on the definition and structure of international markets, logistics, organizations and nations. (Irreg.)

**4663 MIS Field Project.** Prerequisite: 3033, 3363, 3373, or permission. Involves a field project for a client—business firm or other organization. Students will work closely with their client; perform an analysis, provide design alternatives, evaluate alternatives, develop and demonstrate a working model (prototype) of a part of the system, prepare a recommendation, and make a formal presentation to their client. (F, Sp)

**4710 Topics in Management Information Systems.** 1 to 3 hours. Prerequisite: 2113, 3013 or 3033, or permission. May be repeated once with change of topic; maximum credit six hours. Topics may include any MIS related area; offered at the request of a faculty member with division approval. (Irreg.)

**4960 Directed Reading in Management Information Systems.** 1 to 3 hours. Prerequisite: 2113, 3013 or 3033, or permission. May be repeated once with change of topic; maximum credit six hours. Topics in the management of information systems. (F, Sp, Su)

**G5003 Management Information Systems.** Prerequisite: graduate standing or permission of instructor. Study of information systems applications and management in a business environment. Includes personal productivity, basic technology and infrastructure; design, development and management of computer information systems; and impacts of technology on business practices. (F)

**G5113 Database Design and Application.** Prerequisite: 5003 or B AD 5153. Covers concepts and practices of data flows, data storage and information retrieval in computer information systems. Topics include data modeling, relational and non-relational databases, database management systems, principles of telecommunications, and management considerations. (Irreg.)

**G5303 E-Business Architectures.** Prerequisite: 5003 or B AD 5153. A study of the basic concepts of telecommunications and distribution processing and their applications to e-business. Focus is on managerial issues related to telecommunications. (Irreg.)

**G5203 Systems Architecture and Design.** Prerequisite: 5113. Examines how technology, economics and organizational issues influence the structure of such computer information systems as mainframe, client/server, and netcentric. Explores the effective use of design concepts and tools including SDLC, RAD, prototyping, objects, and case in a business enterprise. Includes a field design project. (Su)

**G5313 Information Technology Management.** Prerequisite: 5003 or B AD 5153. Examines the current issues and approaches to the management of information technology (IT). Through assigned reading, case discussions and projects, students confront the complex issues associated with IT management. The underlying theme of this course is that effective IT management requires an understanding of the IT, the organizational/commercial environment in which it will be applied, and basic business, organizational and managerial concepts. (Su)

**G5323 Project Management.** Prerequisite: 5003 or B AD 5153. This course focuses on the management of systems development projects, including their implementation within an organization. The course begins with overviews of the software development context, system development approaches and project management concepts and then focuses on project planning, organizing controlling and recent technological advances in software development (F)

**G5403 Information Technology Enabled E-Business.** Prerequisite: 5003 or B AD 5153. Focuses on the role played by information technology in creating the digital economy. The first part of the course explores e-business models and strategies. The second half deals with external issues related to trading partners and the government, as well as internal issues involved with the development and implementation of e-business applications. (Irreg.)

**G5413 Object-Oriented Systems Development (Slashlisted with 4413).** Prerequisite: 5113. Presents object-oriented theory, concepts, and practice for systems development. Concepts such as abstraction, identity, encapsulation, polymorphism, inheritance, and reuse are discussed. The unified modeling language (UML) is used for practice in object-oriented analysis (OOA) and object-oriented design (OOD). No student may earn credit for both 4413 and 5413. (F, Sp)

**G5423 Expert Systems/Artificial Intelligence.** (Slashlisted with 4423). Prerequisite: 5003 or B AD 5153. A study of the use of expert systems and artificial intelligence. Topics include what-if analysis, knowledge engineering, artificial intelligence models, and management science models. Students design, build and evaluate actual expert systems and write a paper. No student may earn credit for both 4423 and 5423. (Irreg.)

**G5433 Knowledge Management.** Prerequisite: 5003. Course focus is on the three critical elements in knowledge management - people, processes, and technology. Course will explore practices entailed in developing a knowledge infrastructure, managing the interaction of people and technology, valuing knowledge assets, leveraging teams, and knowledge transfer across organizations. (Irreg.)

**G5443 Issues in Data Warehousing.** Prerequisite: 5113 or equivalent. This course will cover the fundamentals of developing and using a data

warehouse. Students will learn to develop requirements, create data models and generate plans to populate and maintain a warehouse. Students will also learn to manipulate the data in the warehouse for update, maintenance and data extraction. (F, Sp)

**G5463 Technology and Innovation Management.** Prerequisite: graduate standing. The effective management of technological innovation is a key organizational capability with an important influence on competitive success. This course examines current issues and approaches to the management of technological innovation. Using case studies, assigned readings and class discussions, students will examine the complexity of issues involved in the management of technological innovation. An underlying theme of this course is that the successful management of technological innovation rests on an understanding of a number of issues, including the nature of competition, the interaction of new technologies with existing technologies, the evolution of markets and processes through which organizations generate and absorb technological innovations. (F)

**G5603 Advanced Database Management.** Prerequisite: 5003, 5113. Covers the principles of design, use, and management of database technology including data warehouses from a manager's perspective. Involves a number of exercises using a multi-user relational database management system and associated tools to address typical business problems. (F)

**G5613 Information Technology and Ethics.** Prerequisite: 5003. Provides exposure to several topics concerning information technology and ethical issues as well as the impact of general technology on business and societal values. Foundation in moral theory provided as a basis for evaluation of the ethical issues concerning information technology. (Sp)

**G5950 Special Topics.** 1 to 3 hours. Prerequisite: 5003, 5113. May be repeated with change of content; maximum credit twelve hours. A study of current research and practice in information technology. (Irreg.)

**G5960 Directed Readings.** Prerequisite: graduate standing. 1 to 3 hours. May be repeated with change of topic; maximum credit six hours. Topics in management information systems. (Irreg.)

**G5973 Topics in Information Systems.** Prerequisite: 5003. May be repeated with change of content; maximum credit twelve hours. A study of current research and practice in information technology. (Irreg.)

**G6723 Managing Technological Innovation and Use.** Prerequisite: graduate standing. Examines theory and research on how individuals and organizations identify appropriate technologies, decide to invest in these technologies, and are able to successfully adopt and embed these technologies within work behaviors/processes. (Sp)

**G6733 Organizational Impacts of Information Technology.** Prerequisite: graduate standing. Examines theories, research and forecasts regarding the impacts of information technology on individuals, groups, organizations, value chains, industries, markets and societies. Primary emphasis is placed on understanding relationships among IT investments, IT impacts and business performance. (F)

**G6743 Computer-Mediated Communication and Decision Making.** Prerequisite: graduate standing. Examines theories and research on how communication and decision making are increasingly being mediated through information technologies. Behaviors by individuals, within groups, and within and across organizations will be studied. (Su)

**G6960 Directed Readings in MIS.** 1 to 3 hours. Prerequisite: graduate standing and permission of instructor. May be repeated as needed by Ph.D. students; maximum credit twelve hours. A study of current research and practice in information technology. (F, Sp, Su)

**G6973 Seminar in Management Information Systems.** Prerequisite: graduate standing. Covers topics from current research in information systems. May be repeated three time with change of content. (Irreg.)

**G6980 Research for Doctoral Dissertation.** 1 to 3 hours. Prerequisite: permission of instructor. Research for doctoral dissertation. (F, Sp, Su)

## Marketing (MKT)

**2013 Introduction to Marketing.** An overview of the marketing mix including pricing, promotion, and distribution channels. Focus will be placed on the interrelationships among the components. Coverage will also include the business implications of developing effective customer demand creation and fulfillment strategies. This course will not count for credit toward any Price College of Business major. (Irreg.)

**3013 Principles of Marketing.** Prerequisite: Economics 1113, 1123, Accounting 2113, 2123, junior standing. Focuses on the relationship between the firm and its customers and the other members of the channel of distribution. Introduces students to: the marketing function of an organization; the environmental factors influencing marketing decisions; the discovery of market opportunities; the development of marketing strategy; and the development of marketing programs. (F, Sp, Su)

**3023 Marketing Analysis.** Prerequisite: 3013, Business Communication 2813, Management Information Systems 2113; or concurrent enrollment, and Economics 2843. A study of basic mathematical, statistical, accounting and financial analysis techniques and tools related to marketing. The methodology and planning of marketing research studies and methods for the analysis, interpretation and presentation of research data. (F, Sp)

**3053 Marketing Research.** Prerequisite: Student must be approved for degree candidacy in the Price College of Business, 3013 or concurrent enrollment. This course provides students with an understanding or the role of marketing research in organizations and how marketing research is implemented. Students will learn the value of primary and secondary data, become familiar with methods for data collection and analysis, and understand how research errors can be reduced or avoided. The course is designed to further students' professional development by enhancing their ability to work in teams and effectively communicate facts and opinions to solve business problems. This course assumes an understanding of basic statistics and spreadsheets. (F, Sp)

**3113 Marketing Management.** Prerequisite: Accounting 2123, Economics 2843; corequisite: 3013. Focuses on the application of marketing concepts to managerial decision-making across topic areas of corporate level strategy, marketing research, markets, products, pricing, promotional, and distribution. The goal of the course is to tie the business concepts and tools of previous courses to real-world situations preparing student for dynamic decision-making in their careers. (F, Sp, Su)

#### **3223 Logistics Management (Crosslisted with Supply Chain Management 3223).**

Prerequisite: Student must be approved for degree candidacy by Price College, 3013 or concurrent enrollment. The physical supply and distribution function in business management, including channel selection, transportation, facility location and materials management; concentrates on the analytical and managerial methods necessary for the development and control of an integrated logistics system. (F, Sp)

**3313 Electronic Marketing.** Prerequisite: Student must be approved for degree candidacy by Price College, 3013. Addresses how businesses use the internet and other computer technologies as marketing tools. The emphasis is on understanding the unique opportunities and challenges associated with electronic marketing in order to better implement a firm's overall marketing strategy. (Irreg.)

#### **3323 Purchasing and Buyer Behavior (Crosslisted with Supply Chain Management 3323).**

Prerequisite: 3013 and 3113 or concurrent enrollment in 3113. Consumer and organizational buying processes are examined. Individual and organizational decision-making frameworks, information technology, and the external environment are studied in the context of forming marketing strategies and tactics. Topics include make or buy decision making; supplier development and outsourcing; supplier evaluation, selection, and management; buyer-seller relationships; purchasing capital goods and services; international and electronic commerce; information processing; social and economic influences; preference formation and change; and image creation and positioning. (F, Sp)

#### **3333 Special Topics in Consumer and Industrial Buyer Behavior.**

Prerequisite: 3013, 3023. May not be repeated. Special topics in marketing. Content will vary and may be of an applied nature.

**3343 Retailing Management.** Prerequisite: Student must be approved for degree candidacy by Price College, 3013. An analytical approach to the management of retail institutions. Addresses strategic and operating level decision making related to delivery of products and services to consumers, focusing on each of the four dimensions of the marketing mix. Includes modules on electronic commerce and ethical responsibility. (F, Sp)

#### **3413 New Product Development (Crosslisted with Entrepreneurship 3413).**

Prerequisite: Student must be approved for degree candidacy by Price College, 3013 and 3053 or Business Administration 2110. Focuses on the development of ideas for new or established organizations, creating an environment conducive to innovation, recognizing business opportunities, assessing the market, customer and competitor situation. The development of these ideas leads to a feasibility analysis. Examines the development of a

sales and distribution structure (including franchising, distributorship, and licensing and alliances), understanding segmentation, targeting, and niching. (F, Sp)

**3960 Honors Reading.** Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to study materials not usually presented in regular courses. (F, Sp, Su)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work at a special project in the student's field. (F, Sp, Su)

**4123 Negotiation and Selling.** Prerequisite: Student must be approved for degree candidacy by Price College, all 3000-level Business core courses, 3053. Addresses the field sales effort of the firm with emphasis on tactical analysis. It examines professional selling as the negotiation process that provides the link between firm and customer with a focus on both the oral and written communication involved. The thrust of the course is application and the view is first line and tactical. (F, Sp)

**4133 Special Topics in Selling and Sales Management.** Prerequisite: 3013, 3023. May not be repeated. Special topics in marketing. Content will vary and may be of an applied nature. (Irreg.)

**4153 Integrated Marketing Communications.** Prerequisite: Student must be approved for degree candidacy by Price College, all 3000-level Business core courses. Examines the promotional element of the marketing mix. It focuses on the management of promotional programs with emphasis on the interaction and coordination of advertising, professional selling, and sales promotions. The course will provide a mix of academic strategies, marketing tools, and hands-on promotional planning. (F, Sp)

**4333 Marketing Strategy and Policy.** Prerequisite: Student must be approved for degree candidacy by Price college, all 3000-level Business core courses, 3053. Should be taken in the student's last semester. Major topics addresses are strategic marketing, product management, pricing management and marketing ethics. (F, Sp, Su)

**4343 Special Topics in Marketing Strategy and Policy.** Prerequisite: 3013, 3023, 3323, 4153. May not be repeated. Special topics in marketing. Content will vary and may be of applied nature.

**4523 International Marketing.** Prerequisite: Student must be approved for degree candidacy by Price College, all 3000-level Business core courses. Study of marketing concepts and their international marketing implications, dealing with international market structure, framework for multinational marketing, strategic guidelines for global marketing strategies, pricing, promotion, product and distribution strategies for international markets. Special assignments include case studies, country analysis, article reviews and a term paper on topic of special interest related to international marketing. (F)

**4800 Current Issues in Marketing.** 1 to 3 hours. Prerequisite: permission of department and instructor. May not be repeated. An advanced seminar dealing with contemporary issues in marketing. Content will vary with the instructor. May not be repeated.

**4900 Marketing Reading.** 1 to 3 hours. Prerequisite: advanced standing and permission. May be repeated; maximum credit six hours. Provides an opportunity for the student to study materials not usually presented in regular courses. (F, Sp, Su)

**G5063 Managerial Marketing.** Prerequisite: graduate standing and permission. The consideration involved in marketing management decisions based on consumer orientation; innovation and creative adaption to change; marketing goals; the cultural implications of marketing action; and the role of theory in marketing. (F, Sp, Su)

**G5103 Advanced Marketing Channels.** Prerequisite: 5063 or B AD 5273 or permission. Studies and analyzes the changing and dynamic nature of marketing channels for products and services. With the explosion in information technology and changing consumer shopping patterns, companies are increasingly redesigning how they deliver products and services to their customers. The course is not only practical but also develops a solid grounding in the economic and behavioral theory of marketing channels. (Irreg.)

**G5113 Business to Business Marketing.** Prerequisite: 5063 or B AD 5273 or permission. Addresses the special challenges and opportunities confronting marketers serving the needs of organizations rather than the needs of households, including commercial enterprises, institutions, and all levels of government. Covers market analysis, organizational buying behavior, relationship management. Emphasizes traditional marketing theory as applied to the business-to-business environment and examines current business practices. (Irreg.)

**G5123 Business Logistics.** Prerequisite: 5063 or B AD 5273 or permission. Overview of current logistics and distribution practices to create an understanding of the basic components of logistics management and what is considered best practice today. Content covers the complexities associated with the integrated flow of raw materials, in-process goods, finished goods, and information from point-of-origin through the production process to the end consumer. The course provides an understanding of how these activities work together to provide required levels of customer services within the supply chain setting. (Irreg.)

**G5133 International Marketing.** Prerequisite: 5063 or B AD 5273 or permission. Emphasizes the study of the major functional areas that comprise the international marketing task and their implications under contemporary market conditions. Focus on the development of analytical and planning sophistication to support an international marketing strategy for brand, product/service line, or business unit. (Irreg.)

**G5143 Services Marketing.** Prerequisite: 5063 or B AD 5273 or permission. Focuses on managerial decision-making in service organizations and the relationship of services marketing decisions to organizations' operations and performance. Topics covered include: understanding customer perceptions, expectations, overall evaluations, and behavior regarding services, managing customer relationships, specifying stands and offerings, delivering services, improving service, and linking customer satisfaction to operations and financial outcomes. (F)

**G5153 Electronic Marketing.** Prerequisite: 5063 or B AD 5273 or permission. Focuses on general on-line demographics, usage, and trends and a discussion of the range and scope of on-line environments. The course then considers topics in human-computer interaction, at both the individual (i.e. search, decision-making, and navigation) and the social (i.e. virtual communities, communication, and public policy) level. Throughout, the course is concerned with the application of consumer behavior principles to product design and marketing in on-line environments. This class will review the current "state of the art" in electronic marketing, both from a theoretical perspective and from the perspective of specific company and industry applications. Students will develop an understanding of the economics of electronic marketing business models and the behavior implications and requirements of those models. (Irreg.)

**G5233 Seminar in Consumer Behavior.** Prerequisite: 5063, permission (Director, Price College of Business Graduate Programs). Brand loyalty and purchasing behavior, family decision making, social class and societal stratification, changing demographics and expanding/contracting markets, product usage rates, social influence process, store loyalty and patronage behavior, family life cycle, retail store images and store positioning, purchase probabilities and intentions, shopping center and store location selection. (Irreg.)

**G5960 Readings in Selected Fields of Marketing.** 1 to 4 hours. Prerequisite: graduate standing and permission. May be repeated; maximum credit eight hours. Guided reading in selected fields of marketing; conferences with staff. Scope of reading and credit to be arranged on entry into course. The only passing grade given in this course is the neutral grade of S. (F, Sp, Su)

**G5973 Seminar.** Prerequisite: graduate standing and permission. May be repeated with change of subject matter; maximum credit nine hours. Exact subject matter will be announced each time the course is offered. Subject matter includes: (1) Behavior Research, (2) Marketing Models. In case a student's undergraduate work included such a large number of courses as to make the seminar redundant, the student may be permitted to substitute another graduate course. (Sp)

**G6101 Seminar on the Academic Profession (Crosslisted with Management 6101).** Prerequisite: graduate standing and permission (Price College of Business Graduate Programs). May be repeated; maximum credit five hours. Socialization of doctoral students in marketing and management to the education profession. Focus will be on developing and understanding of quality efforts in teaching, research, and service. (F, Sp)

**G6243 Applied Univariate Statistics (Crosslisted with Business Administration 6243).** Prerequisite: Ph.D. standing or permission of instructor; permission (Director, Price College of Business Graduate Programs). Probability, algebra of expectations, random sampling, sampling distributions, point and interval estimation, tests of hypotheses, parametric and nonparametric, sampling methods, survey design, general linear model, computer applications, statistical analysis system. (F)

**G6253 Applied Multivariate Statistics (Crosslisted with Business Administration 6253).** Prerequisite: 6243 or permission of instructor;

permission (Director, Price College of Business Graduate Programs). Multivariate data analysis with computer applications—introduction, survey, and computer applications—factor analysis, multidimensional scaling, cluster analysis, regression, analysis of variance, canonical analysis, discrimination analysis. (Sp)

**G6273 Behavioral Analysis in Management and Marketing (Crosslisted with Management 6273).** Prerequisite: graduate standing and permission (Director, Price College of Business Graduate Programs). Addresses personal and interpersonal issues in marketing and management. Application of social science theory to explain the behavior of organization members. (Irreg.)

**G6283 Marketing Theory and Thought.** Prerequisite: graduate standing and permission (Director, Price College of Business Graduate Programs). Reviews the major theoretical perspectives in marketing. Particular emphasis is placed on understanding and appreciating the historical development of marketing theory and thought. (F, Sp)

**G6293 Strategic Marketing and Management (Crosslisted with Management 6293).** Prerequisite: graduate standing and permission (Director, Price College of Business Graduate Programs). Reviews the major theories, concepts and frames of reference regarding strategic marketing and management. (Irreg.)

**G6393 Current Issues in Marketing.** Prerequisite: graduate standing and permission (Director, Price College of Business Graduate Programs). Addresses leading theoretical and research issues that are currently prominent in the marketing discipline. The specific content will be structured according to the particular interests and expertise of the marketing professor teaching the course.

**G6513 Global Business and the Environment (Crosslisted with Management 6513).** Prerequisite: graduate standing and permission (Director, Price College of Business Graduate Programs). Examines the complex relationship between an organization and the multiple markets it operates in globally. Includes organizational structure, adaptation of business functions to effectively compete in global markets, assessing opportunities in overseas markets, and assessing the performance of organizations in global markets. (F)

**G6960 Directed Readings in Marketing.** 1 to 4 hours. Prerequisite: graduate standing; permission of instructor, permission (Director, Price College of Business Graduate Programs). May be repeated as needed by Ph.D. students. Special reading programs are designed to enable graduate students (1) to extend their study to fields of marketing that are not covered in other courses and/or (2) to provide an opportunity for more extensive or intensive study of subjects covered in other courses. (F, Sp, Su)

**G6980 Research for Doctor's Dissertation.** (F, Sp, Su)

## Mathematics (MATH)

The department offers courses which are slashlisted so undergraduate students may take an undergraduate 4000-level course while graduate students may take a graduate 5000-level course. The lectures in a slashlisted course are the same. However, students in the 5000-level course have substantial additional requirements beyond those for students in the 4000-level course. These additional requirements are listed in the slashlisted course syllabus. ACT/SAT scores are valid for placement during a freshman's entry year only.

### Explanation of Course Numbers

In the Department of Mathematics the second digit indicates the area within the department: 1—miscellaneous; 2—mathematics education; 3—algebra; 4—analysis; 5—foundations and logic; 6—geometry; 7—probability and statistics; 8—topology; 9—research. The third digit identifies the course within the level and area.

**0113 Elementary Algebra.** Prerequisite: completion of placement test. For students who score in the lowest bracket on the placement test. A review of beginning algebra including polynomial arithmetic, solving equations, graphing, inequalities, and the quadratic equation. Not acceptable for degree credit at the University of Oklahoma. (F, Sp, Su)

**0115 Fundamental Algebra.** Prerequisite: placement test. Combines the course content of Math 0113 and 0123. A review of beginning algebra including polynomial arithmetic, solving equations, graphing, inequalities, rational expressions, exponents and radicals, imaginary and complex numbers, quadratic equations, systems of linear equations. Not acceptable for degree credit at the University of Oklahoma. (F, Sp, Su)

**0123 Intermediate Algebra.** Prerequisite: 0113 at OU, or satisfactory score on the placement test, or satisfactory score on the ACT/SAT.

Properties of real numbers, equations and inequalities, algebra of rational expressions, exponents and radicals, introduction to quadratic equations, functions and graphs, systems of linear equations. Not acceptable for degree credit at the University of Oklahoma. (F, Sp, Su)

**1473 Mathematics for Critical Thinking.** Prerequisite: 0123 at OU, or satisfactory score on the placement test, or satisfactory score on the ACT/SAT. A study of the mathematics needed for the critical evaluation of quantitative information and arguments including logic, critical appraisal of graphs and tables; use of simple mathematical models and an introduction to elementary statistics. (F, Sp, Su) [I-M]

**1503 Introduction to Elementary Functions.** Prerequisite: 0123 at OU, or satisfactory score on the placement test, or satisfactory score on the ACT/SAT. Review of basic algebraic skills such as multiplying and factoring polynomials, rational expressions, linear equations and inequalities, exponents and radicals, absolute values. Other topics include the concept, notation, and algebra of functions, functions of linear, polynomial, rational, exponential, and logarithmic type, systems of equations. A student may not receive credit for this course and 1643. (F, Sp, Su) [I-M]

**1523 Elementary Functions.** Prerequisite: 1503 at OU, or satisfactory score on the placement test, or satisfactory score on the ACT/SAT. Review of function concepts. Topics covered include properties of functions, exponential and logarithmic functions, trigonometric functions and their inverses by unit circle and triangle approaches, trigonometric equations and identities, simple conic sections, polar coordinates, Demoivre's theorem, discrete algebra, induction, limits and continuity. (F, Sp, Su) [I-M]

**1643 Precalculus for Business, Life and Social Sciences.** Prerequisite: 0123 at OU, or satisfactory score on the placement test, or satisfactory score on the ACT/SAT. Review of basic algebra skills. Topics covered include linear functions, exponential and logarithmic functions, systems of linear equations and inequalities, matrices and operations on matrices, linear programming, introductory trigonometry, elementary probability and statistics. A student may not receive credit for this course and 1503. (F, Sp, Su) [I-M]

**1743 Calculus I for Business, Life and Social Sciences.** Prerequisite: 1523 or 1643 at OU, or satisfactory score on the placement test, or satisfactory score on the ACT/SAT. Topics in differentiation and integration of polynomial, exponential and logarithmic functions. Applications to the business, life and social sciences. A student may not receive credit for this course and 1823. (F, Sp, Su) [I-M]

**1823 Calculus and Analytic Geometry I.** Prerequisite: 1523 at OU, or satisfactory score on the placement test, or satisfactory score on the ACT/SAT. Topics covered include equations of straight lines; conic sections; functions, limits and continuity; differentiation; maximum-minimum theory and curve sketching. A student may not receive credit for this course and 1743. (F, Sp, Su) [I-M]

**2123 Calculus II for Business, Life and Social Sciences.** Prerequisite: 1743. Differentiation and integration of exponential and logarithmic functions; simple differential equations; partial derivatives; double integrals, probability. Applications to the business, life and social sciences. A student may not receive credit for this course and 2423. (F, Sp, Su) [I-M]

**2213 Mathematical Systems.** Prerequisite: plane geometry, intermediate algebra, enrollment in elementary teachers' program. A systematic analysis of arithmetic and a presentation of intuitive algebra and geometry. Not open to students in the University College. (F, Sp, Su)

**2423 Calculus and Analytic Geometry II.** Prerequisite: 1823. Integration and its applications; the calculus of transcendental functions; techniques of integration; and the introduction to differential equations. A student may not receive credit for this course and 2123. (F, Sp, Su) [I-M]

**2433 Calculus and Analytic Geometry III.** Prerequisite: 2423. Polar coordinates, parametric equations, sequences, infinite series, vector analysis. (F, Sp, Su)

**2443 Calculus and Analytic Geometry IV.** Prerequisite: 2433. Vector calculus; functions of several variables; partial derivatives; gradients, extreme values and differentials of multivariate functions; multiple integrals; line and surface integrals. (F, Sp, Su)

**2513 Discrete Mathematical Structures.** Prerequisite: 2423 or concurrent enrollment. A course for math majors or prospective math majors. Provides an introduction to discrete concepts such as finite sets and structures, and their properties and applications. Also exposes students to the basic procedures and styles of mathematical proof. Topics include basic set theory, functions, integers, symbolic logic, predicate calculus, induction,

counting techniques, graphs and trees. Other topics from combinatorics, probability, relations, Boolean algebras or automata theory may be covered as time permits. (F, Sp, Su)

**†G3113 Introduction to Ordinary Differential Equations.** Prerequisite: 2423 or concurrent enrollment. Duplicates two hours of 3413. first order ordinary differential equations, linear differential equations with constant coefficients, two-by-two linear systems, Laplace transforms, phase planes and stability. (F, Sp, Su)

**3213 Data Analysis and Geometric Systems.** Prerequisite: plane geometry, intermediate algebra, 2213, enrollment in elementary teacher's program. Algebra and the structure of number systems, functional relationships, informal geometry. (F, Sp)

**†G3333 Linear Algebra I.** Prerequisite: 2433 or permission of instructor. Systems of linear equations, determinants, finite dimensional vector spaces, linear transformations and matrices, characteristic values and vectors. (F, Sp, Su)

**†G3443 Linear Algebra II.** Prerequisite: 3333. Diagonalization, inner product spaces, applications, and other advanced topics in finite and infinite dimensional vector spaces. No student may earn credit for this course and 4373 or 5373. (F, Sp, Su)

**†G3413 Physical Mathematics I.** Prerequisite: 2443 or concurrent enrollment. Complex numbers and functions. Fourier series, solution methods for ordinary differential equations and partial differential equations, Laplace transforms, series solutions, Legendre's equation. Duplicates two hours of 3113. (F)

**†G3423 Physical Mathematics II.** Prerequisite: 2443, 3413. The Fourier transform and applications, a survey of complex variable theory, linear and nonlinear coordinate transformations, tensors, elements of the calculus of variations. Duplicates one hour of 3333 and one hour of 4103. (Sp)

**†G3513 Foundations of Analysis.** Prerequisite: 2433 or concurrent enrollment. The real number system, sequences of numbers, series of numbers, limits and continuity of functions, topology and continuity on the real line. (F, Sp, Su)

**†G3613 Modern Geometry.** Prerequisite: 1823 or 1743. An introduction to geometry including axiomatics, finite geometry, convexity, and classical Euclidean and non-Euclidean geometry. (F, Sp)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. Covers materials not usually presented in the regular courses. (F, Sp, Su)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Projects covered will vary. The content will deal with concepts not usually presented in regular coursework. (F, Sp)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Will provide an opportunity for the gifted honors candidate to work at a special project in the student's field. (F, Sp, Su)

**3990 Independent Study.** 1 to 3 hours. Prerequisite: one course in general area to be studied; permission of instructor and department. Overall grade point average of 2.50 or better. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**G4033 Applied Matrix Models.** Prerequisite: 3333 and either a programming course or permission of instructor. Solution of systems of m linear equations in m unknowns; solution of m linear equations in k unknowns; linear programming; eigenvalue and vector problems; matrix models selected from various areas such as ecology, voting systems, city street sweeping, infectious diseases, population, predator prey systems, heat transfer in frozen soil, network analysis, psychology, sociology, Markov processes. (F)

**G4073 Numerical Analysis I.** Prerequisite: 3113 or 3413. Solution of linear and nonlinear equations, approximation of functions, numerical integration and differentiation, introduction to analysis of convergence and errors, pitfalls in automatic computation, one-step methods in the solutions of ordinary differential equations. (F)

**G4083 Numerical Analysis II.** Prerequisite: 3113 or 3413; 4073 or Electrical Engineering 3793; 3333 or 4373 or Biostatistics and Epidemiology 5563. Matrix inversion and related topics; numerical solution of ordinary differential equations, partial differential equations, integral equations and functional equations; numerical solution of eigenvalue problems and applications of functional analysis. (Alt. Sp)

**G4103 Introduction to Functions of a Complex Variable.** Prerequisite: 3113. Complex analytic functions, conformal mappings, complex integrals. Taylor and Laurent series, integration by the method of residues, complex analytic functions and potential theory. (Sp)

**4113 Topics in Applied Mathematics (Slashlisted with 5113).**

Prerequisite: permission of instructor. May be repeated with change of content; maximum credit nine hours. Algebraic coding theory, linear finite state workings, numerical analysis of differential equations, asymptotic analysis, game theory or other subjects. No student may earn credit for both 4113 and 5113. (Irreg.)

**G4163 Introduction to Partial Differential Equations.** Prerequisite: 3113. Physical models, classification of equations, Fourier series and boundary value problems, integral transforms, the method of characteristics. (F, Sp)

**4193 Introductory Mathematical Modeling.** Prerequisite: 3113 or 3413, 3333, 4733 or 4753, or permission of instructor. Mathematics models are formulated for problems arising in various areas where mathematics is applied. Techniques are developed for analyzing the problem and testing validity of proposed model. (F)

**4232 Specialized Topics and Methods—A Teachers' Course.**

Prerequisite: 2433. Selected specialized topics and methods relevant to the secondary school mathematics curriculum. Content will vary, but will include problem solving, use of computers in teaching secondary school mathematics, specialized methods for teaching algebra and geometry, teaching probability and statistics at the secondary level, or other appropriate content and methods not covered in EDMA 4242. For major credit only for those in teacher certification programs. (F)

**G4323 Introduction to Abstract Algebra I.** Prerequisite: 3333 and 2513, or permission of instructor. Concepts from set theory; the system of natural numbers, extension from the natural numbers to the integers; semigroups and groups; rings, integral domain and fields. Duplicates one hour of 4383. (F, Sp)

**G4333 Introduction to Abstract Algebra II.** Prerequisite: 4323. Extensions of rings and fields, elementary factorization theory; groups with operators; modules and ideals; lattices. (Sp)

**4373 Abstract Linear Algebra (Slashlisted with 5373).** Prerequisite: 3333. Vector spaces over arbitrary fields, bases, dimension, linear transformations and matrices, similarity and its canonical forms (rational, Jordan), spectral theorem and diagonalization of quadratic forms. No student may earn credit for 3343 and 4373 or 5373, or for both 4373 and 5373. (F, Sp, Su)

**4383 Applied Modern Algebra (Slashlisted with 5383).** Prerequisite: 3333. Topics from the theory of error correcting codes, including Shannon's theorem, finite fields, families of linear codes such as Hamming, Golay, BCH, and Reed-Solomon codes. Other topics such as Goppa codes, group codes, and cryptography as time permits. No student may earn credit for both 4383 and 5383. (Sp)

**G4413 Intermediate Ordinary Differential Equations.** Prerequisite: 3113 or 3413; 3333. Duplicates one hour of 4323. Topics selected from: linear systems of equations, integral equations, stability theory, existence and uniqueness criteria, perturbation theory, dynamical systems, boundary-value problems, numerical methods. (Irreg.)

**G4433 Introduction to Analysis I.** Prerequisite: 2513 or permission of instructor. Review of real number system. Sequences of real numbers. Topology of the real line. Continuity and differentiation of functions of a single variable. (F, Sp, Su)

**4443 Introduction to Analysis II (Slashlisted with 5443).** Prerequisite: 4433. Integration of functions of a single variable. Series of real numbers. Series of functions. Differentiation of functions of more than one variable. No student may earn credit for both 4443 and 5443. (Sp)

**4513 Senior Mathematics Seminar.** Prerequisite: senior standing or permission of instructor. Capstone course which synthesizes ideas from different areas of mathematics with emphasis on current topics of interest. The course will involve student presentations, written projects and problem solving. (F, Sp) [V]

**4623 Convexity Theory I (Slashlisted with 5623).** Prerequisite: 2513 and 3333, or permission of instructor. An introduction to the theory of convex sets. Topics include basic definitions and properties, separating and supporting hyperplanes, and combinatorial theorems of Caratheodory, Radon and Helly. No student may earn credit for both 4623 and 5623. (F)

**G4643 Topics in Geometry and Combinatorics.** Prerequisite: 3333. May be repeated with permission of instructor; maximum credit six hours. Topics may include convexity (convex sets, combinatorial theorems in finite

dimensional Euclidean space), graph theory, finite geometries, foundations of geometry. (F, Sp)

**4653 Introduction to Differential Geometry I (Slashlisted with 5653).**

Prerequisite: 2433 and 3333, or permission of instructor. Elementary theory of curves and surfaces in three-dimensional Euclidean space, differentiable manifolds, Riemannian geometry of two dimensions, Gauss Theorem Egregium. No student may earn credit for both 4653 and 5653. (F)

**4663 Introduction to Differential Geometry II (Slashlisted with 5663).**

Prerequisite: 4653 or 5653. Intermediate theory of surfaces, covariant differentiation, geodesics, Gauss-Bonnet Theorem. Further topics may include: rigidity theorems, minimal surfaces, the Hopf-Rinow Theorem, the Hadamard Theorem, index of vector fields. No student may earn credit for both 4663 and 5663. (Sp)

**4673 Graph Theory I (Slashlisted with 5673).** Prerequisite: 2513 (or 3513) or permission of instructor. An introduction to the theory of graphs.

Topics include basic definitions, cutpoints, blocks, trees, connectivity and Menger's theorem. No student may earn credit for both 4673 and 5673. (F)

**G4733 Mathematical Theory of Probability.** Prerequisite: 2443 or concurrent enrollment. Probability spaces, counting techniques, random variables, moments, special distributions, limit theorems. (F)

**4743 Introduction to Mathematical Statistics (Slashlisted with 5743).**

Prerequisite: 4733. Mathematical development of basic concepts in statistics: estimation, hypothesis testing, sampling from normal and other populations, regression, goodness-of-fit. No student may earn credit for both 4743 and 5743. (Sp)

**G4753 Applied Statistical Methods.** Prerequisite: 2123 or 2423 or permission of instructor. Estimation, hypothesis testing, analysis of variance, regression and correlation, goodness-of-fit, other topics as time permits. Emphasis on applications of statistical methods. (F, Sp, Su)

**4773 Applied Regression Analysis (Slashlisted with 5773).** Prerequisite: 3333, 4733 or 4753 or any statistical probability course at an equivalent level. The general regression problem of fitting an equation involving a single dependent variable and several independent variables, estimation and tests of regression parameters, residual analysis, selecting the "best" regression equation. No student may earn credit for both 4773 and 5773. (Alt. F)

**4793 Advanced Applied Statistics (Slashlisted with 5793).** Prerequisite: 4743 or 4753 or equivalent. Survey of advanced applied statistical methods other than applied regression, including exploratory data analysis, analysis of multivariate data (principal components: analysis, multiple analysis of variance, cluster analysis, etc.), and introduction to non-parametric methods. No student may earn credit for both 4793 and 5793. (Alt. F)

**4803 Topics in Mathematics.** Prerequisite: permission of instructor. May be repeated with change of content; maximum credit nine hours. Topics may include any area of mathematics; these will be substantial and fundamental subjects not offered in regular courses. (F, Sp, Su)

**G4853 Introduction to Topology.** Prerequisite: 2433, 2513 or permission of instructor. Metric spaces and topological spaces, continuity, connectedness, compactness and related topics. (Sp)

**4990 Independent Study.** 1 to 3 hours. Prerequisite: three courses in general area to be studied, permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (Sp)

**4991 Mathematics Capstone Course.** Prerequisite: senior standing and concurrent or previous enrollment of one of 4083, 4193, 4333, 4443, 4653, 4853, or any topics course at the 4000 level. Students will write a senior thesis showing an understanding of a substantial area of modern mathematics. The thesis will be either an essay, the result of a computation, or a combination thereof. (F, Sp) [V]

**G5103 Mathematical Models.** Prerequisite: permission of instructor or admission to the M.S. program. May be repeated with change of content; maximum credit six hours. Mathematical models are formulated for problems arising in various areas in which mathematics has been applied. In each case, techniques are developed for analyzing the resulting mathematical problem, and this analysis is used to test the validity of the model. (Sp)

**G5113 Topics in Applied Mathematics (Slashlisted with 4113).**

Prerequisite: permission of instructor. May be repeated with change of content; maximum credit nine hours. Algebraic coding theory, linear finite state workings, numerical analysis of differential equations, asymptotic analysis, game theory or other subjects. No student may earn credit for both 4113 and 5113. (Irreg.)

**G5163 Partial Differential Equations.** Prerequisite: 4163 or permission of instructor. First order equations, Cauchy problem for higher order equations, second order equations with constant coefficients, linear hyperbolic equations. (Sp)

**G5173 Advanced Numerical Analysis I.** Prerequisite: 4433, 4443 or permission of instructor. Topics may include: error analysis of numerical methods for optimization and initial value problems, numerical approximation of aspects of control problems. (Alt. F)

**G5183 Advanced Numerical Analysis II.** Prerequisite: 4433, 4443 or permission of instructor. Topics may include: analysis of spline approximations as a basis of the finite element method, error analysis for finite element approximation of elliptic and parabolic boundary value problems. (Alt. Sp)

**G5303 Topics in Group Theory.** Prerequisite: 4323 or permission of instructor. May be repeated with change of content; Maximum credit 15 hours. Topics may include permutation groups, invariant subgroups, prime power groups, abelian groups, generators and relations, free groups, solvable and nilpotent groups, semi-direct products and extensions, automorphism groups, reflection groups, Coxeter groups, crystallographic groups, matrix groups and representation group actions. (Irreg.)

**G5333 Topics in Number Theory.** Prerequisite: at least one mathematics course numbered above 3000, other than 3213, 4222, or 4232. May be repeated with change of content; maximum credit nine hours. Topics may include congruencies, arithmetic functions, quadratic reciprocity, continued fractions, diophantine equations, primality testing, factorization methods, cryptography, quadratic forms and quadratic fields, computational number theory, additive number theory, coding theory, p-adic numbers. (Irreg.)

**G5353 Abstract Algebra I.** Prerequisite: 4323, permission of instructor. Groups, Sylow theorems, group actions, group presentations. Rings, ideals, polynomial rings, unique factorization. Fields, algebraic and transcendental extensions. (F)

**G5363 Abstract Algebra II.** Prerequisite: 5353. Galois theory, solvability. Modules over a principal ideal domain. Noetherian ideal theory. Group representations, semisimple rings. Classical groups. (Sp)

**G5373 Abstract Linear Algebra (Slashlisted with 4373).** Prerequisite: 3333. Vector spaces over arbitrary fields, bases, dimension, linear transformations and matrices, similarity and its canonical forms (rational, Jordan), spectral theorem and diagonalization of quadratic forms. No student may earn credit for 3343 and 4373 or 5373, or for both 4373 and 5373. (F, Sp, Su)

**G5383 Applied Modern Algebra (Slashlisted with 4383).** Prerequisite: 3333. Topics from the theory of error correcting codes, including Shannon's theorem, finite fields, families of linear codes such as Hamming, Golay, BCH, and Reed-Solomon codes. Other topics such as Goppa codes, group codes, and cryptography as time permits. No student may earn credit for both 4383 and 5383. Duplicates one hour of 4323. (Sp)

**G5403 Calculus of Variations.** Prerequisite: 4433 or 3423 or 4163. Linear spaces, global and local theories of optimization, necessary conditions for relative extrema of integrals. (Irreg.)

**G5423 Complex Analysis I.** Prerequisite: 4433. The complex numbers, topologies of the extended plane and related sphere, elementary functions, power series, properties of general holomorphic functions. The integral of a complex-valued function over an oriented rectifiable curve, the classical theorems on integrals, Taylor and Laurent expansions, analytic continuation, introduction to Riemann surfaces. (Alt. F)

**G5433 Complex Analysis II.** Prerequisite: 5423. Selected topics from classical and modern function theory such as geometric theory, univalent functions, Hardy spaces and Nevanlinna theory. (Alt. Sp)

**G5443 Introduction to Analysis II (Slashlisted with 4443).** Prerequisite: 4433. Integration of functions of a single variable. Series of real numbers. Series of functions. Differentiation of functions of more than one variable. No student may earn credit for both 4443 and 5443. (Sp)

**G5453 Real Analysis I.** Prerequisite: 4433 or permission of instructor. Lebesgue measure and integration theory, absolutely continuous functions, metric spaces. (F)

**G5463 Real Analysis II.** Prerequisite: 5453. General measure and integration theory, Banach spaces, topics from related areas. (Sp)

**G5483 Wavelets.** Prerequisite: 3113 and 3333. Fourier analysis on a finite cyclic group, the group of integers, and the real line. The matching pursuit algorithm. The Poisson summation formula and sampling. Multi-resolution

analysis, various wavelet constructions (including those of Daubechies and Meyer) and filter banks. An introduction to the MATLAB wavelet toolbox. (F)

**G5623 Convexity Theory I (Slashlisted with 4623).** Prerequisite: 3333, 2513 or permission of instructor. An introduction to the theory of convex sets. Topics include basic definitions and properties, separating and supporting hyperplanes, and combinatorial theorems of Caratheodory, Radon and Helly. No student may earn credit for both 4623 and 5623. (F)

**G5633 Convexity Theory II.** Prerequisite: 5623 or permission of instructor. A continuation of the study of convex sets. Topics include Helly-type theorems, the Blaschke selection theorem, alternate characterizations of convex sets, convex polytopes and Euler's formula. (Sp)

**G5653 Introduction to Differential Geometry I (Slashlisted with 4653).** Prerequisite: 2433 and 3333, or permission of instructor. Elementary theory of curves and surfaces in three-dimensional Euclidean space, differentiable manifolds, Riemannian geometry of two dimensions, Gauss Theorem Egregium. No student may earn credit for both 4653 and 5653. (F)

**G5663 Introduction to Differential Geometry II (Slashlisted with 4663).** Prerequisite: 4653 or 5653. Intermediate theory of surfaces, covariant differentiation, geodesics, Gauss-Bonnet Theorem. Further topics may include: rigidity theorems, minimal surfaces, the Hopf-Rinow Theorem, the Hadamard Theorem, index of vector fields. No student may earn credit for both 4663 and 5663. (Sp)

**G5673 Graph Theory I (Slashlisted with 4673).** Prerequisite: 2513 or permission of instructor. An introduction to the theory of graphs. Topics include basic definitions, cutpoints, blocks, trees, connectivity and Menger's theorem. No student may earn credit for both 4673 and 5673. (F)

**G5683 Graph Theory II.** Prerequisite: 5673 or permission of instructor. A continuation of the study of graphs. Topics include partitions, Eulerian and Hamiltonian graphs, planarity and colorability. (Sp)

**G5693 Topics in Geometry and Combinatorics I.** Prerequisite: permission of instructor. May be repeated with permission of instructor; maximum credit 12 hours. Topics may include convexity, combinatorial geometry, graph theory, or Riemannian geometry. (F, Sp, Su)

**G5743 Introduction to Mathematical Statistics (Slashlisted with 4743).** Prerequisite: 4733. Mathematical development of basic concepts in statistics: estimation, hypothesis testing, sampling from normal and other populations; regression, goodness of fit. No student may earn credit for both 4743 and 5743. (Sp)

**G5763 Introduction to Stochastic Processes.** Prerequisite: 4733 or permission of instructor. Stochastic processes in discrete time including random walks, recurrent events, Markov chains and branching processes. Processes in continuous time including linear and nonlinear birth-death processes and diffusions. Applications taken from economics, engineering, operations research. (Irreg.)

**G5773 Applied Regression Analysis (Slashlisted with 4773).** Prerequisite: 3333, 4733 or 4753 or any statistical probability course at an equivalent level. The general regression problem of fitting an equation involving a single dependent variable and several independent variables, estimation and tests of regression parameters, residual analysis, selecting the "best" regression equation. No student may earn credit for both 4773 and 5773. (Alt. F)

**G5783 Topics in Mathematical Statistics.** Prerequisite: 4743. May be repeated with change of content; maximum credit 15 hours. Topics may include stochastic processes, linear models, non-parametric methods, experimental design, sequential analysis, decision theory, etc. (Irreg.)

**G5793 Advanced Applied Statistics (Slashlisted with 4793).** Prerequisite: 4743 or 4753 or equivalent. Survey of advanced applied statistical methods other than applied regression, including exploratory data analysis, analysis of multivariate data (principal components: analysis, multiple analysis of variance, cluster analysis, etc.), and introduction to non-parametric methods. No student may earn credit for both 4793 and 5793. (Alt. F)

**G5803 Topics in Mathematics.** Prerequisite: permission of instructor. May be repeated with change of content; maximum credit nine hours. Topics may include any area of mathematics; these will be substantial and fundamental subjects not offered in regular courses. (F, Sp, Su)

**G5853 Topology I.** Prerequisite: 3513. Set theory, separation axioms, connectedness, compactness, continuity, metric spaces, nets and sequences. (F)

**G5863 Topology II.** Prerequisite: 5853. Metrization, product and quotient spaces, function spaces, dimension theory, Hilbert spaces, homotopy, simplicial complexes, continua. (Sp)

**G5900 Graduate Mathematics Readings.** 1 to 3 hours. Prerequisite: six-hour mathematics sequence at the 5000+ level. May be repeated with change of content; maximum credit 12 hours. Special background readings in advanced mathematical topics as preparation for later dissertation work. (F, Sp, Su)

**G5910 Seminar—Analysis.** 1 to 2 hours. Prerequisite: graduate standing. May be repeated with change of content; maximum credit 12 hours.

**G5920 Seminar—Algebra and Theory of Numbers.** 1 to 2 hours. May be repeated with change of content; maximum credit 12 hours. (F, Sp)

**G5930 Seminar—Geometry and Topology.** 1 to 2 hours. May be repeated with change of content; maximum credit 12 hours. (F, Sp)

**G5940 Seminar—Applied Mathematics and Statistics.** 1 to 2 hours. May be repeated with change of content; maximum credit 12 hours. (F, Sp)

**G5950 Seminar—Undergraduate Mathematics Curriculum and Pedagogy.** 1 to 2 hours. May be repeated with change of content; maximum credit 12 hours. This seminar will explore the current research literature on undergraduate mathematics curriculum and pedagogy. (F, Sp)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp)

**G5990 Special Problems in Mathematics.** 1 to 2 hours. An option for all candidates for the master's degree who do not present theses. (F, Sp, Su)

**G6373 Commutative Algebra I.** Prerequisite: 4323, 4333, 5333 or permission of instructor. Topics from algebraic number theory, ideals, modules, quadratic and cyclotomic number fields and representation of numbers by decomposable forms. Emphasis on global, local and analytic methods. (Irreg.)

**G6393 Topics in Algebra.** Prerequisite: 5353 or permission of instructor. May be repeated with change of content; maximum credit 15 hours. Topics of modern research interest in algebra. (Irreg.)

**G6443 Topics in Differential Equations.** Prerequisite: permission of instructor. May be repeated with change of content; maximum credit 12 hours. Topics include, but are not limited to, dynamical systems, nonlinear boundary value problems, parameter identification theory, wave theory, nonlinear functional analysis. (F, Sp)

**G6473 Functional Analysis I.** Prerequisite: 5463 or permission of instructor. Vector spaces with topology or norm, dual space, theorems on linear operators, spectral theory in Hilbert space, spectral decomposition of operators, convex sets and weak topologies, fixed point theorems. (Alt. F)

**G6483 Functional Analysis II.** Prerequisite: 6473. Banach algebras and harmonic analysis, representations of symmetric rings, unitary representations of a group, rings of operators in Hilbert space, decomposition of ring operators. Introduction to the theory of distributions. (Alt. Sp)

**G6493 Topics in Analysis.** Prerequisite: 5453 or permission of instructor. May be repeated with change of course content. Topics of modern research interest in analysis. (Irreg.)

**G6673 Differential Geometry I.** Prerequisite: 5853 or permission of instructor. Multilinear algebra, differential manifolds, exterior differential forms, affine connections, Riemannian manifolds. (F)

**G6683 Differential Geometry II.** Prerequisite: 6673. Riemannian manifolds, theory of connections, bundles with classical groups as structure groups, curvature and Betti numbers, complex manifolds. (Sp)

**G6693 Topics in Geometry and Combinatorics II.** Prerequisite: permission of instructor. May be repeated with permission of instructor; maximum credit 12 hours. Topics may include convexity, combinatorial geometry, graph theory, linear topological spaces, metric geometry, differential geometry or Riemannian geometry. (F, Sp)

**G6813 Algebraic Topology I.** Prerequisite: 5863. Introduction to homology theory of spaces, fundamental group and covering spaces, higher homotopy groups, CW-complexes and cellular homology, Whitehead and Hurewicz theorems, Eilenberg-Steenrod axioms. (F)

**G6823 Algebraic Topology II.** Prerequisite: 6813. Topics in cohomology and homology theory, universal coefficient theorems, orientation and duality on manifolds. Further topics may include: obstruction theory, cohomology operations, fibre bundles and characteristic classes, theory of sheaves, Eilenberg-MacLane spaces and Postnikov systems, spectral sequences. (Sp)

**G6833 Topics in Topology I.** Prerequisite: 5863. May be repeated with permission of instructor; maximum credit 12 hours. Topics may include algebraic topology, combinatorial topology, linear topological spaces,

dimension theory, metrization, continua, decomposition spaces, topology of flat spaces. (F, Sp, Su)

**G6843 Topics in Topology II.** Prerequisite: 6833. May be repeated with permission of instructor; maximum credit 12 hours. Topics may include algebraic topology, combinatorial topology, linear topological spaces, dimension theory, metrization, continua, decomposition spaces, topology of flat spaces. (Irreg.)

**G6900 Advanced Topics in Mathematics.** 1 to 4 hours. May be repeated with change of content; maximum credit eight hours. A research problems course for advanced graduate students. (Irreg.)

**G6910 Seminar—Analysis.** 1 to 2 hours. Prerequisite: post-master's graduate standing in the department. May be repeated with change of content; maximum credit 12 hours. (F, Sp, Su)

**G6920 Seminar—Algebra.** 1 to 2 hours. Prerequisite: post-master's graduate standing in the department. May be repeated with change of content; maximum credit 12 hours. (F, Sp, Su)

**G6930 Seminar—Geometry and Topology.** 1 to 2 hours. Prerequisite: post-master's graduate standing in the department. May be repeated with change of content; maximum credit 12 hours. (F, Sp)

**G6980 Research for Doctor's Dissertation.** (F, Sp, Su)

## *Medieval and Renaissance Studies (MRS)*

**3013 Medieval Literature in Translation.** Prerequisite: junior standing or above. May be repeated with change of topic; maximum credit six hours. Topics will vary. A corpus of texts determined by genre, theme, period, or other consideration will be studied as a manifestation of medieval culture. In addition to formal literary qualities, attention will also be paid to social and political concerns which played a part in the genesis of the works in question. (Irreg.) [IV-WC]

**3903 Seminar in Medieval Culture.** Prerequisite: junior standing or above and permission of instructor. May be repeated with change of topic; maximum credit six hours. A theme of crucial importance to, or exemplary of, the defining features of the culture of the Middle Ages will be examined from an interdisciplinary perspective, using the materials and methods of literary study, history, art history, philosophy, religion, and related fields. More advanced students are referred to MRS 4903. (Irreg.) [IV-WC]

**3990 Independent Study.** Prerequisite: junior standing or above and permission of instructor. May be repeated; maximum credit six hours. Independent study on a topic in medieval and/or Renaissance studies. (F, Sp)

**4013 Medieval Studies: Materials and Methods.** Prerequisite: junior standing and permission of instructor. Builds on previous coursework at the 3000- and 4000-levels and provides a basis for advanced work in Medieval Studies. The course will examine selected *realia* with a focus on illuminated manuscripts. Instruction will be provided in research methodology in paleography, codicology, history, literature, art, and theology. Emphasis will be on 11th–16th century Europe. (Irreg.)

**4903 Seminar in Medieval Culture.** Prerequisite: junior standing or above and permission of instructor. May be repeated once with change of topic; maximum credit six hours. A theme of crucial importance to, or exemplary of, the defining features of the culture of the Middle Ages will be chosen and examined from an interdisciplinary perspective, using the materials and methods of literary study, history, art history, philosophy, religion, and related fields. Less advanced students are referred to MRS 3903. (Irreg.) [IV-WC]

**4990 Independent Study.** Prerequisite: junior standing or above and permission of instructor. May be repeated; maximum credit six hours. Independent study on a topic in medieval and/or Renaissance studies. (F, Sp)

## *Meteorology (METR)*

**1014 Introduction to Weather and Climate.** For non-science majors. A descriptive study of both short-term and long-term atmospheric phenomena, evenly divided between: (1) the structure and processes in the atmosphere that affect our every-day weather; and (2) climate and causes of climate change. This course does not count for major credit in the School of Meteorology. **Laboratory** (F, Sp) [II-LAB]

**1111 Orientation to Professional Meteorology.**

Prerequisite: Mathematics 1503 or higher. Required of all Meteorology majors during their first year of residence. Introduction to the School of Meteorology and its curriculum, faculty and staff. Presentations from different professional meteorologists introduce career options, challenges and opportunities in meteorology. (F)

**2011 Introduction to Meteorology I Laboratory.**

Prerequisite: Grade of C or better in Mathematics 1823; corequisite: 2013, Computer Science 1313 or 1323, Mathematics 2423, and Physics 2514 or 1205. Reinforces the theoretical concepts provided in the counterpart lecture course Meteorology 2013, which introduces students to important phenomena and physical processes that occur in the earth's atmosphere. Through a series of laboratory exercises, students will learn the basic concepts and tools that are used to study atmospheric problems. Special emphasis will be placed on developing information technology and computational skills. The laboratory exercises target the topics covered in the lecture component. (F, Sp) [II-LAB]

**2013 Introduction to Meteorology I.**

Prerequisite: Mathematics 1823 © or better); corequisite: 2011, Computer Science 1313 or 1323, Mathematics 2423, Physics 2514 or 1205. Introduces students to important phenomena and physical processes that occur in earth's atmosphere, as well as to the basic concepts and instruments used to study atmospheric problems.

Focuses on atmospheric radiation, thermodynamics, moisture, stability, clouds, and precipitation. **Laboratory** (F, Sp) [II-LAB]

**2021 Introduction to Meteorology II Laboratory.**

Prerequisite: Grade of C or better in 2011 or 2014, 2013, Computer Science 1313 or 1323, Mathematics 2423, and Physics 2514 or 1205. Corequisite: 2023,

Mathematics 2433, and Physics 2524 or 1215. Reinforces the theoretical concepts provided in the counterpart lecture course Meteorology 2023, which introduces students to important phenomena and physical processes that occur in the earth's atmosphere. Through a series of laboratory exercises, students will learn the basic concepts and tools that are used to study atmospheric problems. Special emphasis will be placed on developing information technology and computational skills. The laboratory exercises target the topics covered in the lecture component. (Sp, Su)

**2023 Introduction to Meteorology II.**

Prerequisite: Grade of C or better in 2013, 2011 or 2014, Computer Science 1313 or 1323, Mathematics

2423, Physics 2514 or 1205; corequisite: 2021, Mathematics 2433, and

Physics 2524 or 1215. Introduces students to important phenomena and physical processes that occur in earth's atmosphere. Students will learn the basic concepts and instruments used to study atmospheric problems. Part II of the introduction to meteorology sequence focuses on atmospheric dynamics, wind systems of different origin and scale, and thunderstorms. It also addresses boundary layer meteorology, air pollution, forecasting and climate change. (Sp, Su)

**2103 Physical Mechanics for Meteorology.**

Prerequisite: a grade of C or better in Physics 2514 and Mathematics 2443. Differential equations, vectors and vector calculus, Newtonian particle mechanics, projectiles, simple harmonic motion and atmospheric stability, central force motion and atmospheric vortices, moving coordinate systems and dynamics on a rotating planet, systems of particles and plane motion of rigid bodies as a prelude to fluid mechanics. (F)

**2423 Aviation Meteorology.**

Prerequisite: Grade of C or better in 1014 or 2014. Understand tropospheric meteorology from the vantage points of: the pilot on the ground and in the air transmitting varied weather systems in a short time; the meteorologist forecasting for the aviation community; the airport operations manager working with dispatchers, meteorologists, and airport staff; and the business person making aviation profitable. This course does not count for major credit in the School of Meteorology. (Sp)

**2603 Severe and Unusual Weather.**

Provide non-majors and majors a detailed descriptive account of the physical processes important in the formation of various severe and unusual weather phenomena including: thunderstorms, tornadoes, hail storms, lightning, hurricanes, midlatitude snowstorms, lake effect snows, atmospheric optical effects, and global climate change. This course does not count for major credit in the School of Meteorology. (Irreg.) [II-NL]

**2903 Global Climate Change and Societal Impacts.**

Prerequisite: Mathematics 1523. Why is global warming controversial? Observed climate change and future changes. Natural and human causes of climate change. Greenhouse gases and the carbon cycle. Societal impacts of global warming and adapting to these impacts. Vulnerability of different communities. Approaches to reducing global warming. Ethical and

philosophical dilemmas. This course does not count for major credit in the School of Meteorology. (Sp)

**+G3113 Atmospheric Dynamics I: Intro to Atmospheric Kinematics/Dynamics.**

Prerequisite: Grade of C or better in 2024, Mathematics 2443, Physics 2524. Characterization of the atmosphere mathematically, the study of forces acting upon it, and approximations used. Topics include Newton's laws of motion; energy, equilibrium and stability; coordinate systems and forces; the equations of motion and simple force balances; and mass and energy conservation. (F)

**+G3123 Atmospheric Dynamics II: Theory of Atmospheric Flows.**

Prerequisite: Grade of C or better in 3113, 3213, and MATH 3113 or 3413. Continuation of the study of atmospheric dynamics and kinematics begun in Dynamics I. Topics include: natural coordinates, geostrophic wind, inertial flow, cyclostrophic flow, gradient wind, thermal wind, kinematics and dynamics of circulation and vorticity, viscosity, and stress; turbulence, structure, and dynamics of the atmospheric boundary line. (Sp)

**3213 Physical Meteorology I: Thermodynamics.**

Prerequisite: grade of C or better in 2024, Mathematics 2443, and Physics 2524. This course introduces the physical processes associated with atmospheric composition, basic radiation and energy concepts, the equation of state, the zeroth, first and second law of thermodynamics for dry and moist atmospheres, thermodynamic diagrams, statics, and atmospheric stability. (F)

**+G3223 Physical Meteorology II: Cloud Physics, Atmospheric Electricity and Optics.**

Prerequisite: Grade of C or better in 3113, 3213, Mathematics 3113 or 3413. Cloud and precipitation processes including the role of aerosols in cloud droplet and ice nucleation, growth of cloud particles into rain, snow, and hail by diffusion, coalescence, and cloud aggregation; the Clausius-Clapeyron equation; application of cloud physics in cloud electrification and optical phenomena in the atmosphere; concepts of weather radar. (Sp)

**+G3613 Meteorological Measurement Systems.**

Prerequisite: Grade of C or better in 2024, Mathematics 2443, Physics 2524. Introduces the

physical principles of meteorological instruments, discusses static and

dynamic sensor performance, and explores the concepts of meteorological

instruments, and to identify sensor limitations and major error sources.

Furthermore, basic procedures of data analysis will be discussed. (F)

**3890 Meteorology Internship.**

Prerequisite: junior standing. This course

provides a mechanism for students to receive credit for their internship

experiences with the national weather service, TV stations, the private

sector or any other kind of agency or institution which provides internship

opportunities for Meteorology majors. (F, Sp, Su)

**3960 Honors Reading.**

1 to 3 hours. Prerequisite: admission to Honors

Program. May be repeated; maximum credit six hours. Consists of topics

designated by the instructor in keeping with the student's major program.

Covers materials not usually presented in the regular courses.

**3970 Honors Seminar.**

1 to 3 hours. Prerequisite: admission to Honors

Program. May be repeated; maximum credit six hours. Projects covered

vary. Deals with concepts not usually presented in regular coursework.

**3980 Honors Research.**

1 to 3 hours. Prerequisite: admission to Honors

Program. May be repeated; maximum credit six hours. Provides an

opportunity for the gifted honors candidate to work at a special project in

the student's field.

**G4133 Atmospheric Dynamics II: Mid-Latitude Synoptic-Scale Dynamics.**

Prerequisite: Grade of C or better in 3123 and 3223. Concepts from

kinematics, dynamics and thermodynamics used to characterize

synoptic-scale atmosphere, emphasis on quasi-geostrophic and baroclinic

instability theory as basis for understanding extra-tropical weather systems

including cyclones, fronts and jets. Linear theory is used to describe a

variety of atmospheric waves and their role in synoptic-scale meteorology. (F)

**G4233 Physical Meteorology III: Radiation and Climate.**

Prerequisite: Grade of C or better in 3123 and 3223. Fundamental principles of

radiation; absorption and emission of radiation; solar and terrestrial

radiation; radiative transfer and heating rates; surface and global energy

balances; atmospheric general circulation; natural climate variations;

greenhouse climate change; stratospheric ozone depletion. (F)

**G4303 Statistical Meteorology.**

Prerequisite: Grade of C or better in

Mathematics 2423, Computer Science 1313 or Computer Science 1323.

Offers specialized topics in statistical meteorology such as the role of

probability and statistics in decision making, interplay between

experimental design and the physics of an underlying problem, sampling

techniques, graphical presentation of data and model building. Emphasis

will be placed on computational aspects for meteorological data. (F)

**4330 Information Technology Skills for Meteorology (slashlisted with 5330).** Prerequisite: grade of C or better in CS 1313 or permission of instructor. The use of computers and networks to process the information of meteorology. Workstation skills, computer operating systems, programming languages, the internet, computer graphics, analysis and display of meteorological data. No student may credit for both 4330 and 5330. (Irreg.)

**G4424 Synoptic Meteorology Laboratory.** Prerequisite: Grade of C or better in 3123 and 3223. This course is a lecture/laboratory course designed to provide students a physical understanding of atmospheric principles. Students are challenged to explain theoretical concepts and to demonstrate a mastery in understanding various physical processes including the theory and practice of weather analysis and forecasting, surface and upper air analysis, fronts and wave cyclones, satellite meteorology, sounding analysis, thermodynamic diagram, cross sections, forecasting, NMC models, MOS, radar meteorology, and severe weather. Communications skills are emphasized. (F)

**G4433 Mesoscale Meteorology.** Prerequisite: Grade of C or better in 4133, 4424. Structure and dynamics of convective and mesoscale phenomena including: mesoscale convective systems, severe thunderstorms, tornadoes, low-level jets, mountain waves and hurricanes. Discussion of the general behavior, characteristics, and dynamics of the formation and development of these phenomena, and the types of weather and hazards they produce. (Sp)

**4491 Weather Briefing (Slashlisted with 5491).** Prerequisite: Grade of C or better in 3113, 3213. Students prepare and present daily weather briefing. The briefing should demonstrate ability to synthesize current weather information on all scales, prepare a forecast and communicate this clearly and succinctly to an audience. Can be repeated for credit up to four hours. No student may earn credit for both 4491 and 5491. (F, Sp)

**G4613 Satellite Meteorology.** Prerequisite: Grade of C or better in 3123, 3223. Survey of satellite meteorology and climatology. History of meteorological satellites, radiation, orbital mechanics, satellite systems and data processing, basic image interpretation, cloud-drift winds, precipitation, temperature soundings, tropical cyclone, mesoscale, and synoptic-scale analysis and forecasting, cloud, water vapor and precipitation climatology, radiation budget. **Laboratory** (Irreg.)

**G4624 Radar Meteorology.** Prerequisite: Grade of C or better in 3223, 3613, Mathematics 3413 or 3113. Develops quantitative relationships between physical characteristics of targets illuminated by a pulse of electromagnetic energy and the quantities measured by weather radar. Capabilities and limitations of radar designs are studied relative to meteorological applications. Doppler principles, including interpretation of data, are provided. Polarimetric and phased array radar are introduced. Experience is gained in hands-on exercises with weather radars and computer based labs. (Sp)

**G4633 Hydrometeorology.** Prerequisite: Grade of C or better in 3123, 3223 or permission of instructor. Interdisciplinary emphasis on mesoscale precipitation processes, applications of new hydrometeorological observing systems, and on the interactions between meteorology and hydrology during flood events. (Irreg.)

**4643 Physics of Planetary Atmospheres (slashlisted with 5643).** Prerequisite: Grade of C or better in 3113, 3213, Physics 2524, Mathematics 3113 or permission of instructor. This course will provide an integrated overview of planetary sciences, emphasizing planetary formation and evolution, the atmospheres of the planets, and atmosphere/surface interactions. The interrelationships among different systems will be emphasized. The goal is to provide insight on how we decipher details of distant planets, and the differences ad similarities among the planets of our solar system. No student may earn credit for both 4643 and 5643. (Irreg.)

**4653 Air pollution Meteorology and Modeling (Slashlisted with 5653).** Prerequisite: grade of C or better in 3113, 3213. Presents an overview of atmospheric dispersion problems and relevant weather systems with an emphasis on processes in the atmospheric boundary layer. Basic concepts and theories of turbulent transport and mixing are introduced and different dispersion theories and modeling approaches are discussed. No student may earn credit for both 4653 and 5653. (Irreg.)

**4663 Radar Engineering (Slashlisted with 5663, Crosslisted with Electrical and Computer Engineering 4663).** Prerequisite: grade of C or better in Electrical and Computer Engineering 3613, or permission. Introduction to radar system designs and applications with emphasis on weather radar. Radar system architecture and their functionalities and limitations of subsystems are discussed. Theories of radar detection and

estimation in a noisy and cluttered environment; existing technologies and advanced techniques to improve radar performance. No student may earn credit in both 4663 and 5663. (F)

**G4803 Selected Topics in Meteorology.** Prerequisite: permission of instructor. May be repeated with change of subject matter; maximum credit 12 hours. Topics may include aspects of atmospheric dynamics and severe-storm forecasting, experimental design, economic meteorology, weather modification, climate, radiation, aviation weather, etc. (Irreg.)

**4911 Senior Seminar (Capstone).** Prerequisite: Grade of C or better in 3123, 3223. With 4922, satisfies Capstone course requirement. The instructor will guide senior meteorology majors through planning of a research project. Interdisciplinary topics are encouraged and library work will be required. Students will be paired with regular or adjunct faculty mentors. Senior doctoral students may serve as mentors with permission from the instructor. The result of 4911 will be a mini-proposal which will serve as a guide for the senior research project. In addition, the instructor may present professional skills useful during job search, early employment, and graduate school application and attendance. Note that METR 4922 should be taken following this course. (F, Sp) [V]

**4913 Senior Seminar.** Prerequisite: grade of C or better in 3113 and 3223. Satisfies the capstone course requirement. The instructor will guide senior meteorology majors on a research project. Interdisciplinary topics will be encouraged and library work is required. Students will complete written and oral presentations of a senior thesis. (F, Sp) [V]

**4922 Senior Seminar II (Capstone).** Prerequisite: Grade of C or better in 3123, 3223, 4911. with 4911, satisfies the Capstone course requirement. The instructor will guide students as they follow the research plan established in the mini-proposa completed in METR 4911. Library work will continue to be required with development of research methodology and analysis of results. Students will continue to work with faculty (senior doctoral student) mentors. The culmination of the two-course Capstone sequence will be a written and oral presentation of the senior thesis. The skills learned in Capstone I and II will be useful whether the student is employed in academia, government, or the private sector. (F, Sp) [V]

**4990 Special Problems in Meteorology.** 1 to 4 hours. Prerequisite: permission of instructor. May be repeated with change of subject matter. (F, Sp, Su)

**G5103 Boundary Layer Meteorology.** Prerequisite: 3113, Mathematics 3113. Transfer processes near the earth's surface, turbulence, the planetary boundary layer, air mass modification, fog formation, pollutant transport.

**G5113 Advanced Atmospheric Dynamics I.** Prerequisite: Mathematics 4163 or permission of instructor. Basic fluid dynamics, equations of motion, vorticity dynamics, scale analysis, shallow water equations, linear wave dynamics, gravity waves, Rossby waves, quasi-geostrophic motions. (F)

**G5123 Advanced Atmospheric Dynamics II.** Prerequisite: 5113 or permission of instructor. Shallow water theory in a rotating reference frame, waves and instabilities, thermal convection and chaos, internal waves, anelastic approximation, baroclinic instability, symmetric instability and frontogenesis, general circulation of the atmosphere.

**G5223 Atmospheric Radiation.** Prerequisite: 3213, Mathematics 3113, or permission of instructor. Theory of radiative transfer, spectra of gaseous molecules, use of band models for radiative calculations, interaction of solar radiation with atmospheres, infrared radiative transfer in atmospheres, radiative cooling and heating, scattering, climate and radiation, remote sensing. (Sp)

**G5233 Cloud and Precipitation Physics.** Prerequisite: 3223, Mathematics 3113. Development of thermodynamical relationships and generalized Clausius-Clapeyron equation, phase diagrams, atmospheric aerosols, review of hydrodynamics of flow past particles, collision and coalescence efficiency, theory of nucleation, precipitation growth, observations with radar, electrical state of the atmosphere. (F)

**G5243 Atmospheric Electrodynamics.** Prerequisite: permission of instructor. Global electrical circuit, fair-weather electricity, storm electrification, charging mechanisms, electrical discharges, lightning, thunder, instrumentation and observing systems, meteorological applications.

**G5303 Objective Analysis.** Prerequisite: 4133, Mathematics 3113, Engineering 3723, or equivalent. Introduction to techniques used in objective analysis of meteorological data; polynomial fitting; method of successive corrections; weighting functions; statistical methods; optimum interpolation; filter design; four-dimensional data assimilation. (F)

**G5323 Time Series Analysis I.** Prerequisite: Mathematics 4733 or 4753, computer programming. Data collected from geophysical phenomena are considered as stochastic processes. The resulting time series are

decomposed into autocovariance spectra using Fourier, autocovariance and autoregressive methods. The spectra are interpreted from the viewpoint of estimation theory. Applications and practical aspects of these methods are examined. (Irreg.)

**G5330 Information Technology Skills for Meteorology (Slashlisted with 4330).** Prerequisite: Grade of C or better in Computer Science 1313 or permission of instructor. The use of computers and networks to process the information of meteorology. Workstation skills, computer operating systems, programming languages, the Internet, computer graphics, analysis and display of meteorological data. No student may earn credit for both 4330 and 5330. (Irreg.)

**G5344 Computational Fluid Dynamics I.** Prerequisite: 3113 or Engineering 3223; Engineering 3723; Mathematics 3123; permission of instructor. Application of finite difference, spectral, and semi-Lagrangian methods to multidimensional Newtonian fluid flow problems, including well-posedness, consistency, stability, convergence, accuracy, boundary conditions, conservation, grid systems, and filtering. In addition, code development practices and the use of high-performance vector and parallel supercomputers will be addressed.

**G5413 Advanced Synoptic Meteorology.** Prerequisite: 4133, 4424, 5113 or permission of instructor. Theory and application of quasi-geostrophic dynamics, Q-vectors and isentropic potential vorticity, diagnostic studies of mid-latitude synoptic-scale systems, mesoscale structure of precipitation, structure and dynamics of fronts and jets. (Sp)

**G5463 Advanced Forecasting Techniques.** Prerequisite: 5113 or concurrent enrollment. Application of meteorological science to weather forecasting in real time. **Laboratory** (Irreg.)

**G5491 Weather Briefing (Slashlisted with 4491).** Prerequisite: graduate standing, permission of instructor. Can be repeated for credit; maximum credit four hours. Students prepare and present daily weather briefing. The briefing should demonstrate ability to synthesize current weather information on all scales, prepare a forecast and communicate this clearly and succinctly to an audience. No student may earn credit for both 4491 and 5491. (F, Sp)

**G5503 Climate Dynamics.** Prerequisite: 5113. Survey of past climates; climate variability; heat and water budgets of the atmosphere, oceans and land surfaces; the general circulation; climate modeling.

**G5523 Advanced Mathematical Methods in Science and Engineering (Crosslisted with Chemical Engineering 5523).** Prerequisite: Mathematics 2443 and Chemical Engineering 3113. Scale and vector field theory. Ordinary and partial differential equations. Matrix algebra. Complex analysis. (F)

**G5603 Meteorological Measurement Systems.** Prerequisite: Mathematics 3113 or permission of instructor. Performance of measurement systems used to obtain meteorological observations. Includes systems for synoptic observations and special purpose systems for micro-meteorology, air pollution, etc. Effect of static, dynamic, sampling, round-off, and truncation error on data quality; comparison of analog and digital recording techniques. **Laboratory** (Irreg.)

**G5613 Radar Meteorology.** Prerequisite: Mathematics 3113, Physics 2524. Electromagnetic waves and propagation, principles of radar, weather echo signals, Doppler spectra of weather echoes, considerations for the observation of weather, rain measurements, observations of winds, storms and other phenomena, Doppler spectra of tornadoes, measurement of turbulence. (Irreg.)

**G5623 Radar Meteorology. (Slashlisted with 4623).** Prerequisite: Grade of C or better in 3223, 3613, Mathematics 3113, or permission of instructor. Develops quantitative relationships between physical characteristics of targets illuminated by a pulse of electromagnetic energy and the quantities measured by weather radar. Capabilities and limitations of radar designs are studied relating to meteorological applications. Doppler principles, including interpretation of data, are provided. Polarimetric and phased array radar are introduced. No student may earn credit for both 4623 and 5623. (Irreg.)

**G5643 Physics of Planetary Atmospheres (Slashlisted with 4643).** Prerequisite: C or better in 3113 and 3213, Physics 2524, Mathematics 3113, or permission of instructor. This course will provide an integrated overview of planetary sciences, emphasizing planetary formation and evolution, the atmospheres of the planets, and atmosphere/surface interactions. The interrelationships among different systems will be emphasized. The goal is to provide insight on how we decipher details of distant planets, and the differences and similarities among the planets of our solar system. No student may earn credit for both 4643 and 5643. (Irreg.)

**G5653 Air Pollution Meteorology and Modeling (Slashlisted with 4653).** Prerequisite: Grade of C or better in 3113 and 3213. Presents an overview of atmospheric dispersion problems and relevant weather systems with an emphasis on processes in the atmospheric boundary layer. Basic concepts and theories of turbulent transport and mixing are introduced and different dispersion theories and modeling approaches are discussed. No student may earn credit for both 4653 and 5653. (Irreg.)

**G5663 Radar Engineering (Slashlisted with 4663).** Prerequisite: grade of C or better in Electrical and Computer Engineering 3613, or permission. Introduction to radar system designs and applications with emphasis on weather radar. Radar system architecture and their functionalities and limitations of subsystems are discussed. Theories of radar detection and estimation in a noisy and cluttered environment; existing technologies and advanced techniques to improve radar performance. No student may earn credit in both 4663 and 5663. (F)

**G5673 Weather Radar Theory and Practice.** Prerequisite: grade of C or better in Mathematics 3113 and Physics 2524 or permission. This course provides an introduction to electromagnetic waves and propagation through the atmosphere, radar design trade-offs, antennas, transmitters, and coherent receivers. Analysis of radar signals as noise-corrupted stochastic processes, with emphasis on digital signal processing for Doppler spectrum and moment estimation. Implementation of processing algorithms using actual Doppler radar data. (F)

**G5683 Weather Radar Applications (Crosslisted with Electrical and Computer Engineering 5683.)** Prerequisite: graduate standing and a grade of C or better in 5673 or Electrical and Computer Engineering 5673, or permission of instructor. Continuation of concepts presented in 5673. Interpretation of meteorological structures using weather radar. Introduces interactions of electromagnetic waves in geophysical media and scatter from hydrometeors and refractive index variations. Presentation of quantitative precipitation estimation methods based on the radar reflectivity factor, attenuation, and dual-polarization observations. Also includes the fundamental concepts of clear-air echoes and the estimation of winds under non-precipitation conditions. Implements the processing of algorithms using both simulated and actual Doppler radar data. (Sp)

**G5803 Topics in Applied Meteorology.** Prerequisite: permission of instructor. May be repeated with change of subject matter; maximum credit 12 hours. Application of meteorological concepts and information to current environmental and meteorological problems on any scale.

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp, Su)

**G5990 Independent Study.** 1 to 4 hours. Prerequisite: graduate standing, permission of instructor. May be repeated with change of subject matter; maximum credit eight hours for master's degree students. Individual research problems in meteorology, climatology, hydrometeorology, and other areas of the atmospheric and earth sciences.

**G6103 Turbulence.** Prerequisite: 5113, Mathematics 3113, 3123 or equivalents. Introduction to the evolution, structure and effects of turbulent flow. Learn to use a variety of theoretical and practical tools of discovery and analysis.

**G6223 Convective Clouds and Storms.** Prerequisite: 5113 or equivalent. Anelastic and Boussinesq equations; Benard convection; plume models; parameterization of cloud microphysics; three-dimensional models; Doppler radar analysis; observations of severe thunderstorms and tornadoes. (Irreg.)

**G6344 Computational Fluid Dynamics II.** Prerequisite: 5113, 5344, permission of instructor. Treatment of advanced numerical techniques and boundary conditions for solving the multi-dimensional unsteady Euler and Navier-Stokes equations. Topics include interpolation and finite volume, Godunov, Roe, positive definite, and flux-corrected/monotone differencing schemes. The formulation and application of adjoint codes for optimization and sensitivity analysis are also examined.

**G6413 Topics in Advanced Mesoscale Meteorology.** Prerequisite: 5113. Research topics in the areas of cyclogenesis, frontogenesis and mesoscale systems. Topics include "IPV thinking" and its application to cyclogenesis; trapped gravity currents and Kelvin waves; the dryline; rainbands in extratropical cyclones; air-sea instability; topographically induced eddies; generalization of the frontogenetical function.

**G6613 Wave Interactions with Geophysical Media (Crosslisted with Electrical and Computer Engineering 6613.)** Prerequisite: 5673 or Electrical and Computer Engineering 5673 or permission of instructor. Provides fundamentals and principles for radar remote sensing through

understanding wave scattering and propagation in geophysical media subjected to turbulent mixing and filled with hydrometers and other objects. The relations between radar observables and physical parameters will be established. (Sp)

**G6803 Advanced Selected Topics in Meteorology.** Prerequisite: at least 12 hours of graduate work in meteorology or equivalent, permission of instructor. May be repeated with change of subject matter; maximum credit 12 hours. Topics are drawn from areas of atmospheric physics and dynamics of severe storm forecasting, experimental design, eco-meteorology, weather modification or engineering meteorology. (Irreg.)

**G6902 Professional Perspectives in Meteorology.** Prerequisite: Graduate standing. This is a course presented in discussion format to develop the professional preparation of Ph.D. students. Course topics include: professional ethics; career planning; publishing papers, writing successful proposals, succeeding in academia; professional societies and national laboratories; dealing with the press and politicians, leadership and other aspects of the profession. (Irreg.)

**G6970 Seminar.** 1 to 3 hours. Prerequisite: graduate standing and permission. May be repeated with change of subject matter; maximum credit four hours for master's degree, or 10 hours for doctor's degree. (F, Sp)

**G6980 Research for Doctor's Dissertation.** (F, Sp, Su)

**G6990 Special Problems.** 1 to 4 hours. Prerequisite: graduate standing, permission of instructor. May be repeated with change of subject matter; maximum credit 12 hours for doctoral students. Individual research problems in meteorology and related areas conducted under faculty supervision. (F, Sp, Su)

## Microbiology (MBIO)

**1003 Contemporary Issues in Biology (Crosslisted with Botany and Zoology 1003).** An introduction to biology, focusing on the scientific background needed to understand selected issues related to cells, genetics and inheritance, evolution and ecology. Not open to students with credit for BOT/MBIO/ZOO 1005, BOT 1114 or ZOO 1114. Cannot be used for major credit in Microbiology. (F, Sp) [II-NL]

**1005 Concepts in Biology (Crosslisted with Botany, Zoology 1005).** Prerequisite: none, but high school or college chemistry is recommended. An introduction to the life sciences, focusing on the structure and function of organisms and their relationship to the environment. Fulfills General Education laboratory science requirement. Not open to students with credit for Botany 1114 or Zoology 1114. **Laboratory** (F, Sp) [II-LAB]

**2815 Introduction to Microbiology.** Prerequisite: one course in college chemistry. Introduction to microorganisms as biological entities. Survey of the roles of microorganisms in the ecosystem. Application of microorganisms to industrial and environmental problems. Discussion of microorganisms as causes of human disease and response of hosts to microbial invasion. This course does not count for major credit in Microbiology or Botany. **Laboratory** (F, Sp, Su) [II-LAB]

**3113 Cell Biology (Crosslisted with Botany, Zoology 3113).** Prerequisite: Botany 1114 or Zoology 1114 and Chemistry 3013 or 3053. Introduction to the cell as a unit of life. A chemical and physical comparison of prokaryotic and eukaryotic cells to include a discussion of cell metabolism, types of metabolic regulation and an analysis of ultrastructure. Emphasis will be placed on the dynamic changes in metabolism and ultrastructure which occur during the life of a cell. (F, Sp)

**3812 Fundamentals of Microbiology Laboratory.** Prerequisite: credit or concurrent enrollment in 3813. Fundamental microbiological methods: aseptic technique, culture methods, microscopy, metabolic and physiological tests, bacterial isolation and identification, environmental microbiology. **Laboratory** (F, Sp, Su)

**3813 Fundamentals of Microbiology.** Prerequisite: one course in college biology and either Chemistry 3013 or 3053. Cell structure of Prokaryotes and microbial Eucaryotes; survey of major groups of Eucaryotic and Prokaryotic protists; metabolic characteristics and ecological roles; growth; symbiotic relationships; genetics. (F, Sp)

**†G3932 Instrumental Methods in Biology (Crosslisted with Botany 3932).** Prerequisite: one of the following—Botany 4115; Microbiology 2815; Zoology 2124, or one course in biochemistry; Physics 2414 and 2424. Principles of analytical measurements; common categories of instruments; advantages and disadvantages of each method; examples are

chosen from medical technology, environmental technology, biochemistry, physiology, etc. (F)

**†G3942 Instrumental Methods Laboratory (Cross-listed with Botany 3942).** Prerequisite: credit or concurrent enrollment in 3932. Hands-on experience with analytical instruments used in research and clinical labs; identification of components and simple repairs; understanding measurement principles; assay design and analysis of unknowns; treatment and comparison of data. **Laboratory** (F)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. The topics will cover materials not usually presented in the regular courses. (F, Sp, Su)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Projects covered will vary. Deals with concepts not usually presented in regular coursework. (By request)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. (F, Sp, Su)

**3990 Independent Study.** 1 to 3 hours. Prerequisite: one course in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**4713 Introduction to Nematology (Crosslisted with Botany, Zoology 4713; Slashlisted with 5713).** Prerequisite: 12 hours of biology.

Introduction to the field of nematology including nematodes of importance to human and veterinary medicine, agriculture and the environment. No student may earn credit for both 4713 and 5713. (Irreg.)

**4803 Plant Microbe Interactions (Slashlisted with 5803; Crosslisted with Botany 4803).** Prerequisite: 12 hours of biology. Biochemical, physiological, genetic, ultrastructural and molecular aspects of interactions between plants and their beneficial and harmful symbionts. No student may earn credit for both 4803 and 5803. (Irreg.)

**4810 Special Topics (Slashlisted with 5810).** 1 to 3 hours. Prerequisite: two courses in botany and permission. May be repeated with change of content; maximum credit three hours per semester, nine hours total. Topics will include newly developing areas of the discipline. Taught at an upper-division level based on previous course background. No student may earn credit for both 4810 and 5810 for the same course content. (Irreg.)

**G4813 Ecology and Pathogenic Microbiology Lab.** Prerequisite: 3812 and 3813 or equivalent. Course incorporates laboratory approaches and techniques for the study, characterization and manipulation of individual microorganisms and microbial communities involved in pathogenesis and environmental processes. Contemporary molecular techniques including PCR, recombinant DNA, DNA/RNA analysis; immuno-biological analysis will encompass a large part of this laboratory course. Students will also become acquainted with approaches to discover the mechanisms micro-organisms use to establish their ecological niche in both pathogenic and environmental settings. **Laboratory** (Sp)

**4822 Applications of Molecular Biology (Crosslisted with Botany 4822; Slashlisted with 5822).** Prerequisite: eight hours of biology and permission of instructor; concurrent enrollment in 4812. Application of molecular biology to research in gene expression discussed with emphasis on how the molecular tools were developed, why they work and how they are used in current research. No student may earn credit for both 4822 and 5822.

**G4823 Pathogenic Microbiology and Immunology.** Prerequisite: 3812 and 3813. Study of pathogenic microorganisms and the diseases they produce. Morphology, physiology and pathogenic mechanisms of specific microorganisms. Diagnostic methods and culture techniques. Host resistance, control and epidemiology. Basic immunologic concepts, principles and techniques of serology. (F)

**†G4833 Basic Immunology.** Prerequisite: one semester of organic chemistry, and an introductory biology course, plus one of the following: 3813 and 3812, Zoology 2124, 3113, 3204, 3333 or biochemistry or graduate standing and permission. Fundamentals of immunochemistry, cellular immunology, immunogenetics and clinical immunology. (Sp)

**4843 Introduction to Molecular Biology (Crosslisted with Botany, Zoology 4843; Slashlisted with 5843).** Prerequisite: 3813 and 3812, or Botany 1114 or Zoology 1114 and one course in organic chemistry. Introduction to the characteristics and biological functions of nucleic acids

and proteins in living cells with emphasis on nucleic acid replication, transcription, translation and regulation; also emphasis on the molecular aspects of microbial genetics—transformation, transduction and conjugation; and emphasis on molecular immunology and genetic engineering/recombinant DNA technology. No student may earn credit for both 4843 and 5843. (F, Sp)

**G4853 Physiology of Microorganisms.** Prerequisite: 3813, 3812 and a course in organic chemistry. Diversity, metabolism, energetics and physiology of microorganisms. (Sp)

**4864 Geomicrobiology (Slashlisted with 5864; Crosslisted with Geology 4864).** Prerequisite: 3813 or permission of instructor. Life below the earth's surface. Bacterial degradation of pollutants. Petroleum microbiology. Role of microorganisms in geochemical cycling of carbon, sulfur, and metals. No student may earn credit for both 4864 and 5864. (F)

**4873 Microbial Physiology and Molecular Biology Laboratory (Crosslisted with Botany 4873).** Prerequisite: junior standing or permission of instructor. Current techniques to explore molecular aspects of gene expression and regulation. Experiments include: plasmid and phage propagation, nucleic acid purification, DNA and protein manipulation, and gene analysis. (F, Sp)

**4893 Capstone in Microbiology.** Prerequisite: three hours of calculus; 3813, 3812 and corequisite or prerequisite 4843. Combines laboratory research experiences, primarily in the areas of microbial diversity, physiology, and genetics, with an introduction to how research in microbiology is carried out. **Laboratory** (F, Sp) [V]

**4950 Senior Thesis - Capstone.** 1 to 6 hours. Prerequisite: 3813 and permission of instructor. May be repeated for credit; maximum credit six hours. A minimum total of 6 hours is required. This is a capstone course allowing students to carry out individual research projects under a faculty mentor. Students will present research results orally in a poster session, and by writing a senior thesis. Honors research credit may substitute for some or all of the senior thesis credit hours. (F, Sp, Su) [V]

**4990 Independent Study.** 1 to 3 hours. Prerequisite: three courses in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su) [V]

**G5032 Radioisotope Techniques (Crosslisted with Botany, Civil Engineering, Environmental Science 5032).** Prerequisite: graduate standing or equivalent, permission, corequisite 5041. Fundamentals of detection and measurement of ionizing radiation with emphasis on radiotracer experimental design and applications; radiation effects and protection. (Sp)

**G5041 Radioisotope Techniques Laboratory (Cross-listed with Botany, Civil Engineering, Environmental Science 5041).** Corequisite: 5032. Laboratory techniques required for the utilization of radioisotopes in experimental work. **Laboratory** (Sp)

**G5293 Cytology Ultrastructure (Crosslisted with Botany, Zoology 5293).** Prerequisite: 12 hours of biology. A descriptive survey of bacterial, plant and animal cells. Emphasis will be given to the ultrastructural morphology of cellular organelles and their functional significance. (F)  
**G5364 Transmission Electron Microscopy (Crosslisted with Botany, Zoology 5364).** Prerequisite: permission. Introduction to the theory of transmission electron microscopy and practical instruction in specimen preparation, ultramicrotomy, instrument operation, photography and quantitative methods. **Laboratory** (F)

**G5374 Scanning Electron Microscopy (Crosslisted with Botany, Chemical Engineering, Zoology 5374).** Prerequisite: basic chemistry; basic physics; demonstrated need; permission of instructor. Principles of scanning electron microscopy combined with training in the operation of the SEM and ancillary equipment. Students will be certified in the operation of all equipment. Sample preparation on a variety of samples and darkroom procedures will be performed. Independent project with oral report and poster required. **Laboratory**

**G5453 Advanced Ecology and Evolutionary Biology (Crosslisted with Botany and Zoology).** Prerequisite: general ecology. Required for students in the ecology and evolutionary biology doctoral program. An introduction to current research opportunities and research programs in ecology and evolutionary biology at the University of Oklahoma. Specific topics and lecturers will vary from week to week to give students a broad overview of ongoing research projects. (F)

**G5471 Seminar in Ecology and Evolutionary Biology (Crosslisted with Botany and Zoology).** Prerequisite: graduate standing. Two semesters of enrollment are required for students in the ecology and evolutionary biology doctoral program. An intensive, student-based seminar in which students present both proposals and ongoing progress reports on doctoral level research projects in ecology and evolutionary biology. (F, Sp)

**G5620 Investigations in Microbiology.** 1 to 6 hours. Prerequisite: fifteen hours of microbiology or permission. May be repeated with change of subject matter; nine hours for a Masters student and twelve hours for a Ph.D. student. Only six hours allowed with one professor. Fields of study: environmental microbiology, immunology, industrial microbiology, medical microbiology, medical mycology, microbial ecology, microbial genetics, microbial physiology, ultrastructural morphology, virology and molecular biology. (F, Sp, Su)

**G5713 Introduction to Nematology (Crosslisted with Botany, Zoology 5713; Slashlisted with 4713).** Prerequisite: 12 hours of biology.

Introduction to the field of nematology including nematodes of importance to human and veterinary medicine, agriculture and the environment. No student may earn credit for both 4713 and 5713. (Irreg.)

**G5803 Plant Microbe Interactions (Slashlisted with 4803; Crosslisted with Botany 5803).** Prerequisite: 12 hours of biology. Biochemical, physiological, genetic, ultrastructural and molecular aspects of interactions between plants and their beneficial and harmful symbionts. No student may earn credit for both 4803 and 5803. (Irreg.)

**G5810 Special Topics (Slashlisted with 4810).** 1 to 3 hours. Prerequisite: two courses in botany and permission. May be repeated with change of content; maximum credit three hours per semester, nine hours total. Topics will include newly developing areas of the discipline. Taught at an upper-division level based on previous course background. No student may earn credit for both 4810 and 5810 for the same course content. (Irreg.)

**G5812 Applications of Molecular Biology Laboratory (Crosslisted with Botany 5812; Slashlisted with 4812).** Prerequisite: concurrent enrollment in 5822. Current techniques to explore molecular aspects of gene expression and regulation. Experiments include: plasmid and phage propagation, nucleic acid purification, DNA and protein manipulation, and gene analysis. No student may earn credit for both 4812 and 5812.

**G5822 Applications of Molecular Biology (Crosslisted with Botany 5822; Slashlisted with 4822).** Prerequisite: eight hours of biology and permission of instructor; concurrent enrollment in 5812. Application of molecular biology to research in gene expression discussed with emphasis on how the molecular tools were developed, why they work and how they are used in current research. No student may earn credit for both 4822 and 5822.

**G5833 Industrial and Applied Microbiology.** Prerequisite: 4843 and 4853 and one semester of calculus. The application of fundamental principles of microbiology to industrial fermentations and processing, food manufacture and preservation and environmental quality and sanitation. (F odd-numbered years)

**G5843 Introduction to Molecular Biology (Crosslisted with Botany, Zoology 5843; Slashlisted with 4843).** Prerequisite: 3813 and 3812, or Botany or Zoology 1114, one course in organic chemistry. Introduction to the characteristics and biological functions of nucleic acids and proteins in living cells with emphasis on nucleic acid replication, transcription, translation and regulation; also emphasis on the molecular aspects of microbial genetics—transformation, transduction and conjugation; and emphasis on molecular immunology and genetic engineering/recombinant DNA technology. No student may earn credit for both 4843 and 5843. (F, Sp)

**G5864 Geomicrobiology (Slashlisted with 4864; Crosslisted with Geology 5864).** Prerequisite: 3813 or permission of instructor. Life below the earth's surface. Bacterial degradation of pollutants. Petroleum microbiology. Role of microorganisms in geochemical cycling of carbon, sulfur, and metals. No student may earn credit for both 4864 and 5864. (F)

**G5883 Microbial Genetics.** Prerequisite: 3813 and 3812, or cell biology; molecular biology and biochemistry. Use of bacterial genetics to study biological phenomena at the molecular level; use of recent technological advances, including recombinant DNA, to aid genetic analysis. (F even-numbered years)

**G5893 Genetics and Plasmids and Bacterial Viruses.** Prerequisite: 3813 and 3812, or 3113 and 4843 and biochemistry recommended. Plasmids and bacteriophages will be considered with respect to replication, the regulation of gene expression, transposition and specialized recombination. Strategies of bacterial virus reproduction will also be emphasized. (Sp even-numbered years)

**G5910 Problems in Natural Science (Crosslisted with Botany, Physics, Zoology 5910).** 1 to 2 hours. Prerequisite: admission to candidacy for the degree of Master of Natural Science. (F, Sp, Su)

**G5971 Seminar in Microbiology.** Prerequisite: permission. Required of all graduate students in microbiology. May be repeated; maximum credit two hours for the master's degree, six hours for the doctor's degree. Topics are selected from various areas of microbiology, and each student is called upon for discussion or formal presentations. No laboratory. (F, Sp)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, six hours. (F, Sp, Su)

**G5990 Special Studies in Microbiology.** 1 to 3 hours. Prerequisite: fifteen hours of microbiology, permission. May be repeated; maximum credit six hours. The student selects an area in which the student desires to read intensively, then selects a staff member who is an authority in that field, and together they plan a program for investigation of the literature. (F, Sp, Su)

**G6003 Ecological Modeling (Crosslisted with Botany, Zoology 6003).** Prerequisite: one computer course, one course in ecology, or permission of instructor. Trains students to use modeling tools in their research and to gain greater ability to understand, appreciate, and criticize modeling work. Students will learn general procedure and principles with case studies of successful models in ecology and participate in course projects to gain hands-on experience in model development. (Irreg.)

**G6813 Advanced Bacterial Metabolism.** Prerequisite: 3813 and 3812, plus six hours of microbiology, biochemistry, organic chemistry or permission. Recent advances in bacterial metabolism will be covered with emphasis on unusual bacterial pathways and on the biotransformations of environmentally significant materials. (Sp odd-numbered years)

**G6853 Recent Advances in Microbial Physiology.** Prerequisite: 4843, 4853 and a class in biochemistry. Recent advances in microbial physiology will be covered with emphasis on current literature. (Sp even-numbered years)

**G6873 Microbial Ecology.** Prerequisite: 3813 and 3812 plus two courses in microbiology, or 3813 and 3812 plus one microbiology course and one ecology course; biochemistry; calculus; or permission. Advanced treatment of the development and interactions of microbial communities with their living and abiotic environment. Emphasis placed on experimental approaches and on the quantitative concepts of the subject matter. Topics include a kinetic evaluation of microbial activities, global carbon cycling, biodegradation of environmentally significant materials and techniques used in the study of microbial ecology. (F even-numbered years)

**G6980 Research for Doctor's Dissertation.** 2 to 16 hours. (F, Sp, Su)

## Military Science (M S)

**1112 Fundamentals of Leadership and Management.** Organization of the Army and ROTC, emphasizing the University of Oklahoma ROTC program. Career opportunities for ROTC graduates. Historical growth and development of the army, stressing the magnitude of management implications. The significance of military courtesy, discipline and customs. Development of leadership ability through practical exercises in rappelling, rifle/pistol marksmanship and wilderness skills. **Laboratory (F)**

**1212 Intermediate Techniques of Leadership and Management.**

Prerequisite: 1112. Develops knowledge, understanding and skills in leadership, management, U.S. defense establishment, marksmanship and mountaineering techniques. Instruction focuses on leadership and management theory in the areas of human behavior and interpersonal communications. **Laboratory (Sp)**

**1223 Techniques of Leadership and Management - Compression.** This class combines course content of 1212 and 2414. Develops knowledge, understanding and skills in leadership, management, U.S. military organization, customs and courtesies, U.S. defense establishment as it relates to national power, along with marksmanship and mountaineering techniques. Instruction focuses on leadership and management theory in the areas of decision making and human behavior. **Laboratory (F, Sp)**

**2223 Applied Leadership and Management.** Prerequisite: 1112 and 1212 or 1223. Develops knowledge, understanding and skill in leadership and management techniques. Instruction focuses on how the leader functions in planning, organizing, controlling and evaluating organizational effectiveness. Additionally, instruction is given in land navigation and military drill and ceremonies. **Laboratory (Sp)**

**2313 Applied Management Simulations.** Prerequisite: one semester of Military Science or permission of the Professor of Military Science. Realistic simulation exercises which have been designed to illustrate particular management skills are utilized to teach management concepts. The program consists of the following management concepts: management problem analysis and decision making; management planning and organizing; management delegation and control; interpersonal skills required for effective management. **Laboratory (F)**

**2413 Dynamics of the Military Team.** Prerequisite: 2313. Develops knowledge, understanding and skill in land navigation, drill and ceremony, weapon maintenance and leadership. Instruction focuses on applying leadership and management theory to the area of organization effectiveness and developing unit morale. Additionally, the student will learn how to navigate using a map and how to conduct drill and ceremony. **Laboratory (Sp)**

**2512 Basic Leadership Laboratory.** Consists of Basic Camp at Fort Knox, KY for six weeks. Combines content of 1112, 1212, 1223, 2223, 2313, and 2413. **Laboratory (Su)**

**2610 Introduction to Military History.** 1 to 3 hours. May be repeated; maximum credit three hours. Exposure to the tenets of military history study. Students will attend four class meetings to grasp the fundamental precepts and will prepare a paper on each book assigned. Field trip to one of the nearby battlefields will be included. (F, Sp)

**3113 Land Navigation and Tactics.** Prerequisite: advanced standing in military science. Application of basic principles including marginal information; map symbols; military grid reference systems, map orientation; resection and intersection; use of compass; aerial photograph familiarization mission, organization and composition of basic military teams, principles of offensive and defensive combat stressing firepower, movement and communication, introduction to troop leading procedures. **Laboratory (Sp)**

**3213 Leadership and Management.** Prerequisite: advanced standing in military science. Theory, methods and principles for understanding leadership and behavior in groups; effects of attraction; effectiveness, orientation, ability and persuasiveness, transfer and development of leadership potential, control and coerciveness, status and esteem. Analysis of the leader's role in directing and coordinating the efforts of individuals and small units in the execution of offensive and defensive tactical missions, to include communication systems, internal defense/development and the military team; intelligence gathering, and the role of the various branches of the Army. **Laboratory (F)**

**3313 Advanced Leadership Laboratory.** Prerequisite: 3213. Consists of Advanced Camp at Fort Lewis, WA for five weeks. Students are evaluated on their knowledge and implementation of Army leadership principles and skills, Army field craft, and garrison operations. Practical, hands-on application of material taught in 3113 and 3213. **Laboratory (Su)**

**3610 Historical Military Leadership.** 1 to 3 hours. Prerequisite: 2610 or permission of department chair. May be repeated; maximum credit three hours. Students will examine the personalities of selected military leaders through several sources. The studies will encompass the early career and continue to the culmination. Field trip to one of the nearby battlefields will be included. (F, Sp)

**4113 Military Administration and Management.** Prerequisite: 3113 and 3213. Develops knowledge, understanding and skills in the role of the United States Army, the Army Reserve, the National Guard, the organization, management and ethics of the U.S. Army Officer Corps, the functions and relationships of a commander and his staff and the preparation of administrative correspondence. **Laboratory (F)**

**4212 Senior Seminar in Advanced Leadership.** Prerequisite: 4213. Deals with the analysis and case studies of the great military leaders—primarily the great captains of antiquity, such as Gustavus Adolphus, Alexander the Great, and Hannibal, who have exercised outstanding leadership in combat. Focuses on leadership and application of the principles of war at the strategic, operational and tactical levels. **Laboratory (F)**

**4213 Seminar in Leadership and Management.** Prerequisite: advanced standing in military science. Analysis of selected leadership and management problems involved in staff organization and function, and military justice. Application of leadership principles, stressing responsibilities of the leader, and affording experience through practical exercises. Obligations and responsibilities of an officer on active duty; chain of command; and officer-enlisted relationships. **Laboratory (Sp)**

**4222 Senior Seminar in Advanced Leadership.** Prerequisite: 4212. Deals with the analysis and case studies of the great military leaders—primarily of the modern era, such as Frederick the Great, Napoleon, Ulysses S. Grant,

etc. who have exercised outstanding leadership in combat. Focuses on leadership and application of the principles of war at the strategic, operational and tactical levels. **Laboratory** (Sp)

**4510 Seminar in Military Leadership.** 1 to 3 hours. Prerequisite: junior standing and permission of department. May be repeated with change of content; maximum credit nine hours. Students will learn various theories of leadership and organizational culture and gain practical experience in the application of those theories within a peer leadership setting. Additionally, the course may include elements of military history, social theory, ethics, and military law. (Irreg.)

**4543 The American Military Experience.** Prerequisite: 3113, 3213. Develops knowledge, understanding and a sense of historical-mindedness in future Army officers. Instruction focuses on the need to apply the lessons of history in the examination and treatment of contemporary military problems with which the Army is confronted. A mandatory staff ride to one of several Oklahoma battlefields is included. (Sp)

**4610 Comparative Military History.** 1 to 3 hours. Prerequisite: 3610 or permission of department chair. May be repeated; maximum credit three hours. Students will examine events leading to national and world crisis. Focus points will be socio-economic as well as goals and personalities of political and military leaders. (F, Sp)

## Modern Languages, Literatures, and Linguistics (MLL)

The department offers courses which are slashlisted so undergraduate students may take an undergraduate 4000-level course while graduate students may take a graduate 5000-level course. The lectures in a slashlisted course are the same. However, students in the 5000-level course have substantial additional requirements beyond those for students in the 4000-level course. These additional requirements are listed in the slashlisted course syllabus.

**2003 Introduction to World Literature.** Introduction to idea and practice of comparative literature study. Focus will be on a particular body of literature (e.g., Italian post-WWII fiction, French-Canadian poetry of the nineteenth century, etc.) as shaped by other cultures and literature. Texts will be in original language and translation. (Irreg.) [IV-WC]

**3000 Literature in Translation.** May be repeated with change of subject matter; maximum credit nine hours. Appreciation and analysis of poetry, novel, prose, drama, or film translated into English. (F, Su)

**3043 Mythology and Folklore (Crosslisted with Anthropology 3043).** The nature and function of myth and folklore in human societies and the uses to which the study of folklore have been put by anthropologists in both functional and culture-historical analyses of preliterate societies. (F, Sp) [IV-WC]

**3063 Survey of Jewish Literature from Antiquity to the Present.** Prerequisite: junior standing. Provides a survey of Jewish literature from the Hebrew Bible to contemporary American literature, presented as a journey in which stops will be made at important places, covering all significant periods, genres and prominent writers. (F)

**3073 The Hebrew Bible as Literature.** Prerequisite: junior standing. Provides a survey of Jewish literature from the Hebrew Bible to contemporary American literature, presented as a journey in which stops will be made at important places, covering all significant periods, genres and prominent writers. (F)

**3123 Russian Culture and Civilization.** Considers the historical and cultural heritage of Russia through a study of its geography, history, religion, language, literature and the fine arts. Allows students to appreciate the global perspectives and cultural diversity. [IV-WC]

**3133 Soviet and Post-Soviet Cinema.** Prerequisite: junior standing. Familiarizes students with the history of film in the Soviet Union, from the silent movies of its beginnings to its manifestation at the present time. No previous knowledge of the Russian language is required. Russian social and political issues explored through film. (F, Su)

**3143 Dostoevsky and His Age.** Prerequisite: junior standing. Examination of the life and literary works of Fyodor Dostoevsky, with special attention to the role the writer played in Russian and Western intellectual history. Reading assignments will include Crime and Punishment, The Brothers Karamazov, and several shorter works, all in English translation. (Irreg.) [IV-WC]

**3153 Russian Literature through Film.** Prerequisite: junior standing. Students analyze classic Russian literary texts and the films that they have inspired. This course focuses on the problem of cinematic adaptation. No previous knowledge of the Russian Language is required. (F, Su)

**3213 Japanese Theater and Performance.** Prerequisite: junior standing. A survey of performance traditions in Japan ranging from rituals to dance and theatre, from ancient to contemporary. Explores the role of theatre in society and the relation between performance style and daily behavior. (F) [IV-NW]

**3223 Japan through Film and Literature.** Prerequisite: junior standing. Introduces Japanese post-war society and culture with emphasis on 1945 to the present, as reflected in film and literature. Students will examine essential issues, including class, family, gender, work, education, and minorities, paying attention to the struggles between traditional cultural values and modern society. (Irreg.) [IV-NW]

**3303 The World of Dante.** Prerequisite: Junior standing and English 1213. In this course students will engage in a close reading of a fundamental text in the western literary tradition: Dante Alighieri's Divine Comedy. The course will also consider one of Dante's minor works, the Vita Nuova, as well as the modern critical readings of Dante's writing and thought. In lectures, special attention will be paid to the historical, political, literary and intellectual context of Dante's poetry and thought. Students will also be asked to contribute to the classroom atmosphere by responding to questions and participating in discussions. (Irreg.) [IV-WC]

**3373 Italian Cinema.** Prerequisite: junior standing and English 1213. The aim of this course is to develop interpretive skills relevant to the study of Italian cinema by examining some of its most significant films. More specifically, we will analyze the ways in which Italian society is portrayed and typified in Italian cinema. We will cover the major film movements and periods, from "cinema muto" to Neorealism, from "commedia all'Italiana" to the Italian horror genre and to the most recent works made by contemporary directors. (Irreg.)

**3413 Arabic Literature and Culture.** Prerequisite: junior standing. A survey of Arabic literature tradition and cultural history from the 4th century to the present. Covers themes and genres of the cultural heritage of Arabic-Islamic civilization, continuities and discontinuities between the classical and modern period, and background political and social changes. (F) [IV-NW]

**3423 Western Visions of the East/12<sup>th</sup>-21<sup>st</sup> Century.** Prerequisite: junior standing. This course examines Western European representations of the Middle East, North Africa, and Asia from the Middle Ages to today. The aim is to consider how western culture constructs the Oriental Other in poetry, prose, drama, and film. Edward Said's "Orientalism" will serve as the critical foundation for the course. (F)

**3523 Survey of Russian Literature to 1917 in Translation.** Prerequisite: junior standing. Reading, analysis and discussion of key works of Russian 19th century literature, including the major novels, plays, and poetry selections in English translation. This course does not satisfy the third semester Arts and Sciences language requirement. (F)

**3533 Survey of Russian Literature from 1917 in Translation.**

Prerequisite: Junior standing. Representative works of Soviet and post-Soviet literature are read and discussed. Selections of prose and poetry chosen from among symbolists, acmeists, futurists, populists, modernists, and post-modernists. This course does not satisfy the third semester Arts and Sciences language requirement. (Sp)

**3573 Arthurian Legend and Literature (Crosslisted with English 3573).**

Examination of the legend of King Arthur in European literature. Concentrate first on the historical Arthur, followed by major portion of semester on the medieval and modern literary texts concerning Arthur and the Round Table. All texts will be read in English translation. [IV-WC]

**3633 Modern Japanese Literature and Culture.** Prerequisite: junior standing. A survey of Japanese literature from the Meiji restoration (1868) onward, with attention to social, political, and cultural issues as well as literary theory. Topics will include Japan's "westernization," "naturalism," proletarian literature movements, early post-war literature, and the "third new generation writers." (Sp) [IV-NW]

**3643 Japanese Education Through Fiction.** A discussion of Japanese education through fiction. Fiction is used as a "tool" to explore this complex subject, and the selected novels and short stories will be examined from a specific perspective. Topics will include the occupation reform, "education explosion," "exam hell," school violence and cram schools. [IV-NW]

**3753 Modern Chinese Literature and Culture.** Prerequisite: junior standing. Students will read Chinese literary texts in English translation and

learn about the historical, political, social, and cultural contexts in which they were produced. (Sp) [IV-NW]

**3823 German Culture and Thought.** Prerequisite: junior standing. Introduces major themes in German cultural history and analytical tools students can bring to the further study of German and/or other European literatures and cultures in translation. Specific topics may vary. (F)

**3843 Twentieth-Century European Culture and Identity.** Prerequisite: junior standing. Offers an overview of twentieth-century European culture and identity. Students are made aware of a culture and people different from the United States. In an attempt to understand what makes Europe a unique entity, we will examine how political, social, and economic forces and events in Europe relate to cultural ideas and artistic productions. (F) [IV-WC]

**3853 The Rise of Romanticism.** Prerequisite: Honors' standing. Study of the rise of Romanticism by reading European literary, theoretical, and philosophical texts with emphasis on material from particular Romantic movements. Education, changing relationships and gender will be given consideration. (Irreg.) [IV-WC]

**3943 German Cinema.** Prerequisite: junior standing. This course will provide an overview of German cinema throughout the 20th century, with a focus on the cinematic representation of national identity and gender identity in Germany. We will examine the impact of shifting political structures on film production throughout German history, as well as influential theories of German national cinema. (F)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Will consist of topics designated by the instructor in keeping with the student's major program. The topics will cover materials not usually presented in the regular courses. (F, Sp)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the Honors candidate to work on a special project in the student's field. (F, Sp)

**4003 Movements in World Literature (Crosslisted with English 4003).** Prerequisite: junior standing. May be repeated with change of subject matter; maximum credit nine hours. Focuses on texts within a literary movement (literature other than canonical American or British). Also attention to critical and theoretical questions about concepts such as genre, nation, national building, national identity, etc. (Irreg.) [IV-WC]

**4113 Luso-Brazilian Civilization.** Prerequisite: minimum of 30 hours earned. Taught in English. An introduction to Luso-Brazilian cultural history and literatures through a series of readings and films. The course begins with the poetry of Luis de Camões and the discovery of Brazil, and ends with the impact of European immigrants in the 20th century on the literature and music of Brazil. (Sp) [IV-WC]

**4123 Culture of Afro-Brazilian Popular Music.** Prerequisite: junior standing. The development of five centuries of Afro-Brazilian music from the experience of slavery during Brazil's colonial beginnings to the emergence of contemporary styles. Special attention will be paid to the use of musical and other popular cultural forms in social protest, politics, and the crisis of violence in contemporary Brazil. (Sp) [IV-NW]

**4173 Introduction to Francophone Literatures in Translation**  
**(Slashlisted with MLLL 5173).** Prerequisite: senior standing. Examines the literary, social, and political issues forefronted by the Francophone literatures of West Africa, the Caribbean, and Polynesian Islands, Maghreb (chiefly Algeria, Tunisia, Morocco), and Quebec. (Sp) [IV-NW]

**4443 Exploring Music in Literature: Poetry and Drama of Lorca.** Prerequisite: junior standing. Explores the relationships that exist between music and literature in Lorca, including Spanish folksong, Flamenco as a socio-cultural phenomenon, focusing on ethnic identity, and contemporary orchestral compositions. (Irreg.) [IV-WC]

**4553 Latin America in Its Literature: The Search for a Latin-American Identity.** Prerequisite: Junior standing. The course fosters an understanding of the political nature, impetus and implications of Latin-American literature. It examines stereotypes and the basis upon which they are constructed and develops an awareness of the varied identities reflected in Latin-American literature. (F) [IV-WC]

**4663 Gender and Cross-Cultural Issues in Eastern European Women's Writing.** Prerequisite: junior standing. Exploration of gender issues in cultures in flux and ideologies in turmoil through lectures, discussions, film screenings, journal writing, and small group work. Texts, both written and

visual, are examined within literary, historical and sociological contexts. (Sp) [IV-WC]

**4753 Language, Culture and Cognition.** Prerequisite: junior standing. Cognitive science holds that the human mind is inherently embodied and abstract concepts are largely metaphorical. This course will introduce the cognitive view of metaphor and how it plays a critical role in language and cognition in the cultural context. Also pursues a cross-linguistic and cross-cultural perspective on the study of languages as a window into cognition and culture. (Irreg.)

**G4813 Techniques of Teaching a Foreign Language.** An overview of the basic theoretical aspects which affect teaching and learning in foreign language education. Analysis of current methods and materials, with emphasis on the development of appropriate skills to put those methods into practice. (F)

**G4823 Foreign Language in the Elementary School.** Prerequisite: 4813; both courses may be taken concurrently. Special problems associated with teaching foreign languages in the elementary school; FLES and FLEX programs, immersion programs, content-based instruction; communicative teaching.

**4970 Seminar.** 1 to 4 hours. Prerequisite: permission of instructor. May be repeated with change of content; maximum credit six hours. Varied topics in literature in English translation. (Irreg.)

**4993 Epics of India: Ramayana and Mahabharata .** Prerequisite: junior standing. Reading of the two great epics of India. Special attention will be paid to narrative structure and the role of the storyteller. The course involves extensive weekly reading along with weekly writing assignments and a semester-long research project which students will publish on the internet (no previous web publishing experience is required. (Sp) [IV-NW]

**G5063 Early Literary Criticism.** Prerequisite: graduate standing. An introduction to the main critical ideas of the West, ranging from Plato to Rousseau. Concepts like idealism, realism, nominalism, and materialism will be discussed with substantial readings from Plato, Aristotle, Horace, Longinus, St. Augustine, St. Thomas Aquinas, John Locke, Immanuel Kant, and Jean-Jacques Rousseau. (F)

**G5073 Contemporary Literary Criticism.** An introduction to contemporary linguistic, psychoanalytic and sociological literary theory and criticism. Readings and discussions will include questions of methodology and will demonstrate how these methods can be applied to particular texts. (Sp)

**G5173 Introduction to Francophone Literature in Translation**  
**(Slashlisted with MLLL 4173).** Prerequisite: graduate standing. Examines the literary, social, and political issues forefronted by the Francophone literatures of West Africa, the Caribbean and Polynesian Islands, Maghreb (chiefly Algeria, Tunisia, Morocco), and Quebec. (Sp)

**G5910 Problems in Research.** 2 to 4 hours. Prerequisite: permission of instructor. May be repeated with change of content; maximum credit four hours. An individual course of intensive research with the area and problem to be determined by the student and directing instructor. (Irreg.)

**G5920 Field Research in Foreign Education.** 1 to 3 hours. Prerequisite: 5833. Classroom oriented field research on the use of various methods of teaching foreign language in the classroom. Possible topics include aspects of language acquisition, evaluation, proficiency, communicative methods in foreign language education. (F, Sp, Su)

## Music—Applied

These courses take on the designator of the specific instrument or voice.

**2000 Freshman and/or Sophomore Secondary Piano, Violin, etc.** 1 to 2 hours. Prerequisite: permission of adviser and instructor. May be repeated; maximum credit toward B.F.A., B.M.A., B.M.E., and B.M. degrees, eight hours. For freshman and sophomore music students studying in a secondary (or minor) performance area. (F, Sp, Su)

**2010 Freshman and/or Sophomore Piano, Violin, etc., for Non-Performance Music Majors.** 1 to 2 hours. Prerequisite: permission of adviser and instructor. May be repeated; maximum credit toward the B.F.A., B.M.A., B.M.E., or B.M. degree, eight hours. For freshman and sophomore music students in the B.F.A., B.M.A., B.M.E., and B.M. (Music History or Music Theory majors) degree programs who are studying in their principal performance area. (F, Sp, Su)

**2020 Freshman and/or Sophomore Piano, Violin, etc., for Performance Majors.** 2 to 3 hours. Prerequisite: permission of adviser and instructor. May be repeated; maximum credit toward the B.M. degree, eight hours.

For freshman and sophomore music students in the B.M. (Performance or Composition majors) degree program who are studying in the major performance area. (F, Sp, Su)

**2970 Special Topics in Music.** Majors only. 1 to 3 hours. May be repeated with change of subject matter; content changes each semester. Study of newly developed, experimental or inter-disciplinary topics in music.

**4000 Junior and/or Senior Secondary Piano, Violin, etc.** 1 to 2 hours. Prerequisite: permission of adviser and instructor. May be repeated; maximum credit toward B.F.A., B.M.A., B.M.E., and B.M. degrees, eight hours. For junior and senior music students studying in a secondary (or minor) performance area. (F, Sp, Su)

**4010 Junior and/or Senior Piano, Violin, etc., for Non-Performance Music Majors.** 1 to 2 hours. Prerequisite: permission of adviser and instructor. May be repeated; maximum credit toward the B.F.A., B.M.A., B.M.E., or B.M. degree, eight hours. For junior and senior music students in the B.F.A., B.M.A., B.M.E., and B.M. (Music History or Music Theory majors) degree programs who are studying in a principal performance area. (F, Sp, Su)

**4020 Junior and/or Senior Piano, Violin, etc., for Performance Majors.** 2 to 4 hours. Prerequisite: permission of adviser and instructor. May be repeated; maximum credit toward the B.M. degree 14 hours. May be elected for two hours credit only during summer session. For junior and senior music students in the B.M. (Performance or Composition majors) degree program who are studying in the major performance area. (F, Sp, Su)

**G5000 Master's-Level Secondary Piano, Violin, etc.** 1 to 2 hours.

Prerequisite: graduate standing in music; permission of adviser and instructor. May be repeated; maximum credit eight hours on a given instrument (including voice). For master's degree music students studying in a secondary (or minor) performance area. (F, Sp, Su)

**G5010 Master's-Level Piano, Violin, etc., for Non-Performance Music Majors.** 1 to 3 hours. Prerequisite: graduate standing in music; permission of adviser and instructor. May be repeated; maximum credit eight hours on a given instrument (including voice). For master's degree students other than performance majors in their major field. (F, Sp, Su)

**G5020 Master's-Level Piano, Violin, etc., for Performance Majors.** 2 to 4 hours. Prerequisite: graduate standing in music; permission of adviser and instructor; 4020 and 4021 or equivalent. May be repeated; maximum credit toward an M.M. degree 10 hours. (F, Sp, Su)

**G6000 Doctoral Secondary Piano, Violin, etc.** 1 to 2 hours. Prerequisite: graduate standing in music, permission of adviser or instructor. May be repeated; maximum credit eight hours on a given instrument (including voice). For doctoral degree music students studying in a secondary (or minor) performance area. (F, Sp, Su)

**G6010 Doctoral Piano, Violin, etc., for Non-Performance Music Majors.** 2 to 3 hours. Prerequisite: graduate standing in music; permission of adviser and instructor. May be repeated. Doctoral-level study of applied music in the major performance area for students other than performance majors in their primary field. (F, Sp, Su)

**G6020 Doctoral Piano, Violin, etc., for Performance Majors.** 2 to 4 hours. Prerequisite: graduate standing in music; 5042; permission of adviser and instructor. May be repeated; credit applicable toward applied music requirements for the Doctor of Musical Arts degree. Doctoral-level study of applied music for performance majors in their primary field. (F, Sp, Su)

## Music (MUS)

**2970 Special Topics in Music.** 1 to 3 hours. May be repeated with change of subject matter; content changes each semester. Study of newly developed, experimental, or inter-disciplinary topics in music. (Irreg.)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated with change of subject; maximum credit six hours. Consists of either reading topics or independent study designated by the instructor in keeping with the student's major program. Covers materials not usually presented in the regular courses. (F, Sp, Su)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program; junior or senior standing. May be repeated with change of subject; maximum credit six hours. The projects covered will vary. Deals with concepts not usually presented in regular coursework.

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated with change of subject; maximum credit six

hours. Provides an opportunity for the gifted honors candidate to work at a special project in the student's field. (F, Sp, Su)

**4023 Senior Capstone-BFA degree.** Prerequisite: MUTH 2622 and permission. Research and reading leading to a senior capstone paper in consultation with individual faculty. (F, Sp) [V]

**4970 Undergraduate Seminar.** 1 to 3 hours. Prerequisite: permission of department. May be repeated; maximum credit six hours. In-depth study of topics of interest. Subjects such as The Aesthetics of Music; Musical Criticism; Music in American Culture; Music of the American Indians; The Band as a Cultural Phenomenon; and the like, are illustrative of the topics that may be pursued. (Irreg.)

**G5112 Bibliography and Research in Music.** Prerequisite: graduate standing in music or music education. General and music bibliography; development of research skills in music. (F)

**G6880 Doctor of Musical Arts Project.** 2 to 8 hours. Prerequisite: admission to DMA degree program; permission of adviser and instructor. Research and/or creative endeavor leading to the completion of the final written project for the degree Doctor of Musical Arts. (F, Sp, Su)

## Music Education (MUED)

**1260 Field Experience for 1262.** Corequisite: 1262. Students will complete ten (10) hours of observation and guided teaching in a beginning string classroom. Fieldwork will take place in addition to course hours and must be scheduled through the instrumental music education office for field placement. (F, Sp)

**1262 Beginning Instruments Lab I.** Part of a two-semester sequence intended to equip instrumental music education students with basic performance and diagnostic techniques applicable to brass, woodwind, string, and percussion instruments for beginning-level students. (F, Sp)

**1270 Field Experience for 1272.** Corequisite: 1272. Students will complete ten (10) hours of observation and guided teaching in a beginning band classroom. Fieldwork will take place in addition to course hours and must be scheduled through the instrumental music education office for field placement. (F, Sp)

**1272 Beginning Instruments Lab II.** Prerequisite: 1262. Second of a two-semester sequence intended to equip instrumental music education students with basic performance and diagnostic techniques applicable to brass, woodwind, strings, and percussion instruments for beginning-level students. (F, Sp)

**1730 Field Experience for 1732.** Corequisite: 1732. Students will complete ten (10) hours of guided group field experience in public school classrooms. These observations will take place during course hours. Students not attending during these times must schedule a separate observation time with the field teacher. (F)

**1732 Introduction to Music Education.** Prerequisite: for music students interested in school music teaching. An overview of school music teaching. Designed to enable students to make early career choices. Students will observe music teaching in schools, develop a philosophy of music education, study psychological foundations as applied to music teaching, and become familiar with the total school music curriculum and its place in the school program. (F)

**1740 Field Experience for 1742.** Corequisite: 1742. Students will complete ten (10) hours of guided group field experience in a public school classroom. These observations and micro teaching sessions will take place during course hours. Students not attending during these times must schedule a separate observation/teaching time with the field teacher. (Sp)

**1742 Introduction to Teaching Techniques in Music.** Prerequisite: 1732. Second part of two-semester course sequence in music education. Sequential process of musical development, skills, content, methods, techniques and materials in the following areas: singing voice, classroom listening, sight reading, movement, and music series books. (Sp)

**2733 Music in Early Childhood Education.** Music instruction-learning in the early childhood years; an application of Piaget's principles of learning and development to music curricula in the preschool education of children. (F, Sp)

**2743 Music for Classroom Teachers.** Prerequisite: MUNM 2742. Open only to elementary education majors. Not open for credit to students in the School of Music. An introduction to effective methods, techniques and materials for teaching music to children in the elementary grades. (F, Sp)

**3010 Field Experience I.** Corequisite: 1732. Lab teaching experience required by the state Department of Education as part of teacher preparation sequence. Thirty to 45 hours of observations, part-time teaching, and committee meetings. (F, Sp)

**3020 Field Experience II.** Corequisite: 3723. Lab teaching experience required by the state Department of Education as part of teacher preparation sequence. Thirty to 45 hours of observations, part-time teaching, and committee meetings. (F, Sp)

**3030 Field Experience III.** Corequisite: 3733, or 3743, or 3752, or 3762. Lab teaching experience required by the state Department of Education as part of teacher preparation sequence. Thirty to 45 hours of observations, part-time teaching, and committee meetings. (F, Sp)

**3043 Media and Technologies of Music Instruction.** Current technologies used by music instructors in public schools: MIDI theory and applications; sequencing and composition software; sound reinforcement and recording techniques; video production; elementary graphic design and desktop publishing. (Sp)

**3240 Field Experience for MUTE 3242.** Prerequisite: junior standing in music; corequisite for music education majors only: 3242. Students will complete ten (10) hours of observation and guided teaching in a middle school classroom. Fieldwork will take place in addition to course hours and must be scheduled through the instrumental music education office for field experience. (F)

**3250 Field Experience for MUTE 3252.** Prerequisite: 3242; corequisite for music education majors only: 3252. Students will complete ten (10) hours of observation and guided teaching in a high school classroom. Fieldwork will take place in addition to course hours and must be scheduled through the instrumental music education office for field experience. (Sp)

**3720 Field Experience for 3723.** Corequisite: 3723. Students will complete ten (10) hours of guided group field experience in an elementary public school classrooms. These observations will take place during course hours. Students not attending during these times must schedule a separate observation time with the field teacher. Additionally, students will complete five (5) hours of field experience outside of class time. These placements must be coordinated through the instrumental music education office for field placement. (Sp)

**3723 Teaching Vocal Music, K-3.** Prerequisite: Music Theory 2622. Psychological foundations, teaching techniques and materials for vocal music instruction in kindergarten through grade three. Teaching techniques used in the Kodaly, Orff and other contemporary approaches will be examined. (Sp)

**3730 Field Experience for 3733.** Corequisite: 3733. Students will complete 15-20 hours of group and independent teaching in a middle school classroom. Fieldwork will take place in addition to course hours and must be scheduled through the vocal/general music education office for field placement. (Irreg.)

**3733 Teaching Vocal/General Music, 4-8.** Prerequisite: 3723. Sequential process of music development, skills, content, methods, techniques and materials suited to students in grades 4-8. Special attention given to the boys' changing voices. (F)

**3740 Field Experience for 3743.** Corequisite: 3743. Students will complete 15-20 hours of group and independent teaching in a high school classroom. Fieldwork will take place in addition to course hours and must be scheduled through the choral music education office for field placement. (Irreg.)

**3743 Teaching Choral Music, 9-12.** Prerequisite: 3733. Organization and management of choirs, repertoire appropriate to JHS/SHS choirs, rehearsal techniques, programming considerations, use of audio equipment, field experiences. (F, Sp)

**3750 Field Experience for 3752.** Corequisite: 3752. Students will complete twelve to thirteen (12-13) hours of independent teaching in a middle school classroom. Fieldwork will take place in addition to course hours and must be scheduled through the instrumental music education office for field placement. (F)

**3752 Teaching Instrumental Music, 4-8.** Prerequisite: junior standing in music. Materials and methods for teaching instrumental music in grades 4-8. Study on the selection of students, literature appropriate to ensemble and grade, rehearsal procedures, teaching strategies, psychological learning theory underlying teaching strategies, and evaluation of student learning. (F)

**3760 Field Experience for 3762.** Corequisite: 3762. Students will complete 12-13 hours of independent teaching in a high school classroom.

Fieldwork will take place in addition to course hours and must be scheduled through the instrumental music education office for field placement. (Sp)

**3762 Teaching Instrumental Music, 9-12.** Prerequisite: 3752. Administrative procedures and methods for teaching instrumental music in grades 9-12. Study of literature appropriate to ensemble and grade, score preparation, teaching style, problems related to contests, festivals, trips, scheduling, and measurements and evaluation of student learning. (Sp)

**3773 Teaching Multicultural Music.** Prerequisite: junior standing in music education. Designed for the music education major as an introduction to teaching the musical art forms of diverse groups and cultures within the United States and throughout the world. Building on basic principles of contemporary learning theory, this course develops knowledge and understanding of global musical art forms through active multi-sensory teaching approaches. (Sp)

**3782 Internship in Piano Teaching.** Prerequisite or corequisite: 3783. Teaching of children from preschool through high school in groups and private lessons under faculty supervision. (F, Sp)

**3783 Piano Pedagogy.** Prerequisite: eight hours of piano or organ, permission. Required for piano majors and elective for other fields. Basic study of concepts necessary for successful private and class piano teaching at the elementary level. Student teaching required. (Alt. F)

**3792 Internship in Piano Teaching.** Prerequisite or corequisite: 3782 and 3783. Continuation of teaching skills begun in 3782. Teaching of children from preschool through high school in groups and private lessons under faculty supervision. (F, Sp)

**3793 Piano Pedagogy.** Prerequisite: 3783. Required for piano majors and elective for other fields. Continuation of skills begun in 3783. Basic study of concepts necessary for successful private and class piano teaching at the intermediate level. Student teaching required. (Alt. Sp)

**4042 Capstone Seminar.** Prerequisite: concurrent enrollment in 4050 and 4060. The development of a teaching portfolio including a reflection log of teaching activities, written evaluations of video and audio episodes, and a summary of teaching successes and areas to be improved. (F, Sp) [V]

**4050 Teaching Experiences in the Elementary School.** Prerequisite: formal admission to student teaching; corequisite: 4042. Laboratory activities in music classes in elementary schools under competent direction and supervision: orientation, observation, and classroom teaching experiences supported by seminars and conferences focusing on the problems of teaching. Prospective teachers receive instruction, aid, and constructive supervision in classroom management, evaluation of pupil behavior, methods of teaching, selection of teaching materials, and school-home-community relations. (F, Sp)

**4060 Teaching Experiences in the Secondary School.** Prerequisite: formal admission to student teaching; corequisite: 4042. Correlation of theory and instructional practices in music classes in secondary schools; supervised observation, teaching, classroom management, and evaluation; acquaintance with the administration of a secondary school and the school program; selection and use of appropriate instructional materials; conferences with supervisors. (F, Sp)

**G4752 Marching Band Techniques.** Prerequisite: junior standing in music education. Organization of the marching band and its instrumentation, selecting and adapting music, marching fundamentals, marching styles and trends, planning and charting half-time shows, parade routines, auxiliary units and drum major signals. (Sp)

**4762 String Pedagogy.** Prerequisite: MUTE 3252, and junior standing. String teaching techniques in large and small group settings. Emphasis is on familiarizing students with teaching strategies for string classes in public schools. (Sp)

**G4892 Introduction to Voice Pedagogy.** Prerequisite: eight hours of voice, permission. Study of vocal teaching techniques including anatomy of vocal tract, physiological process and acoustical properties. Repertory for high school students. (F)

**4970 Undergraduate Seminar.** 1 to 3 hours. Prerequisite: permission of department. In-depth study of topics of interest as appropriate to the field of study. Subjects such as Music in the Two-Year College, The Aesthetic Dimensions of Music Education; The Teaching of Ethnic Music; The Psychology of Music; and the like, are illustrative of the topics that may be pursued. (Irreg.)

**G5212 Research in Music Education.** Prerequisite: graduate standing in music or music education or permission. Methods of analytical-historical research in music and historical, philosophical, descriptive and experimental research in music education. (F, Alt. Su)

**G5382 Percussion Pedagogy.** Prerequisite: 12 hours of education (professional or music). The basic techniques of playing and teaching all percussion instruments for high school through college level. (Irreg.)

**G5522 Voice Pedagogy I.** Prerequisite: graduate standing or permission. An introduction to methods of instruction in vocal pedagogy. An in-depth study of voice building and hygiene, psychological factors in singing, physiology of the vocal tract, acoustic principles of speech and singing, and vocal materials. Examined through discussion, lecture, demonstration, micro-teaching, and outside reading. (Irreg.)

**G5552 Master's Workshop in Voice Pedagogy.** Prerequisite: graduate standing and permission. A public workshop for voice teachers concentrating on teaching techniques and materials. Must be at least three hours in length. Terminal degree requirement in lieu of recital.

**G5553 Kodály Concept I.** Prerequisite: graduate standing. The philosophy, methodology and techniques of teaching the Kodály Concept of music education in levels K-1. (F)

**G5562 Solfege I.** Kodály techniques applied to the practice and skills of sight singing, ear training and dictation. Sight singing of unison, homophonic and polyphonic examples from the classical music literature. Study of selected books in the Kodály choral method. (Sp)

**G5563 Kodály Concept II.** Prerequisite: 5553. The philosophy, methodology and techniques of teaching the Kodály Concept of music education in levels 2-3. (Irreg.)

**G5572 Solfege II.** Prerequisite: 5562. Advanced Kodály techniques applied to the practice and skills of sight singing, ear training and dictation. Sight singing examples will involve modulation, chromaticism and modes. (Su)

**G5573 Kodály Concept III.** Prerequisite: 5563. The philosophy, methodology and techniques of teaching the Kodály concept of music education in levels 4-6. (Irreg.)

**G5582 Folk Song Research.** Prerequisite: 5553. Study of musical culture in America through analysis of melodic and rhythmic structures, forms and categories of American folk songs as source material for teaching the Kodály Concept. (Irreg.)

**G5612 Piano Pedagogy I.** Prerequisite: graduate standing or permission. Methods, materials, curriculum building and philosophical bases for teaching piano at the college and university levels with focus on group instruction. Student teaching required. (F)

**G5622 Piano Pedagogy II.** Prerequisite: graduate standing or permission. Methods, materials, curriculum building and philosophical bases for teaching piano at the elementary and intermediate levels. Student teaching required. (Sp)

**G5632 Current Trends in Piano Pedagogy.** Prerequisite: graduate standing. Identification and evaluation of current trends in piano pedagogy including new technology and the job market. Advanced reading and research in the area of piano pedagogy with the preparation of articles suitable for publication on pertinent topics related to piano teaching. (Irreg.)

**G5642 Internship in Piano Teaching.** Prerequisite: graduate standing. Teaching of children's classes, college classes, adult students or private lessons under faculty supervision. Designed to give the student experience in areas where none exists. (F, Sp, Su)

**G5652 Master's Workshop in Piano Pedagogy.** Prerequisite: graduate standing and permission. A public workshop for piano teachers concentrating on teaching techniques and materials. The workshop must be at least three hours in length. Terminal degree requirement in lieu of recital. (F, Sp)

**G5662 Teaching Intermediate and Advanced Piano.** Prerequisite: graduate standing or permission. Methods, materials and curriculum building for teaching piano students at the intermediate through advanced levels. Focus will be on developing piano teaching techniques for high school and college-age students, studying repertoire that is appropriate for these students, and exploring performance practice suitable for pianists at the intermediate and advanced levels. (Alt. Sp)

**G5960 Directed Readings.** 1 to 3 hours. Prerequisite: eighteen hours of music, permission of the director of the school. May be repeated; maximum credit six hours. Individual topics in music education. (F, Sp, Su)

**G5970 Seminar in Music Education.** 1 to 6 hours. Prerequisite: 12 hours of music education, graduate standing, or permission. May be repeated with change of subject matter; maximum graduate credit 12 hours. (F, Sp, Su)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp, Su)

**G5990 Special Studies in Music Education.** 1 to 3 hours. Prerequisite: permission of the director of the school. May be repeated with change of subject matter; maximum credit six hours. Individual study and research in the field of music education. (F, Sp, Su)

**G6012 Philosophical Foundations of Music Education.** Prerequisite: graduate standing in music or music education. Students will study the writings of Mursell, Leonhard, Reimer, Elliott, and others. Students will debate the theories these authors propose and prepare written papers applying aspects of these theories to music education practice in today's schools. (Irreg.)

**G6022 Psychological Foundations of Music Education.** Prerequisite: graduate standing in music or music education. Philosophies, theories, principles and concepts of learning and their implications to the teaching and learning processes in music education. The basic orientations of Associationist and Field theories will be investigated and the current status of learning theory applied to music education will be evaluated. Specific theories are those of Ausubel, Gagne, Guilford, Piaget, and Skinner and applications by Bruner, Gordon and Mursell. (Sp)

**G6032 Sociological Foundations of Music Education.** Prerequisite: graduate standing in Music or Music Education. Students will read works by Adorno, Becker, Blumer, Dewey, Mead, Vygotsky, and others. Students will debate the issues and theories these authors propose and will prepare written papers applying aspects of these theories to music education practice in today's schools. (Irreg.)

**G6042 Historical Foundations of Music Education.** Prerequisite: graduate standing in Music or Music Education. Includes readings from works by Birge, Britton, Chase, Heller, Keene, Mark, and others that outline the development of music instruction in American schools. Students will debate the issues presented by these authors and prepare written papers on various historical movements and methodologies. (Irreg.)

**G6212 Measurement and Evaluation in Music Education.** Prerequisite: graduate standing in music or music education. Techniques and methods of measuring and evaluating musical behavior in cognitive, affective and psychomotor domains. (Sp)

**G6222 Qualitative Research in Music Education.** Prerequisite: graduate standing in music or music education. Required for the Music Education Ph.D. curriculum. Course assignments review qualitative research techniques applied to problems in music education. Students will study questionnaire development, interview formats, case study reporting, triangulation methods, and oral history methodologies. (Irreg.)

**G6242 Quantitative Research in Music Education.** Prerequisite: graduate standing in music or music education. Required for the Music Education Ph.D. curriculum. Course assignments review empirical research techniques applied to problems in music education. Students study research design, population sampling, statistical formulae for analyzing data, and advanced statistical techniques such as factor analysis and regression analyses. (Irreg.)

**G6442 Current Trends in Music Education.** Prerequisite: graduate standing in music or music education, permission. Identification and evaluation of current trends in music teaching. Individual projects expected. (Alt. F)

**G6652 Doctoral Workshop in Piano Pedagogy.** Prerequisite: doctoral standing and permission. A public workshop for piano teachers concentrating on teaching techniques and materials. The workshop must be a least five hours in length. Terminal degree requirement in lieu of recital. (F, Sp, Su)

**G6980 Research for Doctor's Dissertation.** (F, Sp, Su)

## Musicology (MUSC)

**1312 Music in Culture.** Required of all music majors; nonmusic majors admitted by permission. A study of music in its cultural context, exploring the inter-relationship of music to such aspects as everyday life, worship and belief, migration, dance, memory, politics, and identity. Techniques of aural perception are stressed for the improvement of basic listening skills. (Sp) [IV-AF]

**2313 Ancient Times to 1700.** Prerequisite: 1312. A study of the development of music from its inception to the late Baroque era conducted through lectures, readings, listening and analysis. (F) [IV-WC]

**2323 Late Baroque Through Romantic Period.** Prerequisite: 1312. A study of the development of music in the eighteenth and nineteenth centuries conducted through lectures, readings, listening and analysis. (Sp) [IV-WC]

**3333 Post-Romantic Period to the Present.** Prerequisite: 1312. A study of the development of music from the Post-Romantic era to the present day conducted through lectures, readings, listening and analysis. (F) [IV-WC]

**4970 Undergraduate Seminar.** 1 to 3 hours. Prerequisite: permission of department. In-depth study of topics of interest as appropriate to the field of study. Subjects such as the style, aesthetics, and influence of a particular composer, i.e., Beethoven, Berlioz, Brahms; the social/cultural foundations of a particular musical era or period; notational systems; and the like, are illustrative of the topics that may be pursued. (Sp)

**G5323 The History of Opera.** Prerequisite: graduate standing or permission; 2313, 2323, 3333, or equivalent. Changes of content, style and form in dramatic music as related to social, economic and political change in the past 350 years of western civilization. (Irreg.)

**G5353 History of the Symphony.** Prerequisite: graduate standing or permission; 2313, 2323, 3333, or equivalent. The development of symphonic form with detailed attention to outstanding examples of literature from the various periods. (Irreg.)

**G5373 History of American Music.** Prerequisite: graduate standing or permission; 2313, 2323, 3333, or equivalent. Music in the United States from its beginnings to the present. (Irreg.)

**G5523 Music in the Renaissance: Style, Theory and Performance.** Prerequisite: graduate standing; 2313 or equivalent. An integrated course that correlates vocal and instrumental Renaissance music by the major composers with the major writers of the time on musical theory, acoustics, philosophy, esthetics, history and performance. (Irreg.)

**G5543 The Baroque Era.** Prerequisite: graduate standing or permission; 2313, 2323, 3333, or equivalent. A detailed study of music from Monteverdi through J.S. Bach. (Irreg.)

**G5563 Music in the Classical Period.** Prerequisite: graduate standing or permission; 2313, 2323, 3333, or equivalent. A detailed study of music from around 1730 to Beethoven. (Irreg.)

**G5573 The Romantic Era.** Prerequisite: graduate standing or permission; 2313, 2323, 3333, or equivalent. A detailed study of music of the romantic era, principally 1800 to 1900. (Irreg.)

**G5593 Twentieth-Century Music.** Prerequisite: graduate standing or permission; 2313, 2323, 3333, or equivalent. A detailed study of contemporary styles and composers. (Alt. Sp)

**G5653 History of Chamber Music.** Prerequisite: graduate standing or permission; 2313, 2323, 3333, or equivalent. A study of music for chamber ensembles. (Irreg.)

**G5960 Directed Readings.** 1 to 3 hours. Prerequisite: 18 hours of music, permission of the director of the school. May be repeated; maximum credit six hours. Individual topics in music history and literature. (F, Sp, Su)

**G5970 Seminar in Music History.** 1 to 4 hours. Prerequisite: 30 hours of music or permission. May be repeated with change of subject matter; maximum graduate credit 12 hours. (F, Sp, Su)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. Music television emphasis also requires the production of a half-hour broadcast-quality television program as part of thesis research. (F, Sp, Su)

**G5990 Special Studies in Music History.** 1 to 3 hours. Prerequisite: 30 hours of music, permission of the director of the school. May be repeated with change of subject matter; maximum graduate credit six hours. Individual study, research and analysis. (F, Sp, Su)

## Music Literature (MULI)

**2970 Special Topics in Music Literature.** Majors only. 1 to 3 hours. May be repeated with change of subject matter; content changes each semester. Study of newly developed, experimental or inter-disciplinary topics in music literature.

**G4523 Keyboard Literature.** Prerequisite: Music History 2313, 2323, 3333, or permission. (Alt. F)

**G4533 Keyboard Literature.** Prerequisite: Music History 2313, 2323, 3333, or permission. (Alt. Sp)

**4543 Introduction to Vocal Literature.** Prerequisite: junior standing in music. Provides an introduction to art song literature for the solo voice. Repertoire in Italian, German, French, English, Spanish, and Russian will be included. The main emphasis will be on songs for the solo voice; some examples from opera, oratorio, and vocal chamber music will also be discussed. (Irreg.)

**4970 Undergraduate Seminar.** 1 to 3 hours. Prerequisite: permission of department. In-depth study of topics of interest as appropriate to the field of study. Subjects such as The Art Song since 1950; The Symphonic Music of Charles Ives; Songs of the American Revolution; Music of the American Theatre; The String Quartets of Haydn; and the like, are illustrative of topics that may be offered. (F, Sp)

**G5423 Studies in Piano Literature I.** Prerequisite: graduate standing or permission of instructor. A detailed study of compositional styles, idioms and trends in piano music written during the Baroque, Classical and Romantic eras. Topics will vary. Possible areas of study include the Well-Tempered Clavier of Bach, French Rococo Piano Works, Piano Sonatas of Haydn, Piano Sonatas of Mozart, Piano Concertos of Mozart, Beethoven and Brahms, and Piano Sonatas of Beethoven. (F)

**G5433 Studies in Piano Literature II.** Prerequisite: graduate standing or permission of instructor. A detailed study of compositional styles, idioms and trends in music written for the piano during the Romantic period to the present. Topics will vary. Possible areas of study include the Character Piece of the 19th Century, Influence of Liszt on 20th-Century Piano Music, Piano Works of Debussy and Ravel, American Experimentalism in 20th-Century Piano Music, and European Avante Garde Piano Music. (Irreg.)

**G5970 Seminar in Music Literature.** 1 to 4 hours. Prerequisite: 30 hours of music, graduate standing or permission. May be repeated with change of subject matter; maximum graduate credit 12 hours. (F, Sp)

**G5990 Special Studies.** Prerequisite: graduate standing; permission of the director of the school. May be repeated with change of subject matter; maximum credit six hours. Individual study and research in the field of music literature. (F, Sp, Su)

## Music for Nonmajors (MUNM)

**1022 Beginning Instrument/Voice Class I.** For non-music majors with no experience in the instrument/voice only. May be repeated for credit; maximum credit eight hours. Class instruction in basic performance/musicianship skills. This course does not count for major credit in the School of Music. (F, Sp)

**1032 Beginning Instrument/Voice Class II.** Prerequisite: 1022 or permission. For non-music majors with limited instrumental/vocal experience only. May be repeated for credit; maximum credit eight hours. Class instruction in basic performance/musicianship skills. This course does not count for major credit in the School of Music. (F, Sp)

**1100 Freshman and/or Sophomore Piano, Violin, etc., for Non-Music Majors.** 1 to 2 hours. Prerequisite: permission of instructor. Enrollment is subject to faculty availability and will not be accepted until the first day of classes. Private instruction in the development of instrumental or vocal performance skills and musicianship. This course does not count for major credit in the School of Music. (F, Sp, Su)

**1113 The Understanding of Music.** Open to non-music majors. A course in music appreciation covering all of the important fields of music, with opportunity for the students to listen to recordings and to attend concerts. This course does not count for major credit in the School of Music. (F, Sp, Su) [IV-AF]

**1123 Music Theory for Non-Majors I.** Study of the basic materials of music. These materials will be approached through written, aural, oral and analysis drills. Credit not applicable to Bachelor of Music, Bachelor of Music Education, or Bachelor of Fine Arts-Music Emphasis degrees. This course does not count for major credit in the School of Music. (F)

**1743 Experiencing Music.** Designed as an introduction to the varied strands of folk music in America. Involves examination of the historical, cultural and social implications of American folk songs; performance and analysis of folk songs as musical art forms; and the link between folk songs and large-scale contemporary musical compositions. This course does not count for major credit in the School of Music. (F, Sp) [IV-AF]

**2210 Special Topics in Music.** 1 to 3 hours. Prerequisite: 1113 or permission of instructor. May be repeated with change of topic. Special

topics in music and music history requiring a minimal background in music. Topics typically will treat periods of musical history, style and related topics. This course does not count for major credit in the School of Music. (F, Sp, Su)

**2313 History of Jazz.** Open to non-music majors. Detailed and specific study of jazz as a major musical art form. Studies the logical musical developments of jazz pointing out the important elements comprising the individual styles as they have evolved. Evolution and cultural ties are made through representative masterworks by master performers. Critical listening and evaluation are a major element. No prior knowledge of terms or techniques is necessary. This course does not count for major credit in the School of Music. (F, Sp, Su) [IV-AF]

**2970 Special Topics in Music.** Open to non-music majors. 1 to 3 hours. May be repeated with change of subject matter; content changes each semester. Study of newly developed, experimental or inter-disciplinary topics in music. This course does not count for major credit in the School of Music.

**3022 Intermediate Instrument/Voice Class I.** Prerequisite: 1032 or permission. For non-music majors only. May be repeated for credit; maximum credit eight hours. Class instruction in intermediate-level instrument/voice performance/musicianship. This course does not count for major credit in the School of Music. (F, Sp)

**3032 Intermediate Instrument/Voice Class II.** For non-music majors only. May be repeated; maximum credit eight hours. Class instruction in intermediate-level instrument/voice performance/musicianship. This course does not count for major credit in the School of Music. (F, Sp)

**3100 Junior and/or Senior Piano, Violin, etc., for Non-music Majors.** 1 to 2 hours. Prerequisite: permission of instructor. Enrollment is subject to faculty availability and will not be accepted until the first day of classes. Private instruction in the development of instrumental or vocal skills and musicianship. This course does not count for major credit in the School of Music. (F, Sp, Su)

**3113 Introduction to World Music.** Prerequisite: junior standing. Study of music and human culture focusing on tribal, folk, popular and oriental (non-Western) music. Several representative societies will be explored in depth. Field study, music-making projects, and analysis of live performances of ethnic music are included. This course does not count for major credit in the School of Music. (F, Sp, Su) [IV-NW]

**3123 Introduction to the Art Song.** Prerequisite: junior standing. Designed to introduce students to the various traditions that have informed the literature of the western art song from antiquity to the present. Emphasis will be placed on understanding musical and poetic forms as well as the general cultural climates that gave birth to song repertoires. This course does not count for major credit in the School of Music. (Irreg.) [IV-AF]

**3213 Native American Music.** Prerequisite: junior standing. Study of Native American music of the North American continental United States (with special emphasis on music of the Plains tribes). Field study, instrument building, analytical essays of live performances and a high level of aural classroom experience will be included. This course does not count for major credit in the School of Music. [IV-NW]

**3313 African Repercussions.** Prerequisite: junior standing. Open to non-music majors. Study of music culture focusing on the African impact. Several areas of influence explored in depth include African traditional music, Afro Pop, Reggae and Caribbean fusion, American black gospel, rhythm and blues, and jazz. Written analyses on recorded and live music are part of course requirements as well as exams based on classroom lectures and performances. This course does not count for major credit in the School of Music. (F, Sp) [IV-NW]

**3413 Music of the Pacific Rim.** Prerequisite: junior standing. Open to non-music majors. Music cultures of the Pacific Rim including Japan, Southeast Asia, Indonesia, Pacific Islands and Australia. Cultural context and aesthetic elements of the music will be examined. Western music terminology will serve as a point of departure as a new music vocabulary and mindset are developed and used as part of written reports and class discussions. This course does not count for major credit in the School of Music. (F, Sp) [IV-NW]

**4210 Special Topics in Music.** 1 to 3 hours. Prerequisite: 1113. May be repeated with change of topic; maximum credit six hours. Special topics in music and music history requiring writing projects and listening activity. Topics typically will treat periods of musical history, style, and related topics. This course does not count for major credit in the School of Music. (F, Sp, Su)

**4970 Undergraduate Seminar.** Open to non-music majors. 1 to 3 hours. Prerequisite: 1113 or permission of instructor. May be repeated with change of subject matter; content changes each semester. Study of newly developed, experimental or inter-disciplinary topics in music. This course does not count for major credit in the School of Music.

**G5100 Graduate Piano, Violin, etc., for Non-music Majors.** 1 to 2 hours. Prerequisite: graduate standing and permission; four semesters of previous study in the instrument or voice. Enrollment is subject to faculty availability and will not be accepted until the first day of classes. Private instruction in the development of instrumental or vocal skills and musicianship. This course does not count for major credit in the School of Music. (F, Sp, Su)

## Music Recitals

### (Designator varies with classification)

**3021 Junior Recital.** Prerequisite: concurrent enrollment in 4020, during the junior year, permission of adviser and instructor. Preparation and performance of a public recital by students in the B.M. degree program. (F, Sp, Su)

**4011 Undergraduate Recital.** Prerequisite: concurrent enrollment in 4010, permission of adviser and instructor. Preparation and performance of a public recital by students in the B.M.A. and B.M.E. degree programs. (F, Sp, Su)

**4012 Capstone Writing Seminar.** Prerequisite: permission of applied instrument instructor and senior standing. Designed to emphasize research and writing skills culminating in a major research document to demonstrate knowledge in the student's performance area. The document(s) should reflect study and experience in the undergraduate curriculum of their degree program, including, but not confined to, music theory, musicology, conducting and ensembles. Normally, this document is extensive program notes related to the repertoire of their senior recital. Students should enroll in the capstone writing seminar the semester before the senior capstone recital. (F, Sp) [V]

**4021 Senior Capstone Recital.** Prerequisite: 4012 or concurrent enrollment, concurrent enrollment in 4020, permission of instructor. Preparation and performance of a public recital by students in all undergraduate music programs. Students are advised to and should complete the Capstone Writing Seminar the semester before the Senior Capstone Recital. (F, Sp) [V]

**G5042 Graduate Recital—Master of Music Degree.** Prerequisite: concurrent enrollment in 5020, permission of adviser and instructor. Preparation and performance of a public recital. May not be elected during first enrollment. (F, Sp, Su)

**G5051 Graduate Composition Recital.** Prerequisite: permission of instructor. A program of original compositions presented in partial fulfillment for the requirements of the Master of Music degree in composition. (F, Sp, Su)

**G5052 Graduate Recital—Master of Music Education Degree.**

Prerequisite: concurrent enrollment in 5010, permission of adviser and instructor. May not be elected during first enrollment. (F, Sp, Su)

**G6022 Graduate Recital—Doctor of Philosophy Degree.** Prerequisite: concurrent enrollment in 6010, permission of adviser and instructor. May be repeated for credit with the approval of the student's advisory committee. May not be elected during first enrollment. Preparation and performance of a public recital. (F, Sp, Su)

**G6042 Graduate Recital—Doctor of Musical Arts Degree.** Prerequisite: concurrent enrollment in 6020; permission of adviser and instructor. May be repeated; maximum credit four hours. May not be elected during first enrollment. The preparation and presentation of a public recital. (F, Sp, Su)

**G6052 Graduate Lecture/Chamber Recital—Doctor of Musical Arts Degree.** Prerequisite: concurrent enrollment in 6020; permission of adviser and instructor. May not be elected during first enrollment. The preparation and presentation of a public lecture or chamber music recital. Requires the submission of a related written document. (F, Sp, Su)

## Music Technique (MUTE)

**1010 Recital Attendance.** 0 hours credit. Performance laboratory for all undergraduate music majors. (F, Sp)

**1120 Jazz Ensemble.** 0 to 1 hour. Prerequisite: permission by audition. May be repeated for credit; maximum credit eight hours. Preparation and performance of music written in a variety of jazz styles. (F, Sp)

**1130 University Band.** 0 to 1 hour. Prerequisite: permission by audition. Performance in University bands. (F, Sp, Su)

**1140 University Orchestra.** 0 to 1 hour. Prerequisite: permission by audition. May be repeated for credit; maximum credit eight hours. Performance in University orchestra. (F, Sp, Su)

**1160 University Chorale.** 0 to 1 hour. Prerequisite: permission; membership determined by audition. May be repeated for credit; maximum credit eight hours. An ensemble of high calibre; approximately 24 singers. Rehearsal and performance of choral and choral-orchestral masterworks drawn mostly from the baroque through twentieth-century style periods. Several performances each semester. (F, Sp, Occas. Su)

**1170 University Choir.** 0 to 1 hour. Open to both music majors and nonmusic majors. May be repeated for credit. Performance of a capella and accompanied music of various periods and styles. One to two performances per semester. (F, Sp, Su)

**1180 University Chorus.** 0 to 1 hour. Open to all university students. May be repeated for credit. A large chorus for the music enthusiast who desires a rich experience singing a variety of music. Repertoire will range from lighter pieces to large choral-orchestral works. Occasional performances. (F, Sp)

**1190 Opera/Music Theatre.** 0 to 2 hours. Prerequisite: permission of instructor by audition. May be repeated for credit; maximum credit sixteen hours. Consists of rehearsals and performances of opera, musicals and other forms of music theatre. (F, Sp)

**1211 Brass Instrument Class.** Prerequisite: permission. May be repeated with change of instrument or subject matter; maximum credit four hours. Basic concepts of playing and teaching brass instruments. **Laboratory** (F, Sp)

**1221 Percussion Instrument Class.** Prerequisite: permission. May be repeated with change of instrument or subject matter; maximum credit four hours. Basic concepts of playing and teaching percussion instruments. **Laboratory** (F, Sp)

**1231 Woodwind Instrument Class.** Prerequisite: permission. May be repeated with change of instrument or subject matter; maximum credit four hours. Basic concepts of playing and teaching woodwind instruments. **Laboratory** (F, Sp)

**1251 Stringed Instrument Class.** Prerequisite: permission. May be repeated with change of instrument or subject matter; maximum credit four hours. **Laboratory** (F, Sp)

**1261 Group Voice.** Open to music majors whose emphasis is not in voice. May be repeated; maximum credit two hours. Development of basic skills, techniques and repertoire for the singer. (F, Sp)

**1311 Group Piano I.** Prerequisite: permission. Development of functional piano skills for the non-keyboard music major. Emphasis on keyboard theory and technique, sight reading, solo/ensemble repertoire and creative activities (harmonization, improvisation). **Laboratory** (F, Sp)

**1321 Group Piano II.** Prerequisite: 1311 and permission. Continued development of the skills begun in 1311. **Laboratory** (F, Sp)

**1332 Functional Piano Skills I.** Prerequisite: piano major, piano emphasis, permission. Experience in sight reading, playing by ear, modulation, open score reading, transposition and improvisation at the keyboard. (F)

**1342 Functional Piano Skills II.** Prerequisite: 1332 or permission. Experience in sight reading, playing by ear, modulation, open score reading, transposition and improvisation at the keyboard.

**2020 Composition Forum.** Prerequisite: composition majors; corequisite: Composition 2010 or 2020. Required of all composition majors. Meets weekly throughout the semester as an official laboratory to discuss compositional techniques and review student compositions. (F, Sp, Su)

**2271 Chamber Music.** Prerequisite: permission. May be repeated; maximum credit four hours. Study and performance of chamber music literature for various combinations of instruments. (F, Sp, Su)

**2280 Studio Ensemble.** 0 to 1 hour. May be repeated for credit. Performance experience in an ensemble of similar instruments. (F, Sp)

**2311 Group Piano III.** Prerequisite: 1321 and permission. Continued development of the skills begun in 1321. **Laboratory** (F, Sp)

**2321 Group Piano IV.** Prerequisite: 2311 and permission. Continued development of the skills begun in 2311. Special emphasis on sight reading, accompanying and instrumental and vocal-choral score reading. **Laboratory** (F, Sp)

**2970 Special Topics in Music Technique.** Majors only. 1 to 3 hours. May be repeated with change of subject matter; content changes each semester. Study of newly developed, experimental or inter-disciplinary topics in music technique.

**3110 Studio Accompanying for Piano Majors.** 0 to 1 hour. Prerequisite: 2212, 2222, or concurrent enrollment, or permission. Required of piano majors, during junior and senior years. Two hours per week of assigned accompanying in vocal and/or instrumental teaching studios. **Laboratory** (F, Sp)

**3120 Jazz Ensemble.** 0 to 1 hour. Admission by audition. May be repeated for credit. Preparation and performance of music written in a variety of jazz styles. (F, Sp)

**3130 University Band.** 0 to 1 hour. Prerequisite: permission by audition. May be repeated for credit; maximum credit eight hours. Performance in University bands. (F, Sp, Su)

**3140 University Orchestra.** 0 to 1 hour. Prerequisite: permission by audition. May be repeated for credit; maximum credit eight hours. Performance in University orchestra. (F, Sp)

**3160 University Chorale.** 0 to 1 hour. Prerequisite: audition. May be repeated for credit. An ensemble of high calibre; approximately forty singers. Rehearsal and performance of choral and choral-orchestral masterworks drawn mostly from the baroque through twentieth-century style periods. Several performances each semester. (F, Sp)

**3170 University Choir.** 0 to 1 hour. Prerequisite: audition. Open to both music majors and nonmusic majors. May be repeated for credit. Performance of a capella and accompanied music of various periods and styles. One to two performances per semester. (F, Sp, Su)

**3180 University Chorus.** 0 to 1 hour. Prerequisite: audition. Open to all University students. May be repeated for credit. A large chorus for the music enthusiast who desires a rich experience singing a variety of music. Repertoire will range from light pieces to large choral-orchestral works. Occasional performances. (F, Sp)

**3190 Opera/Music Theatre.** 0 to 2 hours. Prerequisite: permission by audition. May be repeated for credit; maximum credit sixteen hours. Consists of rehearsals and performances of opera, musicals and other forms of music theatre. (F, Sp)

**3242 Instrumental Conducting I.** Prerequisite: junior standing in music. Development of skills and knowledge in instrumental conducting, rehearsal techniques and instrumental repertoire. (F)

**3252 Instrumental Conducting II.** Prerequisite: 3242. Continued development of skills and knowledge in instrumental conducting, rehearsal skills and instrumental repertoire. (Sp)

**3262 Choral Conducting I.** Prerequisite: junior standing in the School of Music. Development of skills and knowledge in choral conducting, rehearsal techniques and choral repertoire. (F)

**3272 Choral Conducting II.** Prerequisite: 3262. Continued development of skills and knowledge in choral conducting, rehearsal techniques and choral repertoire. (Sp)

**3282 Singer's Diction I.** Prerequisite: junior standing in music. Provides an introduction to the principles of correct pronunciation of English, Italian and Latin for singing. Students will learn and use the International Phonetic Alphabet (IPA) as a symbolic medium. The rules of pronunciation will be illustrated through the study and performance of songs from English and Italian art song and operatic repertoire, and Latin choral repertoire. (Irreg.)

**3292 Singer's Diction II.** Prerequisite: junior standing in music, and 3282. Provides an introduction to the principles of correct pronunciation of German and French for singing. Students will learn and use the International Phonetic Alphabet (IPA) as a symbolic medium. The rules of pronunciation will be illustrated through the study and performance of songs from German and French art song and operatic repertoire. (Irreg.)

**3342 Jazz Improvisation.** Development of improvising skills in the jazz idiom. Designed as a hands-on laboratory course for students of various skill levels to improve personal abilities. (F, Sp, Su)

**4020 Composition Forum.** Prerequisite: junior standing and composition majors; corequisite: Composition 4010 or 4020. Required of all composition majors. Meets weekly throughout the semester as an official

laboratory to discuss compositional techniques and review student compositions. (F, Sp, Su)

**G4252 Church Music.** Prerequisite: junior standing in the School of Music and permission. Music in the church service. Appropriate choral, vocal, instrumental and organ literature. (F)

**G4262 Church Music.** Prerequisite: junior standing in the School of Music and permission. Music in the church service. Appropriate choral, vocal, instrumental and organ literature. (F, Sp)

**4271 Chamber Music.** Prerequisite: permission. May be repeated; maximum credit four hours. Study and performance of chamber music literature for various combinations of instruments. (F, Sp)

**4272 Movement for Musicians (Slashlisted with 5272).** Prerequisite: junior standing. Explores the interrelationship of movement, music, imagination, and emotion. Conductors, composers, singers, and actors are invited to participate. No student may earn credit for both 4272 and 5272. (Irreg.)

**4280 Studio Ensemble.** 0 to 1 hour. Prerequisite: 2280. May be repeated for credit. Performance experience in an ensemble of similar instruments. (F, Sp)

**4283 Acting for Opera (Slashlisted with 5283).** Prerequisite: junior standing in music. Develops basic acting and interpretative skills for opera including characterization, interaction, and improvisation. Students will also begin to develop professional work habits and artistic independence. The course culminates with a public presentation of scenes. No student may earn credit for both 4283 and 5283. (Irreg.)

**4290 Opera Production (Slashlisted with 5290).** 1 to 3 hours. Prerequisite: junior standing in music. May be repeated; maximum credit 12 hours. A musical, dramatic, and technical theater practicum for students cast in solo and chorus roles in major opera productions. The purpose of the course and productions is to provide appropriate training and performance opportunities for each participant. No student may earn credit for both 4290 and 5290. (Irreg.)

**4970 Undergraduate Seminar.** Majors only. 1 to 3 hours. May be repeated with change of subject matter; content changes each semester. In-depth look at areas dealing with technique, technology and applied instruction in a class or group setting. Study of newly developed, experimental or inter-disciplinary topics in music technique.

**G5110 Collegium Musicum.** 0 to 1 hour. Prerequisite: permission of instructor. May be repeated for credit; maximum credit four hours. Performance of instrumental and vocal music from all periods and repertoires, and problems related thereto. (F, Sp)

**G5120 Jazz Ensemble.** 0 to 1 hour. Prerequisite: graduate standing and permission. May be repeated for credit; maximum credit four hours. Admission by audition. Preparation and performance of music written in a variety of jazz styles. (F, Sp)

**G5130 University Band.** 0 to 1 hour. Prerequisite: permission of instructor; determined by audition. May be repeated for credit. Number of credits applicable to degree programs varies, but in no case may exceed four hours. Study and performance of concert literature for the wind band to include score analysis and study of the aspects of program planning and performance practices. (F, Sp, Su)

**G5140 University Orchestra.** 0 to 1 hour. Prerequisite: permission of instructor; determined by audition. May be repeated for credit. Number of credits applicable to degree programs varies, but in no case may exceed four hours. Study and performance of orchestral literature for the string orchestra and full symphony orchestra to include score analysis and study of the aspects of program planning and performance practices. (F, Sp)

**G5160 University Chorale.** Prerequisite: graduate standing, permission; membership determined by audition. May be repeated for credit. An ensemble of high calibre; approximately 40 singers. Rehearsal and performance of choral and choral-orchestral masterworks drawn mostly from the baroque through twentieth-century style periods. Several performances each semester. (F, Sp, Su)

**G5170 University Choir.** 0 to 1 hour. Prerequisite: permission of instructor; determined by audition. Open to both music and nonmusic majors. May be repeated for credit. Performance of a capella and accompanied music of various periods and styles. One to two performances per semester. (F, Sp, Su)

**G5180 University Chorus.** 0 to 1 hour. Prerequisite: graduate standing. Open to all University students. May be repeated for credit. A large chorus for the music enthusiast who desires a rich experience singing a variety of

music. Repertoire will range from lighter pieces to large choral-orchestral works. Occasional performances. (F, Sp)

**G5190 Opera/Music Theatre.** 0 to 2 hours. Prerequisite: permission of instructor by audition. May be repeated for credit; maximum credit eight hours. Consists of rehearsals and performances of opera, musicals and other forms of music theatre. (F, Sp, Su)

**G5271 Chamber Music.** Prerequisite: graduate standing, permission. May be repeated with change of subject matter. Survey of chamber music through participation in ensemble groups. Preparation and public performance of selected chamber music works. (F, Sp)

**G5272 Movement for Musicians (Slashlisted with 4272).** Prerequisite: graduate standing. Explores the interrelationship of movement, music, imagination, and emotion. Conductors, composers, singers, and actors are invited to participate. No student may earn credit for both 4272 and 5272. (Irreg.)

**G5280 Studio Ensemble.** 0 to 1 hour. Prerequisite: graduate standing. May be repeated for credit. Performance experience in an ensemble of similar instruments. (F, Sp)

**G5283 Acting for Opera (Slashlisted with 4283).** Prerequisite: junior standing in music. Develops basic acting and interpretative skills for opera including characterization, interaction, and improvisation. Students will also begin to develop professional work habits and artistic independence. The course culminates with a public presentation of scenes. No student may earn credit for both 4283 and 5283. (Irreg.)

**G5290 Opera Production (Slashlisted with 4290).** 1 to 3 hours. Prerequisite: junior standing in music. May be repeated; maximum credit 12 hours. A musical, dramatic, and technical theater practicum for students cast in solo and chorus roles in major opera productions. The purpose of the course and productions is to provide appropriate training and performance opportunities for each participant. No student may earn credit for both 4290 and 5290. (Irreg.)

**G5342 Jazz Improvisation.** Development of improvising skills in the jazz idiom for graduate students. Designed as a hands-on laboratory course for students of various skill levels to improve personal abilities. (F, Sp)

**G5512 Choral Conducting.** Prerequisite: 3262; graduate standing; permission of instructor. May be repeated; maximum credit six hours. Development of conducting gestures, rehearsal procedures and stylistic interpretation in an ensemble setting. Content coordinated with 6152. Repertoire ranges from medieval chant to avant garde works with nonconventional notation. (F, Sp, Su)

**G5522 Instrumental Conducting.** Prerequisite: 3252, graduate standing; permission of instructor. May be repeated; maximum credit six hours. Development of baton technique, error detection skills, rehearsal procedures and interpretive skills. Conducting of band or orchestral works from various style periods. (F)

**G5532 Instrumental Score Studies.** Prerequisite: 3252; graduate standing or permission. May be repeated with change of content. Critical performance analysis of selected instrumental masterworks from various style periods. Development of an understanding of proper style and interpretation based on musical research.

**G5712 Seminar in Music Television Production.** Prerequisite: permission of instructor. Study of techniques and problems in working as producer employing professionals in music television. Topics to include funding; scripting; music recording; coaching rehearsals and performances; hiring the production crew for lighting, video or film, audio, designers and builders of costumes, and sets for dramatization, etc. Format involves directed reading and supervised participation in real television production.

**G5722 Seminar in Music Television Post-Production.** Prerequisite: permission of instructor. Study of techniques and problems in working as producer employing professionals in music television post-production. Topics to include television editing (online and off-line), use of time code, titling, preparation for broadcast, video cassette distribution, copyright, writing study guides, and philosophy of publication through television. Format involves directed reading and direct participation in music television post-production.

**G5970 Seminar in Music Technique.** 1 to 3 hours. Prerequisite: graduate standing in music and permission. May be repeated with change of subject matter; maximum credit applicable toward degree, six hours. In-depth study of topics of interest in music performance. (Sp)

**G5990 Special Studies in Conducting.** 1 to 3 hours. Prerequisite: 5512 or 5522, graduate standing, permission of director of the school. May be

repeated with change of subject matter; maximum graduate credit six hours. Advanced individual study of conducting problems and score analysis. (Sp, Su)

**G6152 Choral Score Studies.** Prerequisite: 3252; graduate standing; permission of instructor. May be repeated; eight hours credit applicable to DMA degree. Critical performance analysis of selected masterworks from medieval chant to avant garde works of the twentieth century. Development of an understanding of proper style and interpretation based on musical research. (F, Sp, Su)

**G6162 Instrumental Score Studies.** Prerequisite: 5532, graduate standing, and permission of instructor. May be repeated; maximum credit eight hours applicable to DMA degree. Development of knowledge of broad base of repertoire combined with in-depth analysis of specific works. (F, Sp)

**G6210 Collegium Musicum.** 0 to 1 hour. Prerequisite: permission. Performance of instrumental and vocal music from all periods and repertoires, and problems related thereto. (F, Sp)

**G6252 Choral Conducting.** Prerequisite: 5512; graduate standing; permission of instructor. May be repeated; eight hours credit applicable to DMA degree. Refinement of conducting, rehearsal and interpretive skills. Emphasis on musical nuance in choral style and interpretation. (F, Sp, Occas. Su)

**G6262 Instrumental Conducting.** Prerequisite: 5522, graduate standing, and permission of instructor. May be repeated; maximum credit eight hours applicable to DMA degree. Development of advanced conducting techniques and rehearsal skills. Exploration of relationships between structural analysis and performance. Podium time in ensemble situations. (F, Sp)

## *Music Technology (MUTK)*

**2263 Musical Instrument Digital Interface I.** A basic course in electronic music utilizing the University of Oklahoma MIDI laboratory. **Laboratory** (F)

**3263 Musical Instrument Digital Interface II.** Prerequisite: 2263. Moving from MIDI theories of operation to several applications of MIDI such as MIDI sequencing and musical notation. (Sp)

## *Music Theory (MUTH)*

**1511 Musical Structures I.** Prerequisite: knowledge of music fundamentals, written and aural, or concurrent enrollment in 0601. Study of the basic materials of music as a necessary preparation for the study of music theory. These factors will be approached through written, aural, oral, sensitivity, keyboard and analysis drills. (F, Sp)

**1522 Musical Structures II.** Prerequisite: 1511. An overview of the common practice periods through writing, analysis, aural perception and keyboard. (F, Sp)

**1611 Aural Skills I.** Prerequisite: knowledge of music fundamentals, written and aural, or concurrent enrollment in 0601. Study of simple melodic and rhythmic patterns, isolated and in the context of literature, to the end of aural perception and vocal reading of same. **Laboratory** (F, Sp)

**1622 Aural Skills II.** Prerequisite: 1611. Continuation of 1611. **Laboratory** (F, Sp)

**2512 Musical Structures III.** Prerequisite: 1522. A study of the traditional harmonic practices of the eighteenth and nineteenth centuries through writing, analysis, aural perception and keyboard. (F, Sp) [IV-AF]

**2522 Musical Structures IV.** Prerequisite: 2512. A study of late nineteenth-century harmonic practices and twentieth-century idioms through writing, analysis, aural perception and keyboard. (F, Sp)

**2612 Aural Skills III.** Prerequisite: 1622. Study of moderately difficult rhythms and melodies in the context of illustrative eighteenth- and nineteenth-century styles—aural perception, vocal reading and analysis. **Laboratory** (F)

**2622 Aural Skills IV.** Prerequisite: 2612. Study of rhythms and melodies as used by late nineteenth- and twentieth-century composers—aural perception, vocal reading and analysis. **Laboratory** (Sp)

**2970 Special Topics in Music Theory.** Majors only. 1 to 3 hours. May be repeated with change of subject matter; content changes each semester. Study of newly developed, experimental or inter-disciplinary topics in music theory. (Irreg.)

**3512 Musical Structures V.** Prerequisite: 2522. A study of the late nineteenth- and twentieth-century harmonic practices. Development of theoretical analysis skills in twentieth-century music. (F, Sp)

**3763 Counterpoint.** Prerequisite: 2522. A study of eighteenth-century counterpoint. First semester, two parts with analysis and original writing. (F)

**3783 Forms and Analysis.** Prerequisite: 2522. A study of the structure of homophonic forms, followed by the standard polyphonic and homophonic forms of eighteenth-, nineteenth-, and twentieth-century music. (Sp)

**G4853 Orchestration.** Prerequisite: 3763 or concurrent enrollment in 3763. A study of the characteristics of the instruments of the orchestra and their uses in combination, including historical background of orchestral style. (F)

**4863 Advanced Orchestration.** Prerequisite: 4853 or permission of instructor. May be repeated; maximum credit six hours. Continuation of the study of the characteristics of the instruments of the orchestra and their uses in combination covering advanced techniques and practices, including historical background or orchestral style, including the twentieth century. (Sp)

**G4922 Instrumental Arranging.** Prerequisite: 12 hours of music theory. Arranging instrumental music for all combinations of instruments and groupings. (Sp)

**4970 Senior Seminar.** 1 to 3 hours. Prerequisite: 3763 and 3783. May be repeated once with change of topic; maximum credit six hours. Not open to graduate students. Intended to permit study in-depth of such areas as the style of a particular composer or the writing of a particular theorist such as Hindemith, Schenker, Persichetti and others. (F, Sp, Su)

**G5812 Practicum in Music Theory I.** Prerequisite: 12 hours of music theory. The study of nineteenth-century chromatic harmony and the relationship of musical content to musical form. (F, Alt. Su)

**G5822 Practicum in Music Theory II.** Prerequisite: 5812. A brief comparative study of Baroque and twentieth-century fugues; analysis of compositional techniques and forms in the first half of the twentieth century. (Sp, Su)

**G5960 Directed Readings.** 1 to 4 hours. Prerequisite: 18 hours of music, permission of the director of the school. May be repeated; maximum undergraduate credit eight hours, graduate credit six hours. Individual topics in music theory. (F, Sp, Su)

**G5970 Seminar in Music Theory.** 1 to 4 hours. Prerequisite: 30 hours of music or permission. May be repeated with change of subject matter; maximum graduate credit 12 hours. (F, Sp, Su)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp, Su)

**G5990 Special Studies in Music Theory.** 1 to 3 hours. Prerequisite: 30 hours of music, permission of the director of the school. May be repeated with change of subject matter; maximum graduate credit six hours. Individual study, research and analysis in music theory. (F, Sp, Su)

**G6833 Analysis of Twentieth-Century Music.** Prerequisite: 16 hours of music theory, permission. Traces the origins of twentieth-century music and surveys compositional techniques. (Irreg.)

**G6853 Analytical Techniques of Musical Styles.** Prerequisite: 30 hours of music, including 18 hours of music theory. The techniques of stylistic analysis of music from the Baroque period through the early twentieth century. (Irreg.)

## *Musical Theatre (MTHR)*

**1102 Tap Foundations.** Introduction to the basic concepts of tap dance. Students learn step development, basic rhythms, and the rudiments of placement, balance, and weight change. (F, Sp)

**1112 Tap I (Crosslisted with Dance 1112).** Prerequisite: 1212 and permission of instructor. May be repeated; maximum credit four hours. A beginner class emphasizing tap fundamentals and terminology that includes weight change, proper placement and simple step patterns. The course concentrates on basic rhythms, counting, ear training and clarity of sound. (F, Sp)

**1402 Jazz Foundations.** Introduction to the basic concepts of jazz movement. Students learn basic motor skills used in musical theatre and focus on the rudiments of placement, alignment, flexibility, and assimilation. (F, Sp)

**1442 Jazz I (Crosslisted with Dance 1442).** Prerequisite: 1212 and permission of instructor. May be repeated; maximum credit four hours. A beginner class that provides the student with a comprehensive understanding of the technical fundamentals of jazz dance including basic rhythms, vocabulary and skills. Focus is aimed towards proper placement, strength and flexibility development. (F, Sp)

**1501 Musical Notation.** Prerequisite: admission to Musical Theatre program. Lecture/discussion class to enhance the ability to read music, including treble and bass clefs, major and minor scales, diatonic intervals and chords as well as simple and compound rhythms. (F)

**1502 Studio Voice I.** Prerequisite: admission to musical theatre program. May be repeated; maximum credit four hours. Establishing basic vocal technique for musical theatre singing, including vocal exercises and breathing technique. Application of technique through the study of beginning level Broadway up-tempos and ballads as well as English art song and American folk song. (F, Sp)

**1551 Sight Reading.** Prerequisite: admission to Musical Theatre program. Lab practice of rhythm and pitch recognition including the ability to perform diatonic intervals ascending/descending as well as simple/compound rhythms in both division and subdivision. (Sp)

**2101 Performance Practicum.** Prerequisite: permission of instructor. May be repeated; maximum credit four hours. Study and practice in rehearsal and performance as a cast member in musical theatre productions including cabaret work of the freshman/sophomore level. (F, Sp)

**2112 Tap II (Crosslisted with Dance 2112).** Prerequisite: 1112 and permission of instructor. May be repeated; maximum credit four hours. An advanced beginner class that maintains focus on proper placement and clarity of sound while introducing more complicated rhythms, step patterns and vocabulary. Counting and ear training continues as the student hones assimilation skills. Focus is placed on tap dynamics including accenting, shading and movement quality. A variety of styles will be introduced. (F, Sp)

**2121 Auditions.** Prerequisite: permission of instructor. An introduction to musical theatre performance through the practice of auditioning. Study involves an overview of song form, style, and composers. Assignments include casting notices, resume format and research tools. Emphasis is placed on assembling a portfolio of song cuttings. (Sp)

**2442 Jazz II (Crosslisted with Dance 2442).** Prerequisite: 1442 or permission of instructor. May be repeated; maximum credit four hours. This advanced beginner class expands on the techniques learned in Jazz I with focus on cleanly executed technique, well connected movement quality, dynamics and increased strength and flexibility. A variety of jazz styles will be introduced. (F, Sp)

**2502 Studio Voice II.** Prerequisite: 1502. May be repeated; maximum credit four hours. Continuing practice of vocal technique for musical theatre singing; includes developing range, flexibility and tone color. Application of technique through the study of intermediate level Broadway up-tempos and ballads, as well as Italian art song and European operetta. (F, Sp)

**3112 Tap III (Crosslisted with Dance 3112).** Prerequisite: 2112 or permission of instructor. May be repeated; maximum credit six hours. An intermediate class with focus placed on refinement of technical and assimilation skills while dramatically increasing tap vocabulary. Students focus on tap dynamics, performance quality, style variety and movement coordination while learning longer and more complicated step patterns. Tap improvisation is introduced. (Irreg.)

**3141 Repertoire.** Prerequisite: 2121 or permission of instructor. Investigation of Broadway and Hollywood songwriting during the first half of the 20<sup>th</sup> Century. Performance material will consist of songs appropriate for the student's vocal range. Study includes critical listening to period recordings. (F)

**3142 Song Study.** Prerequisite: 3141 or permission of instructor. Development of musical theatre performance technique through the study of solo song. Study includes exploring aspects of interpretation and expression to support the vocal, physical and mental aspects of performing. Emphasis is placed on integrating singing and acting skills. (Sp)

**3143 History of American Musical Theatre.** Prerequisite: English 1213. Surveys history of the American musical theatre from its beginnings in the late 19th century to the present. (F, Sp) [IV-AF]

**3163 Musical Scenes.** Prerequisite: 3142 or permission of instructor. Application of musical theatre performance technique utilizing scenes from the Broadway stage. Study includes using show research and script analysis to develop characterization. Emphasis is placed on creating unified performance both dramatically and musically. (F)

**3171 Roles.** Prerequisite: 3163 or permission of instructor. Exploration of musical theatre leading roles from the second half of the 20th Century. Performance material will consist of songs appropriate for the student's vocal and physical range. Study includes viewing performances of artists from the Broadway stage. (Sp)

**3442 Jazz III (Crosslisted with Dance 3442).** Prerequisite: 2442 or permission of instructor. May be repeated; maximum credit four hours. An intermediate class that moves at a heightened pace, this level expands on the techniques learned in Jazz II. Additional focus is placed on style variety, assimilation skills, and more advanced movement coordination and rhythms. (Irreg.)

**3502 Studio Voice III.** Prerequisite: 2502. May be repeated; maximum credit four hours. Broadening development of vocal technique for musical theatre singing; includes learning to blend the vocal registers for healthy tone production. Application of technique through the study of advanced level Broadway up-tempos and ballads, as well as German art song and American operetta. (F, Sp)

**3960 Honors Reading.** Prerequisite: admission to Honors program and permission of instructor. Consists of either reading topics or independent study designated by the instructor in keeping with the student's major program. Covers materials not usually presented in the regular courses. (F, Sp)

**3980 Honors Research.** Prerequisite: admission to Honors program and permission of instructor. Provides an opportunity for the gifted Honors candidate to work at a special project in the student's field. (F, Sp)

**4101 Advanced Performance Practicum.** Prerequisite: junior or senior standing and permission of instructor. May be repeated; maximum credit four hours. Study and practice in rehearsal and performance as a cast member in musical theatre productions, including mainstage or cabaret/revue participation during the junior and senior years. (F, Sp)

**4112 Tap IV (Crosslisted with Dance 4112).** Prerequisite: 3112 or permission of instructor. May be repeated; maximum credit four hours. This advanced class furthers the tap dancer's vocabulary, refines technical skills, greatly increases assimilation ability and furthers the study of tap improvisation. (Irreg.)

**4172 Theatre Dance Styles I.** Prerequisite: 2112 and 2442, and senior standing, or permission of instructor. A practical and historical study of the Broadway dance styles. The main focus is in the jazz idiom; however, strong ballet, jazz, and tap skills are required. Emphasis is placed on technique, performance quality and auditioning skills. (F)

**4174 Coaching.** Prerequisite: 3171 or permission of instructor. Advanced techniques of musical theatre performance through individual coaching. Study includes developing a song notebook appropriate to one's type for professional auditions and assignments related to working in the Broadway profession. Emphasis is placed on presenting a variety of musical and dramatic styles. (F)

**4182 Theatre Dance Styles II.** Prerequisite: 4172. This course is a continuing study of Broadway dance styles. Strong skills in jazz, ballet, and tap are required. Emphasis placed on techniques, performance quality and auditioning skills. (Sp)

**4183 Capstone Experience.** Prerequisite: senior standing and permission of instructor. Requires written documentation in appropriate format. Senior year project which demonstrates mastery of skills and knowledge in musical theatre, selected under advisement and guided by appropriate faculty. (F, Sp)

**4190 Special Studies.** 1 to 4 hours. Prerequisite: junior standing, major in musical theatre, and permission of instructor. May be repeated with change of content; maximum credit six hours. Varying individual or small group topics or projects in the study and practice of musical theatre not covered in regularly scheduled courses. (Irreg.)

**4442 Jazz IV (Crosslisted with Dance 4442).** Prerequisite: permission of instructor. May be repeated; maximum credit four hours. An advanced class emphasizing strong technique and assimilation skills as well as the ability to adapt to any jazz style. Continued focus is placed on flexibility, strength, dynamics, and solid performance quality. (Irreg.)

**4502 Studio Voice IV.** Prerequisite: 3502. May be repeated; maximum credit four hours. Furthering development of vocal technique for musical theatre singing; includes practical application of technical skills and knowledge. Application of technique through the study of classics and contemporary Broadway up-tempos and ballads as well as French art song and American art song. (F, Sp)

## Native American Studies (NAS)

**1013 Introduction to Native American Studies.** This course will introduce students to key concepts and methods in the study of American Indian history, culture, and contemporary governance and socio-economic status. (F, Sp)

**1713 Beginning American Indian Languages I (Crosslisted with Anthropology 1713).** May be repeated with change of language; maximum credit 12 hours. Introduction to the structure of an American Indian language with special attention to its phonology, morphology, and syntax. Conversational practice, vocabulary-building and the history and culture of the native speech community also are emphasized. (F, Sp) [I-FL]

**1723 Beginning American Indian Languages II (Crosslisted with Anthropology 1723).** Prerequisite: 1713 in the native language listed as course topic. May be repeated with change of language; maximum credit 12 hours. Introduction to the structure of an American Indian language with special attention to its phonology, morphology and syntax. Conversational practice, vocabulary-building, and the history and culture of the native speech community also are emphasized. (F, Sp) [I-FL]

**2733 Intermediate American Indian Languages (Crosslisted with Anthropology 2733).** Prerequisite: 1723. May be repeated with change of language; maximum credit 12 hours. A systematic review of the structure of an American Indian language. Syntactic control and vocabulary expansion are emphasized. Conversational practice and traditional oral texts are used to develop proficiency. (F, Sp)

**3113 Native American Philosophy.** Prerequisite: junior standing or permission of instructor. A survey of systems of understanding and explaining the relationships between human beings and the natural world in Native American cultures including; concepts of power, spirituality, and ceremonialism; ethical systems; and culturally based ways of knowing. (F) [IV-NW]

**3333 Native American Film.** Prerequisite: junior standing or permission of instructor. A critical investigation of the role that film, as an art genre, has played in creating the general public's idea of the American Indian, and its construction of images representing that idea. (Su)

**3693 Special Topics.** Prerequisite: six hours of NAS courses. May be repeated twice with a change in topic. Covers topics of special interest to NAS such as politics and tribal government, contemporary health issues, educational policies and trends, and tribal culture in the U.S. and Oklahoma. (F, Sp, Su)

**3863 Research Methods in Native American Studies.** Prerequisite: junior standing and permission of instructor. Introduction to research methods emphasizing formulation of hypothesis, conceptualization of theory; elementary quantitative and qualitative sources of data and methods; and ethical standards in social and educational research. (F)

**3960 Honors Reading.** Prerequisite: admission to Honors Program and permission of instructor. May be repeated with change of content; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. This course will allow the honors candidate the opportunity to study materials not offered in other courses. (F, Sp, Su)

**3980 Honors Research.** Prerequisite: admission to Honors Program. May be repeated with change of content; maximum credit six hours. The study of issues related to Native American Studies for the gifted honors candidate allowing him/her to work on a special project. (F, Sp, Su)

**3990 Independent Study.** 1 to 3 hours. Prerequisite: six hours of NAS major courses and permission of instructor. May be repeated; maximum credit six hours. Work on a topic of the student's choosing taken under the direct supervision of a faculty member. May involve directed reading and research or participation in a community-based activity. Students will be required to give a written report or research papers. (F, Sp)

**4013 Senior Capstone.** Prerequisite: senior standing. Provides a culminating experience giving students the opportunity to incorporate knowledge gained through previous coursework. Students will integrate this knowledge into a final project. (Sp) [V]

**4693 Contemporary Native American Artist (Crosslisted with ARTC 4693).** Prerequisite: junior standing. Discussion of the broad and modern sensibilities that make up the contemporary diversity of the indigenous arts and people of the North American hemisphere. May include but not limited to artwork dealing with race, class, tribal sovereignty, as well as

formalist modes. Introduction to a survey of common methods of contemporary artistic practice. (Irreg.) [IV-NW]

**4803 Native American Sovereignty.** Prerequisite: six hours of courses that are required to satisfy the major, excluding the native languages. Students will learn what constitutes the basic nature of political sovereignty and how it is exercised in Indian communities and what the possibilities and limitations are for Indian tribal governments. (Sp)

**4833 American Indian Health Issues and Concerns.** Prerequisite: junior standing. Historical information about American Indians with emphasis on health, including behavioral health, and tribal/Indian health service policy issues. Discusses traditional medicine and healing, research needs related to American Indian health, and career opportunities in health professions. (F)

**4913 American Indian Education Policy and Development.** Prerequisite: six hours of courses that satisfy the major, excluding the native languages, or permission of instructor. This course will enable students to come to an understanding of American Indian education history and policy as related to western European educational thought, philosophies, theories, and practices. (Sp) [III-SS]

**4920 Native American Studies Internship.** 1 to 6 hours. Prerequisite: completion of 18 hours of Native American Studies curriculum and permission of internship coordinator. May be repeated; maximum credit six hours. Participation in a supervised work experience. Grade is based on work performance, regular reports, and on-site supervisor's evaluation. (F, Sp, Su)

**4933 Introduction to Tribal Economic Development.** Prerequisite: six hours required for the Native American Studies major excluding languages, or permission of instructor. Introduces students to the concept of tribal economic development and the various issues facing governments. Theories and roles of tribal economic development as it relates to the survival and continuation of tribal governments. (F)

**4990 Independent Study.** Prerequisite: nine hours of NAS courses and permission of Program Director or instructor. May be repeated; maximum credit six hours. The study of issues related to Native American Studies to include research and special projects. (F, Sp, Su)

**G5050 Directed Readings in Native American Studies.** Prerequisite: graduate standing. May be repeated with change of content; maximum credit 12 hours. Graduate-level independent study for Master's candidates. (Irreg.)

**G5103 Interdisciplinary Seminar.** Prerequisite: graduate standing. An introduction to basic disciplinary approaches to the study of American Indian cultures and history and to current scholarship in history, anthropology, literature, and the arts dealing with American Indians. (F)

**G5971 Pre-Thesis Seminar.** Prerequisite: graduate standing. This course is a one-hour course to orient students to thesis research and assist them in the development of topics. It will meet in a concentrated format during the last third of the semester. (F)

**G5980 Research for Master's Thesis.** Prerequisite: graduate standing. Variable enrollment, two to six hours; maximum credit applicable toward degree, six hours. (F, Sp, Su)

## Naval Science (N S)

**0110 Leadership Development.** Designed to expose NROTC students to the professional development of a military officer. This is accomplished through military drill, guest lecturers, command situation and role enactment training. The goal is to better prepare young men and women to serve as naval officers in various fleet assignments. (F, Sp)

**1132 Introduction to Naval Science.** Mission and organization of the Naval Service. The concept of seapower to include strategic and political implications, military law, naval heritage, leadership, naval customs and traditions, rank and rate structure, military courtesies, honors and ceremonies; and an overview of different career fields and warfare communities. (F)

**1133 Seapower and Maritime Affairs.** Analyzes the influence of seapower on history and its relationship to national defense goals and policies, the role of the U.S. Naval Service in our national military strategy, the major historical events of the U.S. Navy and Marine Corps, and current trends in Soviet seapower. (Sp)

**2113 Leadership and Management.** Designed to teach introductory-level leadership and management concepts and applications to sophomore-level Naval ROTC midshipmen and all other interested University students. (Irreg.)

**2133 Navigation.** Introduction to marine navigation, including celestial and electronic navigation theory and practical application, rules of the road, and relative motion. (Sp)

**3223 Naval Ship Systems I: Naval Engineering Systems.** Prerequisite: 1132. Detailed study of ship characteristics and types, including design, hydrodynamics, stability, compartmentation, propulsion, electrical and auxiliary systems. Includes study of basic concepts of steam, gas turbine, diesel and nuclear propulsion. Case studies on leadership/ethical issues in engineering are also covered. (Sp)

**3333 Evolution of the Art of War.** Principles of war, offensive and defensive war, historical campaigns, civil war. (F)

**3433 Naval Ship Systems II: Naval Weapons Systems.** Prerequisite: 1132 or permission of instructor. Outlines theory and employment of weapon systems. Student explores processes of detection, evaluation, threat analysis, weapon selection, delivery, guidance and explosives. Fire control systems and studies involving the moral and ethical responsibilities of leaders in the employment of weapons. (F)

**4333 Amphibious Warfare.** Gallipoli, amphibious doctrine and landing in WWII in Europe and Western Pacific, Korean operations, and amphibious planning. (Irreg.)

**4433 Naval Operations and Seamanship.** Prerequisite: 2133. Advanced navigation concepts, including communications, evolutions, and operations. Introduction to naval warfare doctrine and joint operations. (F)

**4633 Naval Leadership and Ethics.** Prerequisite: 2113 or permission of instructor. An examination of leadership, ethical concepts, and management of naval (Navy and Marine Corps) resources. Objective is to learn the leadership skills, ethical expectations, and management techniques necessary to succeed as a naval officer in leading people and using limited resources in the most efficient manner. Encompasses leadership and ethical readings, discussion of the uniform code of military justice, and specific service guidance for junior officers. (F, Sp)

**G5183 Capstone Project.** Prerequisite: Graduate standing or permission of instructor. This capstone project will involve "real-world" application of the material covered in the program. (Irreg.)

**G5213 Job Analysis Methods and Applications.** Prerequisite: Admission into Organizational Dynamics program or permission of instructor. The course focuses on the major theories, principles and applications of job analysis in business and industrial settings. The topics covered include job analysis methods and tools, and the application of job analysis information in human resource management functions such as personnel selection, training and development and change, workforce planning, and compensation. (Irreg.)

**G5223 Performance Management.** Prerequisite: 5153 and 5163, or permission of instructor. Covers basic approaches to motivating and developing individuals to perform well within organizational settings; includes discussion of alternative methods for measuring and assessing individual, team, and organizational performance. (Irreg.)

**G5233 Training and Career Development.** Prerequisite: Graduate standing or permission of instructor. Overview of principles, theories, and practices of learning and development in organizations. Application of various training techniques and designs will be covered as well as roles of different organizational constituencies in employee training and development. (Irreg.)

**G5243 Staffing, Selection, and Compensation.** Prerequisite: Graduate standing or permission of instructor. Focuses on recent, state-of-the-art processes and technologies for organizational staffing, personnel selection, and employee benefits and pay. Relevant theories in these areas will be reviewed. (Irreg.)

**G5253 Organizational Behavior, Change, and Development.** Prerequisite: Graduate standing or permission of instructor. Explores theories and practices related to the planned process of changing an organization or group's culture to increase organizational productivity and effectiveness. Topics such as organizational assessment and diagnosis, continuous learning, problem solving sessions, reward systems, visioning, and empowerment will be covered. (Irreg.)

**G5263 Human Resource Management Systems and Techniques.**

Prerequisite: Admission to Organizational Dynamics program or permission of instructor. Survey of theory and practice in primary areas of human resource management such as workforce planning, recruiting, selection and staffing, performance management, compensation, and training and development. Focuses on a systems approach to human resource management, including how aspects of HRM are interrelated, as well as strategies and technologies being used to perform various HRM functions. (Irreg.)

**G5273 Topics in Human Resource Management.** Prerequisite: Graduate standing or permission of instructor. In-depth examination of existing and emerging issues and problems facing human resource professionals who work as internal or external consultants and administrators. May include issues such as human resource costing, equal employment opportunity, downsizing, selection, training, and globalization. (Irreg.)

**G5313 Planning Processes and Strategy Development.** Prerequisite: Graduate standing or permission of instructor. Overview of principles and practices of planning and strategy development. Planning processes will be examined at micro as well as macro organizational levels; organizational strategies such as succession planning and workforce planning will be discussed. (Irreg.)

**G5323 The Psychology and Practice of Project Management.** Prerequisite: Graduate standing or permission of instructor. Focuses on strategies and steps involved in developing project proposals and workplans. Includes topics such as needs assessment, budgeting, resource utilization, managing diverse project teams, troubleshooting, and others. (Irreg.)

**G5333 Customer Service and Market Analysis.** Prerequisite: 5153 or permission of instructor. Principles, theories and applications of market analysis and customer service will be reviewed; techniques for gathering, assessing, and analyzing market and customer data will be covered; techniques for improving customer service will be discussed. (Irreg.)

**G5343 Organizational Communication.** Prerequisite: Graduate standing or permission of instructor. Overview of theories and systems of communication in organizational settings. Various forms and effectiveness of communication as well as purposes and strategies at different organizational levels will be covered. (Irreg.)

**G5353 Global Business Practices and Ethics.** Prerequisite: Graduate standing or permission of instructor. Covers the relationship between

## Organizational Dynamics (ODYN)

**G5113 The Psychology of Leadership.** Prerequisite: Graduate standing or permission of instructor. Focuses on the theories, principles, and practice of leadership in organizational settings; particular focus on technologically based organizations, leading change in organizations, and leading teams. (Irreg.)

**G5123 Survey of Organizational Dynamics.** Prerequisite: Admission to the Organizational Dynamics program or instructor's consent. Overview of theories and practices used in human resource management; project management; and knowledge management. Emphasis is on research methodologies and key theories relevant to each of the three substantive area, as well as application of general principles of each of the three areas in the workforce, considering individual, group and organizational levels. (Irreg.)

**G5133 Teams and Motivation.** Prerequisite: Graduate standing or permission of instructor. Team formation, socialization and identity, team problem solving, individual and collective motivation, conflict and power, learning and team development, and group liabilities. (Irreg.)

**G5153 Design, Evaluation, and Statistics.** Prerequisite: Graduate standing or permission of instructor. Covers applied research designs such as quasi-experimental and correlation designs; covers basic statistics, hypothesis testing, correlation/multiple regression, and quality control models. Focus will be on application of statistics in organizational problem solving. (Irreg.)

**G5163 Applied Measurement and Analysis.** Prerequisite: graduate standing or permission of instructor. Focuses on teaching principles and practices of individual and organizational assessment, covering concepts such as validity, reliability, survey and instrument development, and characteristics of organizational data. Techniques for analyzing organizational data and conducting program evaluation will also be discussed. (Irreg.)

**G5173 Technology and Organizations.** Prerequisite: Graduate standing or permission of instructor. Technology impacts every aspect of organizational life. Focus is on the role of technology in obtaining, accessing, moving, and storing knowledge and information, technology and patterns of interaction and communication, automation of work processes, and other topics. (Irreg.)

organizations and global markets. Explores how organizational systems work together to meet global demands, system breakdowns, and assessment of organizational performance. (Irreg.)

**G5373 Technology Management and Industrial Engineering.** Prerequisite: Graduate standing or permission of instructor. Overview of principles, theories and practices of industrial engineering. Will cover integrated product/service and operational process design; productivity and quality improvement; use of technology; and operations management. (Irreg.)

**G5383 Emerging Topics in Project Management.** Prerequisite: Admission to Organizational Dynamics program or instructor's consent. In-depth examination of existing and emerging issues and problems facing project management professionals who work as internal or external consultants. May include issues such as risk management, project selection, conflict resolution, and strategic management decision processes. (Irreg.)

**G5980 Research Masters Thesis.** Prerequisite: permission of instructor. Supervised research in area agreed upon by the student and the instructor. (F, Sp, Su)

## Petroleum Engineering (P E)

**2012 Introduction to Petroleum Engineering Systems.** Prerequisite: Petroleum Engineering major or permission of instructor. Overview of petroleum engineering systems including: uses of petroleum products, exploration, exploitation subjects such as drilling, production, reservoir and formation evaluation, transportation and refining; marketing; government regulation and political influence. (Sp)

**2281 Engineering Co-Op Program (Crosslisted with AME, CH E, C E, C S, ECE, ENGR, E PHY, E S, G E, I E 2281).** Prerequisite: student participation in the program. The Co-Op program provides student placement in jobs outside the University, but in a position related to the student's major. On completion of a semester work period, the student submits a brief written report. One hour of credit (elective) granted for each work period, with a maximum credit of six hours. (F, Sp, Su)

**3022 Technical Communications.** Prerequisite: 2012 and English 1213. Skill to be developed: communicating effectively and efficiently; summarizing and distilling; reading for understanding; planning and writing business letters, memoranda, emails, resumes, technical reports; active listening; preparing and delivering oral technical presentations and interviewing skill. (F)

**3113 Production Engineering (Crosslisted with Geological Engineering)**

**3113.** Prerequisite: 3123, Engineering 3223. Single and two-phase flow through pipes, gas lift, sucker rod pumping, submersible pumps, fluid separation, gas dehydration, pipeline system design, corrosion control. (Sp)

**3123 Petroleum Reservoir Fluids.** Prerequisite: 3213 and Engineering 2213 or Aerospace and Mechanical Engineering 2213. Properties of petroleum behavior of gases, phase behavior of liquids, qualitative and quantitative phase behavior of hydrocarbon systems, reservoir fluid characteristics. Application of these concepts to the prediction of gas and gas-condensate reservoir behavior. (F)

**3153 Petrophysics.** Prerequisite: 3123, Engineering 2313; corequisite, Engineering 3223. Porosity, structure, fluid content permeability and flow of fluids in reservoir rocks, and properties responding to well logs.

**Laboratory (F)**

**3213 Reservoir Rock Properties.** Prerequisite: 2012, Geology 1114; corequisite: 3221. Fundamental course establishing primary petrophysical concepts, properties and their measurement. Covers rock types, distribution, composition and structure, porosity, permeability, resistivity, wettability, water saturation, elastic moduli and includes effects of pressure and temperature on rock properties. (Sp)

**3221 Rock Properties Laboratory.** Prerequisite: Geology 1114; corequisite: 3213. Laboratory course aimed at exposing the student to the measurement and analysis of reservoir properties such as porosity, permeability, fluid saturation, grain size, elastic moduli and pore throat sizes. The course will stress safety concerns appropriate for all laboratory procedures, error analyses and report writing. (Sp)

**3222 Petroleum Engineering Practice II (Internship).** Prerequisite: junior standing. Career-related work experience of at least eight weeks in the petroleum industry. The internship may also involve research with faculty members. This internship usually takes place in the summer between the sophomore and junior or the junior and senior years in the students'

curricula. Students must obtain prior approval of proposed internship from instructor. Written report and presentation required. (Su)

**3223 Fluid Mechanics.** Prerequisite: Aerospace & Mechanical Engineering 2113 or Civil Engineering 2113, Aerospace & Mechanical Engineering 2213, Mathematics 2433 & 3113. Coverage of the fundamental of fluid statics and dynamics. Formulation of the equations of fluid flow such as Navier Stokes, Euler, Bernoulli, etc. and their application. Formulation of the momentum and energy equations. Examples of ideal and viscous fluid flow in open and closed conduits. (F)

**3303 Drilling Engineering (Crosslisted with Geological Engineering)**

**3303.** Prerequisite: 3123, Engineering 2153, 3223. History of drilling, methods and equipment, well kicks and blowouts, drilling fluids, pressure losses in circulating systems, penetration rate, rotary drilling techniques, formation damage, drilling costs. (Sp)

**3313 Drilling and Completions I.** Prerequisite: 3213, 3223 or concurrent enrollment, Geology 1114. Drilling operations, drilling costs and economics, drilling fluids, pressure losses in circulating systems, rotary drilling bits and penetration rate, rotary drilling techniques, pore and fracture gradients. (F)

**3413 Subsurface Production Engineering.** Prerequisite: 3123, 3313. Tubing and packer design; hydraulic fracturing and acidizing; oil and gas well performance; vertical lift and choke performance; systems analysis; production operations. (Sp)

**3513 Reservoir Engineering Fundamentals.** Prerequisite: 3123, 3213, and Mathematics 3113. Fundamentals of evaluation of oil and gas reservoirs. Reservoir volumetrics; material balance; Darcy's law and equation of continuity; diffusivity equation; streamlines; well models; introduction to well testing; decline curve analysis; natural water influx. (Sp)

**3723 Numerical Methods for Engineering Computation (Crosslisted with Aerospace and Mechanical Engineering, Chemical Engineering, Computer Science 3723).** Prerequisite: Aerospace and Mechanical Engineering 2401 or Chemical Engineering 2002 or Computer Science 1313 or Computer Science 1323 or Engineering 1001 or Engineering 2003, and Mathematics 3113. Basic methods for obtaining numerical solutions with a digital computer. Included are methods for the solution of algebraic and transcendental equations, simultaneous linear equations, ordinary and partial differential equations and curve fitting techniques. The methods are compared with respect to computational efficiency and accuracy. This course may not be taken for graduate credit within the College of Engineering. (F, Sp)

**3813 Formation Evaluation with Well Logs.** Prerequisite: 3213, 3221. Basic formation evaluation concepts, borehole environment, principles of resistivity, radiation, thermal and elastic wave measurements and measuring tools, applications to formation evaluation using commercial software package. (Sp)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. Covers materials not usually presented in regular coursework. (F, Sp)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. The projects covered will vary. Deals with concepts not usually presented in regular coursework.

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work on a special project in the student's field. (F, Sp)

**G4033 Oil, Gas and Environmental Law.** Prerequisite: senior standing. Review and analysis of legal principles and leading cases related to oil and gas exploration, production and marketing in the areas of land titles, leases, operating agreements, contracts, acquisitions, gas marketing, environmental regulation, pollution, and litigation. (F)

**4113 Oil Field Development.** Prerequisite: senior standing, permission. (For nonengineering majors only). Properties of petroleum fluids and reservoir rocks; geophysical environment and exploration methods; drilling and completion methods; well testing; producing mechanisms; evaluation methods. (F)

**G4233 Subsurface Engineering and Tunneling.** Prerequisite: senior standing in engineering or permission. Engineering properties of earth materials, theories of rock failure, tunneling, mining and excavation procedures; nature of geologic hazards; geothermal, oil shale, oil mining, earthquake, rock bolting, permafrost engineering, etc. (F)

**4313 Well Completions and Stimulation.** Prerequisite: 3303. Well completion selection, casing design, cementing, perforating, hydraulic fracturing, acidizing and chemical stimulation, sand control, well testing. (F)

**4323 Drilling and Completions II.** Prerequisite: 3313 and 3413. Wellbore configuration, well planning, casing design, direction control, drilling program preparation, offshore operations, cost control and AFE, post-drilling review, and economics. (F)

**4331 Drilling and Production Engineering Laboratory.** Prerequisite: 3022, 3413; corequisite: 4423. Properties of drilling and completion fluids; well control; oil and gas well testing; production operations; evaluation of artificial lift systems; gas measurement. (Sp)

**G4413 Oil Field Management and Evaluation.** Prerequisite: 4453. Application of reservoir engineering principles and petroleum economics to the evaluation of oil and gas properties; interpretations of well data; oil property management. (Sp) [V - with 4602]

**4423 Surface Production Engineering.** Prerequisite: 3413. Artificial lift design; sucker rod pumping, electric submersible pumping, plunger lift, and gas lift; design of surface production equipment; oil and gas separation; oil treating; gas dehydration; single and two-phase flow through pipes, fluid measurement; pipeline system design. (Sp)

**+G4453 Oil Reservoir Engineering.** Prerequisite: 3123, 3153 and Engineering 3723. Darcy's Law and its applications; well inflow equations for stabilized flow conditions; oil well testing; gas well testing; material balance equations; predicting reservoir performance; natural water inflow; immiscible displacement. (F)

**+G4462 Reservoir Mechanics Laboratory.** Prerequisite: 4453 or enrollment in 4453. Hydrocarbon phase behavior, saturation pressure, mercury injection method for determining capillary pressures; secondary recovery by gas flooding; gas-oil relative permeability; waterflood studies of plug samples at reservoir overburden pressure; laminar flow studies; enhanced oil recovery, surfactant flooding, polymer flooding; in situ combustion. **Laboratory** (F)

**4521 Reservoir Fluid Mechanics Laboratory.** Prerequisite: 3022, 3513. Laboratory experiences in hydrocarbon phase behavior, saturation pressure, real fluid properties, relative permeability, secondary recovery by water flooding and gas displacement, volumetric reserve estimation, statistical analyses of core data, two-dimensional flow, enhanced oil recovery using surfactants and polymers. (F)

**4533 Applied Reservoir Engineering.** Prerequisite: 3513, and Engineering 3723. Advanced reservoir engineering concepts required for effective production of oil and gas. Reservoir characterization; reservoir heterogeneity and anisotropy; recovery mechanisms; Leverett J-functions; upscaling; flow simulation; history matching and forecasting; uncertainty and risk. (F)

**4543 Improved Recovery Techniques.** Prerequisite: 3413, 4323, and 4533. New wellbore and reservoir techniques for improved recovery. Feasibility analysis; diagnostic techniques; single well operations; infill drilling; horizontal wells and multilaterals; waterflooding; enhanced oil recovery. (Sp)

**4553 Integrated Reservoir Management.** Prerequisite: 3413, 3513, 3813, Geology 3003. Application of petroleum engineering and geoscience principles to the design of the reservoir management plan. The management environment; integrated reservoir description; performance prediction; developing the reservoir management plan; economics. (Sp)

**+G4602 Natural Gas Engineering Laboratory.** Prerequisite: 3113, 3123. Determination of specific gravity and deviation factor of gases; chemical analysis of gas mixtures, determination of gas permeability; testing and calibration of orifice meters, positive displacement meters and regulators; pressure loss measurement along pipes; bottom hole pressure calculations; gas well testing; gas reserves estimation. **Laboratory** (Sp) [V - with 4413]

**4713 Petroleum Project Evaluation.** Prerequisite: 3413, 3513, and 3813. Application of petroleum engineering principles and economics to the evaluation of oil and gas projects; evaluation principles, time value of money concepts, and investment measures; cost estimating, price and production forecasting; risk and uncertainty, project selection, and capital budgeting. (F)

**4990 Special Studies.** 1 to 4 hours. Prerequisite: senior standing. Special research on current or special problems. (F, Sp, Su)

**G5133 Non-Newtonian Fluid Mechanics (Crosslisted with Geological Engineering 5133).** Prerequisite: Engineering 3223 or equivalent.

Characteristics of stress in fluids, the role of Newtonian fluid mechanics, extension of Newtonian analysis to Bingham plastics; fluids without yield

stress, time dependent non-Newtonian fluids, laminar and turbulent flow, boundary layers in non-Newtonian fluids. (Sp)

**G5143 Fluid Flow in Porous Media (Crosslisted with Geological Engineering 5143).** Prerequisite: 4513, graduate standing. Physical concepts involved in the flow of fluids in porous media; treatment of Darcy's Law in a mathematical sense; the concept of relative permeability applied also in a mathematical sense. (F)

**G5243 Introduction to Rock Mechanics (Crosslisted with Geological Engineering 5243).** Prerequisite: senior standing in engineering or permission. Engineering properties of rock; rock testing techniques; in situ methods; mathematical approach to stress-strain analysis; discontinuities in rock; applications for underground openings; rock slopes; foundations and drilling. (Sp)

**G5353 Advanced Drilling.** Prerequisite: 3213, Engineering 3723, Geology 3113, permission. Cost control, hole problems, planning a well, drilling; muds, drilling fluid solids removal, pressure losses, lifting capacity of drilling fluids, surge and swab pressures, pore pressure and fracture gradients, pressure control, well control equipment, blowouts, deviation in boreholes, rotary drilling bits.

**G5423 Advanced Stimulation.** Prerequisite: graduate standing or permission. Theory and application of continuum mechanics concepts to hydraulic fracturing, acidizing, acid fracturing and other stimulation processes. (Irreg.)

**G5433 Horizontal Well Technology.** Prerequisite: engineering degree or equivalent. Horizontal well technology including: horizontal drilling, horizontal well completions and stimulation, pumping and lift systems, well testing, horizontal wells in waterflooding and enhanced oil recovery, costs, economics, regulations, tax incentives.

**G5443 Formation Damage (Crosslisted with GEOL 5443).** Prerequisite: graduate standing or permission of instructor. This course presents an overview of the common formation damage processes, mechanisms, theories, and parameters; methods for diagnosis, determination, and control of formation damage; and application of mathematical models for analysis of laboratory and field data (Irreg.).

**G5533 Petroleum Reservoir Development (Crosslisted with Geological Engineering 5533).** Prerequisite: 4223, 4513, Engineering 3723, Geology 3113 or permission. Petroleum reservoir development and extension. Simulation methods for evaluating a petroleum reservoir, schemes for oil field development. Engineering application of logging and geological, fluid and well-testing data. Student-oriented reservoir simulation projects. (Sp)

**G5543 Waterflooding.** Prerequisite: senior standing, 4511, 4523. Evaluating and operating secondary recovery projects; fundamental consideration of petroleum engineering and reservoir behavior applied to secondary recovery of oil. (F)

**G5553 Well Testing Analysis.** Prerequisite: 4513 or graduate standing. Diffusivity equation; exponential integral solution; principle of superposition; drawdown testing, skin effects, wellbore storage, type curve matching, reservoir limit test; buildup testing, bounded reservoirs, average reservoir pressure; drill stem testing; interference testing; pulse testing; reservoir heterogeneities; anisotropy, stratification, sealing faults. (F)

**G5563 Mathematical Simulation Models.** Prerequisite: graduate standing, permission. Principles of simulating engineering systems by partial differential equation systems; considers the use of engineering principles in formulating mathematical simulation models and analytic techniques for solving the resulting mathematical models. (Sp)

**G5603 Introduction to Natural Gas Engineering and Management.** Prerequisite: graduate standing. Global natural gas supply and demand, international gas trade and infrastructure, gas policy, regulation, safety and environmental issues, natural gas resource base: conventional and unconventional, gas exploration, drilling and production, gas processing, storage and pipeline, gas trading and marketing, gas utilization, LNG, chemicals. (F)

**G5613 Natural Gas Engineering.** Prerequisite: Graduate standing or permission of instructor. Review of properties of natural gases and condensate systems; gas flow in porous media; gas reservoir engineering; gas field development; gas condensate reservoirs; natural gas transportation and storage. (Alt. Sp)

**G5623 Natural Gas Processing.** Prerequisite: graduate standing or permission of instructor. Gas conditioning; processing of gas for its liquids; design of adsorption and absorption facilities; fractionation design. (Alt. Sp)

**G5633 Application of System Dynamics in Natural Gas Management.**

Prerequisite: graduate standing. The limits of classical rationality and decision making, mental model and system thinking, cognitive mapping and hexagon modeling process. Causal loop diagramming, system thinking and system dynamics, strategic planning and scenario management, business simulation tools-Powerism and Ithing, applications in natural gas business process. (Irreg.)

**G5713 Introduction to Geostatistics (Crosslisted with Geological Engineering 5713 and Geology 5713).** Prerequisite: Undergraduate course in statistics or permission of instructor. Introduction to geostatistical concepts, Principles and tools for description and modeling of spatial variability in oil/gas reservoirs and other geological formations. Topics include review of basic statistic concepts, exploratory spatial data analysis, stationary and ergodicity, variogram and covariance, kriging, spatial sampling, stochastic realizations and simulations, conditioning, and indicator kriging. (Sp)

**G5812 Research in Special Petroleum Engineering Problems.** (Sp, Su)

**G5822 Research in Special Petroleum Engineering Problems.**

Prerequisite: 5812. (F)

**G5971 Seminar in Petroleum Engineering.** Prerequisite: graduate standing. Current petroleum literature, lectures, and reports; emphasis upon reservoir behavior and conservation. (F, Sp)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp, Su)

**G5990 Special Studies.** 1 to 4 hours. Prerequisite: graduate standing in petroleum engineering. May be repeated with change of topic; maximum credit twelve hours. Supervised individual study or specialized research in petroleum engineering. (F, Sp, Su)

**G6153 Transport Phenomena in Porous Media (Crosslisted with Geological Engineering 6153).** Prerequisite: 5143 or equivalent.

Fundamental theory of mass, momentum and energy transport in porous media. Emphasis placed upon enhanced oil recovery processes, in situ energy extraction, and other processes relevant to energy production. (Irreg.)

**G6253 Advanced Petrophysics (Crosslisted with Geological Engineering 6253).** Prerequisite: 4513, 4522, graduate standing or permission.

Techniques of sampling petroleum reservoirs with emphasis upon the rock and fluid properties. (Irreg.)

**G6263 Advanced Rock Mechanics I (Crosslisted with Geological Engineering 6263).** Prerequisite: 5243. In-situ stress determinations, effects of stress and strain gradients, time-dependent effects, Griffith's theory, crack phenomena, fracture toughness of rocks, poroelasticity concepts.

**G6273 Advanced Rock Mechanics II (Crosslisted with Geological Engineering 6273).** Prerequisite: 6263. Stereographic projections, properties of discontinuities, fluid flow in fractures, stability and design of rock slopes (two- and three-dimensional).

**G6283 Seismic Reservoir Modeling (Crosslisted with Geology and Geological Engineering 6283).** Prerequisite: Graduate standing or permission of instructor. This course is designed to explore the seismic response of rocks and how it is related to petrophysical parameters. This understanding is key to interpretation of seismic data in terms of subsurface rocks and fluids. (F)

**G6443 Petroleum Production Systems (Crosslisted with Geological Engineering 6443).** Prerequisite: graduate standing, permission. Principles of the development and operation of petroleum production systems. Considers the combined behavior of the reservoirs, the surface equipment, the pipeline system and the storage facilities. Optimization of these systems for various production schedules using queuing theory, linear programming and dynamic programming. (Irreg.)

**G6573 Advanced Reservoir Engineering (Cross-listed with Geological Engineering 6573).** Prerequisite: 4513, 4523 and graduate standing.

Optimization of material balance equations; saturation calculations, with and without counterflow; dynamics of water drive reservoirs; accelerated blowdown of strong water drive gas reservoirs; conformal mapping of oil and gas fields; the subsidiary equation; tracer methods; streamlines; miscible processes; dispersion models and optimum solvent slug size. (Irreg.)

**G6583 Enhanced Oil Recovery (Crosslisted with Geological Engineering 6583).** Prerequisite: graduate standing or permission. New principles of recovery of oil and gas fields including: polymer, surfactants, miscible recovery processes, inert gas injection, emulsions, steam, in situ and wet combustion techniques. (Sp)

**G6612 Drilling Fluids (Crosslisted with Geological Engineering 6612).** Prerequisite: graduate standing and permission of instructor. Theory and

practical application of drilling fluids based upon the theory of colloidal chemistry and the technology of fine particles. (Irreg.)

**G6743 Advanced Evaluation of Petroleum Properties (Crosslisted with Geological Engineering 6743).** Prerequisite: 4513, 4723, graduate standing. Continuation of 4413. More extensive work on evaluation of petroleum and natural gas properties. Actual fields and leases used. (Irreg.)

**G6980 Research for Doctoral Dissertation.** (F, Sp, Su)

## *Philosophy (PHIL)*

**1013 Introduction to Philosophy.** Basic problems of philosophy explored through a consideration of selected philosophers. (F, Sp, Su) [IV-WC]

**1103 Critical Reasoning.** An informal survey of evaluative principles of reasoning. The application of these principles is emphasized, and common errors and fallacies in everyday, ethical, legal, and scientific reasoning are discussed. This course is not a course in formal symbolic logic or mathematical logic. (F, Sp) [III-SS]

**1113 Introduction to Logic.** Prerequisite: MATH 0123 or satisfactory score on Math placement test. An introduction to modern logic and its applications. Emphasis is placed on deductive logic, but may also include some treatment of inductive logic. Various common fallacies and errors in reasoning will also be discussed. (F, Sp, Su) [I-M]

**1203 Philosophy and Human Destiny, East and West.** An inquiry into values bearing upon human destiny or fulfillment with special attention to values inspired by religion in both western and eastern traditions. (Irreg.) [IV-WC]

**1213 Introduction to Ethics.** Basic issues in moral philosophy examined through a consideration of selected philosophers, including a sampling of normative theories as well as an introduction to issues of metaethics. (F, Sp, some Su) [IV-WC]

**2023 Existentialism, Its Sources and Influences.** The historical background and cultural impact of existentialism in its literary, religious, psychiatric and philosophical expressions. Stresses Kierkegaard, Heidegger and Sartre. Briefly treats Nietzsche, Jaspers, Berdyaev, Maslow, Beckett, etc. (Irreg.)

**2403 Introduction to Philosophy of Religion.** A systematic critical discussion of religious world-views. Topics covered include definitions of religion, reason and faith, authority, proofs for God's existence, evil and immortality. (Irreg.)

**2900 Special Topics.** 1 to 4 hours. May be repeated with change of topic; maximum credit nine hours. Topics in philosophy not accommodated by the existing curriculum will be taught from time to time (examples: Islamic philosophy, Navajo thought, feminism). (Irreg.)

**Unless otherwise noted, the prerequisite for courses in philosophy numbered 3000-3999 is six hours of philosophy or junior standing.**

**3033 Philosophy and Literature.** Literature expresses in concrete form what philosophy discusses in abstract terms: views of the world that human beings inhabit; views of the nature of human freedom and rationality; and views of the good human life. Use of literature to illustrate philosophical issues, and philosophy to reveal the unstated assumptions and implications of selected literary works. (Irreg.) [IV-WC]

**3043 Philosophy and Film.** Prerequisite: six hours of philosophy or junior standing. Use of films to shed light on philosophical issues, and philosophy to reveal the philosophical assumptions and implications of selected films. Training in philosophical modes of thought can enrich our understanding of film-as of other cultural products and activities-by revealing dimensions that might otherwise go unnoticed or insufficiently appreciated. (Irreg.) [IV-WC]

**3113 Reasoning, Judgment and Decision Making.** Prerequisite: Six hours of philosophy or junior standing; and Math 0115 or equivalent; math placement test. This course covers the three basic approaches to reasoning and decision making. The first (normative) component covers the basics of probability theory and decision theory. The second (descriptive) component focuses on research on the ways people actually reason. The third (prescriptive) component focuses on ways of improving reasoning. (Irreg.) [I-M]

**3123 Logic and Scientific Method.** Recommended especially for students majoring in the sciences, engineering or business. An introduction to scientific method and some aspects of logic. (alt. Sp) [I-O]

**3253 History of Ethics.** Prerequisite: six hours of philosophy. A survey of the major figures in the history of moral philosophy with emphasis on their interrelations, influences on each other and effect on contemporary moral philosophy. (Sp) [IV-WC]

**3273 Ethics and Business.** Prerequisite: Six hours of philosophy or junior standing. A study of how ethics illuminates business activities. Topics include: the philosophical bases of capitalism; the legitimacy of the profit motive; virtue and the marketplace; corporate responsibility; government regulation; the marketplace and the environment; the ethics of advertising; employee privacy; and the challenges posed by the developing information age. (Irreg.) [IV-WC]

**3283 Religion and the Environment.** Prerequisite: Six hours of philosophy or junior standing. Will examine how various religious traditions serve as the source of different philosophical visions of human beings' place in the environment. (Irreg.) [IV-WC]

**3293 Environmental Ethics.** Prerequisite: junior standing or permission of instructor. Surveys the field of environmental ethics. Various principles philosophers use to assign value to the natural world and assign obligations toward nature to human beings are examined by students in order to articulate and defend their own reasoned points of view on environmental questions. (Irreg.) [IV-WC]

**3303 East Asian Philosophy.** Prerequisite: six hours of philosophy or junior standing. Survey and analysis of the major texts and schools of philosophy in East Asia (China, Korea, Japan, and surrounding regions). Included are Confucianism, Taoism, and Buddhism. (Irreg.) [IV-NW]

**3313 History of Ancient Philosophy.** Prerequisite: six hours of philosophy. A survey of Greek and Roman philosophy with concentration on selected readings in classical philosophy from Thales to St. Augustine. (F) [IV-WC]

**3333 History of Modern Philosophy.** Prerequisite: six hours of philosophy. A survey of modern European philosophy with concentration on selected readings from the Renaissance through Kant. (Sp) [IV-WC]

**3353 American Philosophy.** A study of important American philosophers and philosophical movements, from Jonathan Edwards through pragmatism. (Irreg.) [IV-WC]

**3393 Twentieth-Century Anglo-American Philosophy.** Prerequisite: six hours of philosophy or junior standing. Examine major philosophical works from the early twentieth century, drawing from both the logical positivist and pragmatic traditions. The course will trace the development and influence of these theories through the latter part of the century, with an eye toward a better understanding of both the original theories themselves and the subsequent work they inspired and influenced. (Irreg.) [IV-WC]

**3423 Ancient and Medieval Religious Philosophy.** Prerequisite: six hours of philosophy or junior standing. Covers the history of religious philosophy in the West from ancient Greece until the 16<sup>th</sup> century. Major figures studied include Plato, Aristotle, the Stoics, Plotinus, Augustine, Boethius, Anselm, Maimonides, Aquinas, Averroes, Scotus, Ockham, and the Reformers. (Irreg.) [IV-WC]

**3433 Modern Philosophy of Religion.** Prerequisite: six hours of philosophy or junior standing. Covers the history of modern religious philosophy in the West from the 17th to the mid-20th centuries. Major figures studied include Descartes, Pascal, Leibniz, Locke, Hume, Kant, Kierkegaard, Nietzsche, Clifford, James, Freud, and Wittgenstein. (Irreg.) [IV-WC]

**3443 Contemporary Issues in Philosophy of Religion.** Prerequisite: six hours of philosophy or junior standing. Issues currently debated in philosophy of religion. Topics include the rationality of religious belief, the problem of evil, the dilemma of divine foreknowledge and human free will, life after death, the relation between science and religion, and religion and public policy. (Irreg.) [IV-WC]

**3503 Self and Identity.** Prerequisite: 1013 or permission of instructor. Introduction to a number of philosophical topics about the self including personal identity, immortality, unity of self-consciousness, self-knowledge, and nature of self. (Irreg.)

**3533 Language, Communication, and Knowledge.** Prerequisite: six hours of philosophy or junior standing. The nature of language and communication as studied by linguists and philosophers. Topics will include the nature of meanings; the relationship between syntax, semantics, and pragmatics; and the transmission of knowledge through testimony. Combines philosophical readings with readings from the empirical sciences. (Irreg.) [IV-WC]

**3613 Philosophy of Biology.** Prerequisite: six hours of philosophy or junior standing. Philosophical issues raised by evolutionary theory. Topics include creationism versus evolutionary theory; what makes a hypothesis scientific; can evolutionary theory explain psychological or cultural phenomena? (Irreg.) [IV-WC]

**3623 Philosophical Issues in Physics and Cosmology.** Prerequisite: six hours of philosophy or junior standing. Focus on philosophical issues raised by relativity theory (e.g. the nature of space and time), quantum theory (e.g. non-local action, the measurement problem), and cosmology (e.g. how did the universe begin, will it end and how, and what sense can be made of the universe beginning and ending?). (Irreg.) [IV-WC]

**3633 The Nature of Science.** Prerequisite: six hours of Philosophy or junior standing. Issues related to the nature and scope of science. Topics may include distinguishing science from pseudo-science; the nature of scientific theories; the history of scientific progress; and the theory-ladenness of observation. Also, brief comparisons of different special sciences may be made in order to investigate what they have in common and what is special to each. (Irreg.)

**3713 History of Social and Political Philosophy.** Prerequisite: for nonmajors, eight hours of social science. A survey of the views of major philosophers from Plato to the nineteenth century on the nature of man's relation to society and to the state in the context of their wider philosophical (logical, epistemological, metaphysical and ethical) doctrines. Plato, Aristotle, Aquinas, Hobbes, Locke, Rousseau, Hegel and Marx are the chief figures covered, though others will be considered as time permits. (Irreg.)

**3723 Contemporary Social and Political Philosophy.** Prerequisite: six hours of philosophy or junior standing. A study of contemporary discussions of political legitimacy, political obligation, democracy, theories of justice and desert, and accounts of individual and group rights. Topics include issues such as political liberalism and its contemporary critiques; discourse-based political theory; theories of procedural and deliberative democracy; and cultural pluralism. (Irreg.) [IV-WC]

**3811 Philosophy Writing Workshop.** Prerequisite: co-requisite with 3813, 3833 or 3853. Intensive instruction on how to write papers in philosophy. Students will use the workshop to help them write the term paper for a designated target class, in which they must be concurrently enrolled. (F, Sp)

**3813 History of Ancient Philosophy for Majors.** Prerequisite: six hours of philosophy and Philosophy or Ethics and Religion major. A survey of Greek and Roman philosophy with concentration on selected readings in classical philosophy from Thales to St. Augustine. For majors in Philosophy or Ethics and Religion. No student may earn credit for both 3313 and 3813. (F, Sp)

**3833 History of Modern Philosophy for Majors.** Prerequisite: six hours of philosophy and Philosophy or Ethics and Religion major. A survey of modern European philosophy with concentration on selected readings from the Renaissance through Kant. For majors in Philosophy or Ethics and Religion. No student may earn credit for both 3333 and 3833. (F, Sp)

**3853 History of Ethics for Majors.** Prerequisite: six hours of philosophy and Philosophy or Ethics and Religion major. A survey of the major figures in the history of moral philosophy with emphasis on their interrelations, influences on each other and effect on contemporary moral philosophy. For majors in Philosophy or Ethics and Religion. No student may earn credit for both 3253 and 3853. (Sp)

**3900 Special Topics.** 1 to 4 hours. May be repeated with change of topic, maximum credit nine hours. Topics in philosophy not accommodated by the existing curriculum will be taught from time to time. (Irreg.)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Will consist of topics designated by the instructor in keeping with the student's major program. Topics will cover materials not usually presented in the regular courses. (F, Sp, Su)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. The projects covered will vary. The content will deal with concepts not usually presented in regular coursework. (Irreg.)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Will provide an opportunity for the gifted honors candidate to work at a special project in the student's field. (F, Sp, Su)

**3990 Independent Study.** 1 to 3 hours. Prerequisite: one course in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**Unless otherwise noted, the prerequisite for courses in philosophy numbered 4000-4999 is eight hours of philosophy. Other specific prerequisites are so indicated.**

**G4133 Symbolic Logic I.** An introduction to the symbolism and methods of modern deductive logic. (F)

**4293 Ethical Theory (Slashlisted with 5293).** Prerequisite: eight hours of philosophy including an ethics course or permission. A survey of theories of the nature and foundations of morality. Topics may include the analysis of moral language, the justification of moral beliefs, and the status of ethical theories. No student may earn credit for both 4293 and 5293. (Sp)

**4473 Philosophy of Religion (Slashlisted with 5473).** Prerequisite: eight hours of philosophy or permission. Survey of topics in the philosophy of religion. Topics covered include the concept of God, the problem of religious knowledge, the nature of religious language, the problem of evil, and particular thinkers. No student may earn credit for both 4473 and 5473. (Irreg.)

**4513 Metaphysics (Slashlisted with 5513).** Prerequisite: eight hours of philosophy or permission. Survey of major philosophical views about the nature of reality. Topics covered may include the mind-body problem, causation, personal identity, free will and determinism, universals, and the existence of God. No student may earn credit for both 4513 and 5513. (Sp)

**4523 Epistemology (Slashlisted with 5523).** Prerequisite: eight hours of philosophy or permission. Survey on the evaluation of human reasoning and the nature and scope of human knowledge. Topics include skepticism, the nature of justification, the ethics of belief, and the problem of induction. No student may earn credit for both 4523 and 5523. (F)

**4533 Philosophy of Language (Crosslisted with Linguistics 4533; Slashlisted with 5533).** Prerequisite: eight hours of philosophy or permission. Survey of major philosophical views on the nature and workings of language. Topics covered include: meaning and truth, sense and reference, speech acts, and communication. No student may earn credit for both 4533 and 5533. (Irreg.)

**4543 Philosophy of Mind (Crosslisted with Linguistics 4543; Slashlisted with 5543).** Prerequisite: eight hours of philosophy or permission. Survey of major philosophical views on the nature of the mind. Topics covered may include: the nature and unity of consciousness, the mind-body problem, personal identity, the emotions, actions and intentions, self-knowledge, and other minds. No student may earn credit for both 4543 and 5543. (Irreg.)

**4613 Philosophy of Science (Slashlisted with 5613).** Prerequisite: eight hours of philosophy or permission. Survey of main issues in the philosophy of science. Topics will include the structure of scientific theories, theory testing, and the rationale of scientific methodologies. The rationality of scientific belief and the moral constraints on scientific research may also be discussed. No student may earn credit for both 4613 and 5613. (Irreg.)

**4623 Philosophy of the Social Sciences (Slashlisted with 5623).** Prerequisite: nine hours of upper-division social sciences or permission. Survey of issues in the philosophy of the social sciences. Topics covered will include explanation in the social sciences, theory construction, theories and observation, evidence and theory of confirmation, theoretical constructs and operationism, verstehen and objectivity. No student may earn credit for both 4623 and 5623. (Irreg.)

**4713 Survey of Social and Political Philosophy (Slashlisted with 5713).** Prerequisite: Eight hours of philosophy or permission. Survey of important theories in social and political philosophy. Beginning with ancient theories (Plato and Aristotle), to modern social contract theories and the foundations of liberalism (Hobbes, Locke, Rousseau, and Mill), and concludes with the debate between liberals and communitarians (Rawls and his critics). No student may earn credit for both 4713 and 5713. (Irreg.)

**4763 Philosophy of Law (Slashlisted with 5763).** Prerequisite: eight hours of philosophy or permission. Survey of philosophical treatments of concepts and problems fundamental to the law, including (a) the origin, ground, status, justification and language of laws and systems of laws; (b) legal right and duties; and, (c) the nature and justification of legal sanctions. No student may earn credit for both 4763 and 5763. (Irreg.)

**4893 Senior Capstone in Philosophy.** Prerequisite: graduating majors. Covering the major areas of philosophy taught in the undergraduate major, coordinated with the departmental objectives for undergraduate majors and for the purpose of assessing the level of learning among graduating seniors. (Sp) [V]

**4900 Special Topics.** 1 to 3 hours. Prerequisite: eight hours of philosophy. May be repeated with change of topic; maximum credit nine hours. Topics in philosophy not accommodated by the existing curriculum. (Irreg.)

**4990 Independent Study.** 1 to 3 hours. Prerequisite: three courses in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**Unless otherwise noted, the prerequisite for courses in philosophy numbered 5000 and above is 12 hours of philosophy. Other specific prerequisites are so indicated.**

**G5143 Symbolic Logic II (Crosslisted with Linguistics 5143).** Further study of first order predicate logic: identity, axiomatic development. Various metatheorems; soundness, consistency and completeness. (Alt. Sp)

**G5293 Ethical Theory (Slashlisted with 4293).** Prerequisite: graduate standing. A survey of theories of the nature and foundations of morality. Topics may include the analysis of moral language, the justification of moral beliefs, and the status of ethical theories. No student may earn credit for both 4293 and 5293. (Sp)

**G5313 Studies in Ancient Philosophy.** Prerequisite: 3313. May be repeated with change of content; maximum credit 18 hours. Survey of philosophical writings of a major ancient Greek philosopher, typically Plato and Aristotle. Works covering different philosophical topics and written at different stages in the philosopher's development will be studied. Selection of figure will alternate each year the course is offered. (Sp)

**G5333 Studies in Modern Philosophy.** May be repeated with change of content; maximum credit 18 hours. Survey of philosophical writings of major philosophers. Figures covered will alternate each year between the Rationalists (Descartes, Leibniz, and Spinoza) and the Empiricists (Locke, Berkeley, and Hume), though other combinations (e.g., Locke and Leibniz) may be offered. (F)

**G5353 Studies in American Philosophy.** May be repeated with change of content; maximum credit 18 hours. Survey of philosophical writings of a major American philosopher or group of American philosophers. (Irreg.)

**G5473 Philosophy of Religion (Slashlisted with 4473).** Prerequisite: graduate standing. Survey of topics in the philosophy of religion. Topics covered include the concept of God, the problem of religious knowledge, the nature of religious language, the problem of evil, and particular thinkers. No student may earn credit for both 4473 and 5473. (Irreg.)

**G5513 Metaphysics (Slashlisted with 4513).** Prerequisite: graduate standing. Survey of major philosophical views about the nature of reality. Topics covered may include the mind-body problem, causation, personal identity, free will and determinism, universals, and the existence of God. No student may earn credit for both 4513 and 5513. (Sp)

**G5523 Epistemology (Slashlisted with 4523).** Prerequisite: graduate standing. Survey on the evaluation of human reasoning and the nature and scope of human knowledge. Topics include skepticism, the nature of justification, the ethics of belief, and the problem of induction. No student may earn credit for both 4523 and 5523. (F)

**G5533 Philosophy of Language (Crosslisted with Linguistics 5533; Slashlisted with 4533).** Prerequisite: graduate standing. Survey of major philosophical views on the nature and workings of language. Topics covered include: meaning and truth, sense and reference, speech acts, and communication. No student may earn credit for both 4533 and 5533. (Irreg.)

**G5543 Philosophy of Mind (Crosslisted with Linguistics 5543; Slashlisted with 4543).** Prerequisite: graduate standing. Survey of major philosophical views on the nature of the mind. Topics covered may include: the nature and unity of consciousness, the mind-body problem, personal identity, the emotions, actions and intentions, self-knowledge, and other minds. No student may earn credit for both 4543 and 5543. (Irreg.)

**G5613 Philosophy of Science (Slashlisted with 4613).** Prerequisite: graduate standing. Survey of main issues in the philosophy of science. Topics will include the structure of scientific theories, theory testing, and the rationale of scientific methodologies. The rationality of scientific belief and the moral constraints of scientific research may also be discussed. No student may earn credit for both 4613 and 5613. (Irreg.)

**G5623 Philosophy of the Social Sciences (Slash-listed with 4623).** Prerequisite: graduate standing. Survey of issues in the philosophy of the social sciences. Topics covered will include explanation in the social sciences, theory construction, theories and observation, evidence and

theory of confirmation, theoretical constructs and operationism, verstehen and objectivity. No student may earn credit for both 4623 and 5623. (Irreg.)

**G5713 Survey of Social and Political Philosophy (Slashlisted with 4713).** Prerequisite: Eight hours of philosophy or permission. Survey of important theories in social and political philosophy. Beginning with ancient theories (Plato and Aristotle), to modern social contract theories and the foundations of liberalism (Hobbes, Locke, Rousseau, and Mill), and concludes with the debate between liberals and communitarians (Rawls and his critics). No student may earn credit for both 4713 and 5713. (Irreg.)

**G5763 Philosophy of Law (Slashlisted with 4763).** Prerequisite: graduate standing. Survey of philosophical treatments of concepts and problems fundamental to the law, including (a) the origin, ground, status, justification and language of laws and systems of laws; (b) legal right and duties; and, (c) the nature and justification of legal sanctions. No student may earn credit for both 4763 and 5763. (Irreg.)

**G5833 Gender, Values, and Education (Crosslisted with EDFN 5833).** Prerequisite: graduate standing or permission of instructor. May be repeated with change of topic; maximum credit six hours. Topics vary each semester, but are developed from philosophical studies in and about education, politics, ethics, aesthetics, law and religion that address the issues of gender and sexuality. Intensive oral and written theoretical inquiry. (Irreg.)

**G5900 Special Topics.** 1 to 3 hours. Prerequisite: graduate standing. May be repeated with change of topic; maximum credit nine hours. Topics in philosophy not accommodated by the existing curriculum. (Irreg.)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp, Su)

**G5990 Independent Study.** 1 to 3 hours. Prerequisite: permission of instructor and adviser. May be repeated with change of subject matter; maximum undergraduate credit eight hours; maximum graduate credit 12 hours. (F, Sp, Su)

**G6010 Writing Educational Inquiry (Crosslisted with EDFN 6010).** 1 to 3 hours. Prerequisite: graduate standing, enrollment in any graduate EDFN or philosophy course, and permission based on review of academic writing samples. May be repeated; maximum credit nine hours. Individual or group tutorial study of informal logic and rhetorical theory concerning academic writing as a social practice. Emphasis on contextually appropriate documentation practices, philosophical moves, and rhetorical devices; development of clarity and grace in written formulations of educational concepts and values. Address various scholarly and professional situations. Aimed toward public presentation or publication. (F, Sp)

**G6013 Gender, Knowledge and Inquiry (Crosslisted with EDFN 6013).** Prerequisite: graduate standing and Womens' Studies 4003 or equivalent, or any graduate-level course in research methods or philosophy, or three graduate hours in EDFN. Interdisciplinary seminar introducing feminist criticisms of epistemology and exploring their possible significance for design and practices of gender sensitive inquiry in various academic fields and educational contexts. (F)

**G6173 Seminar in Logic.** Prerequisite: 4133 or permission. May be repeated with change of subject matter; maximum credit 12 hours. (Irreg.)

**G6203 Seminar in Ethics.** May be repeated with change of subject matter; maximum credit 12 hours. (F, Sp)

**G6393 Seminar in the History of Philosophy.** May be repeated with change of subject matter; maximum credit 12 hours. (Irreg.)

**G6473 Seminar in Philosophy of Religion.** Prerequisite: 5473 or permission. May be repeated with change of content; maximum credit 12 hours. Intensive seminar on a topic in the philosophy of religion. (Irreg.)

**G6513 Seminar in Metaphysics.** Prerequisite: 5513 or permission. May be repeated with change of content; maximum credit 12 hours. Intensive seminar on a topic in metaphysics. (Irreg.)

**G6523 Seminar in Epistemology.** Prerequisite: 5523 or permission. May be repeated with change of content; maximum credit 12 hours. Intensive seminar on a topic in epistemology. (Irreg.)

**G6533 Seminar in Philosophy of Language.** Prerequisite: 5533 or permission. May be repeated with change of content; maximum credit 12 hours. Intensive seminar on a topic in the philosophy of language. (Irreg.)

**G6543 Seminar in Philosophy of Mind.** Prerequisite: 5543 or permission. May be repeated with change of content; maximum credit 12 hours. Intensive seminar on a topic in the philosophy of mind. (Irreg.)

**G6593 Seminar in Contemporary Philosophy.** May be repeated with change of subject matter; maximum credit 12 hours. (Irreg.)

**G6613 Seminar in Philosophy of Science.** Prerequisite: 5613 or permission. May be repeated with change of content; maximum credit 12 hours. Intensive seminar on a topic in the philosophy of science. (Irreg.)

**G6763 Seminar in Philosophy of Law.** Prerequisite: 5763 or permission. May be repeated with change of content; maximum credit 12 hours. Intensive seminar on a topic in the philosophy of law. (Irreg.)

**G6793 Seminar in Social and Political Philosophy.** May be repeated with change of subject matter; maximum credit 15 hours. (Irreg.)

**G6980 Research for Doctor's Dissertation.** (F, Sp, Su)

## Physics (PHYS)

The department offers courses which are slashlisted so undergraduate students may take an undergraduate 4000-level course while graduate students may take a graduate 5000-level course. The lectures in a slashlisted course are the same. However, students in the 5000-level course have substantial additional requirements beyond those for students in the 4000-level course. These additional requirements are listed in the slashlisted course syllabus.

**1114 General Physics for Non-Science Majors.** Prerequisite: high school algebra II. Not open to students who intend to do major work in mathematics or physical science. Not open to students with credit in 1205, 2414 or 2514. Concepts of force, energy, matter, atomic physics, electricity, light, presented as a part of a liberal education. (F, Sp, Su) [II-NL]

**1205 Introductory Physics I for Physics Majors.** Prerequisite: enrollment in Mathematics 1823 or permission of instructor. To be taken by physics, astronomy and engineering physics majors during the first semester of their freshman year. Kinematics, dynamics, work and energy, many-particle systems, rigid body rotation, simple harmonic motion. Laboratory is an integral part of the course. **Laboratory** (F) [II-LAB]

**1215 Introductory Physics II for Physics Majors.** Prerequisite: 1205 or permission of instructor. Electricity and magnetism: static fields and forces, circuits, electromagnetic induction. Thermodynamics: the First and Second Laws, temperature, heat, work and entropy. Laboratory is an integral part of the course. **Laboratory** (Sp)

**1311 General Physics Lab I.** Corequisite: 2414 or 2514. Experiments in basic law of mechanics and thermodynamics. (F, Sp, Su) [II-LAB]

**1321 General Physics Lab II.** Corequisite: 2424 or 2524. Experiments in basic laws of electricity, magnetism, and optics. (F, Sp, Su) [II-LAB]

**1453 Musical Acoustics.** An introduction to the science of sound and its propagation with special emphasis on the production of sound by musical instruments and the voice, psychological aspects of sound perception, and room acoustics. Topics are explored through lectures, demonstrations, and discussions. No previous musical experience or proficiency is required. Not for major credit. (F) [II-NL]

**2203 Introductory Physics III: Modern Physics.** Prerequisite: 1215 or 2524 (or concurrent enrollment), or permission of instructor. An introduction to and overview of key concepts in contemporary physics, with emphasis on the contrast between classical and modern ways of thinking about the physical universe. Includes an introduction to selected major subject areas, which might include light and optics, relativity, atoms and molecules, the solid state, nuclei, elementary particles, fundamental interactions, cosmology and/or chaos. Students will also explore selected topics in current physics research. (F)

**2302 Electronics Laboratory I.** Prerequisite: 1215 or 2524 or permission of instructor. Introduction to analog and digital electronics. Experiments involve operation and use of basic solid state devices and integrated circuits. Emphasis on design and construction of circuits relating to the use of microprocessors as an interface between computer and experiment. (F)

**2303 Electronics.** Prerequisite: 1215 or 2524 (or concurrent enrollment), or permission of instructor. An introduction to the characteristics of semiconductor electronic components and their use in the design and operation of practical analog and digital electronic circuits. The emphasis will be on gaining a working knowledge of basic circuits and preparation for understanding and building electronic circuits encountered by experimental research physicists. (F)

**2414 General Physics for Life Science Oriented Majors.** Prerequisite: Mathematics 1523 or 1743. Not open to students with credit in 1205 or 2514. Kinematics and dynamics of particles and rigid bodies, gravitation,

equilibrium, momentum, energy, static and flowing fluids, kinetic theory, heat and thermodynamics, vibrations, waves and sound. (F, Sp, Su) [II-NL]

**2424 General Physics for Life Science Oriented Majors.** Prerequisite: 2414. Not open to students with credit in 1215 or 2524. Electric charge, electric field, electric potential, energy, DC and AC currents, magnetic fields, electromagnetic induction, geometrical optics, wave nature of light, optical instruments, early quantum theory, models of the atom, the nucleus, radioactivity, nuclear reactions and nuclear energy. (F, Sp, Su)

**2514 General Physics for Engineering and Science Majors.** Prerequisite: Mathematics 1823. Not open to students with credit in 1205. Vectors, kinematics and dynamics of particles, work and energy systems of particles, rotational kinematics and dynamics, oscillations, gravitation, fluid mechanics, waves. (F, Sp, Su) [II-NL]

**2524 General Physics for Engineering and Science Majors.** Prerequisite: 2514 and Mathematics 2423. Not open to students with credit in 1215. Temperature, heat, thermodynamics, electricity, magnetism, optics. (F, Sp, Su)

**2613 Introduction to Medical Physics.** Prerequisite: 2414 and 2424, or 2514 and 2524. Introduce and review the principles of physics in radiological sciences. Applications in radiography, fluoroscopy, ultrasound, nuclear medicine, magnetic resonance imaging, and radiation therapy will be discussed. May be useful to students in the sciences, engineering, or programs that are affiliated with the practice of medicine or with its technology. (F)

**3043 Physical Mechanics I.** Prerequisite: 1205 or 2514, and Mathematics 3113 or 3413 (or concurrent enrollment); or permission of instructor. Differential equations based continuum mechanics: Newtonian particle mechanics, driven and damped oscillations, vibrations and waves, and their application to other linear systems, non-linear oscillations, introduction to Lagrange's equations. (Sp)

**+G3053 Physical Mechanics II.** Prerequisite: 3043 or permission of instructor. Lagrangian and Hamiltonian dynamics. Non-inertial reference frames. Rigid body motion. Central forces and collisions. Special relativity. (F)

**+G3183 Electricity and Magnetism I.** Prerequisite: 2203, Mathematics 3413 or concurrent enrollment; or permission of instructor. Electrostatics, dielectrics, continuity conditions, magnetic forces and fields, magnetic induction, magnetization, Maxwell's equations. (F)

**+G3223 Modern Physics for Engineers.** Prerequisite: Mathematics 3113 or equivalent. Relativity, atomic structure, nuclear theory, wave mechanics, statistical physics, solid state physics. (F)

**3302 Advanced Lab I.** Prerequisite: 2303 or permission of instructor. Junior-level experiments in physics. (F, Sp)

**3312 Advanced Lab II.** Prerequisite: 3302 or permission of instructor. Junior-level experiments in physics. (F, Sp)

**+G3803 Introduction to Quantum Mechanics I.** Prerequisite: 2203 or permission of instructor. Fundamental ideas of quantum physics. Postulates of quantum theory, wave functions, operators, the Schrödinger equation, one-dimensional systems. Mathematical tools of quantum mechanics. Theory of measurement. Stationary and nonstationary states. (Sp)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Will consist of topics designated by the instructor in keeping with the student's major program. Covers materials not usually presented in the regular courses. (F, Sp, Su)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. The projects covered will vary. Deals with concepts not usually presented in regular coursework. (Su)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work at a special project in the student's field. (F, Sp, Su)

**3990 Independent Study.** 1 to 3 hours. Prerequisite: one course in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**G4153 Statistical Physics and Thermodynamics.** Prerequisite: 3803. Statistical properties of physical systems. Entropy and temperature, the Boltzmann distribution, Fermi-Dirac and Bose-Einstein gases. Thermodynamic functions. Statistical interpretation of thermodynamics. (F)

**G4183 Electricity and Magnetism II.** Prerequisite: 3183. Maxwell's equations, electromagnetic wave equations, propagation of electromagnetic waves, reflection and refraction, radiation. (Sp)

**4213 Nuclear and Particle Physics (Slashlisted with 5213).** Prerequisite: 3803. Basic nuclear structure, nuclear models, radioactivity, nuclear reactions. Particle interactions and families, quark model, weak decays of quarks and leptons. No student may earn credit for both 4213 and 5213. (F)

**4243 Solid State Physics (Slashlisted with 5243).** Prerequisite: 3803. Crystal structure, electrons in simple metals, electron band theory, semiconductors, superconductivity, phonons. No student may earn credit for both 4243 and 5243. (Sp)

**4300 Senior Research Project.** 1 to 3 hours. Prerequisite: senior standing in major and permission of instructor. May be repeated once, or theoretical, to be arranged with individual faculty, leading to a senior thesis. Group seminars to discuss projects and other topics of current interest in physics and astronomy. Total of four hours required for general education capstone. (F, Sp) [V]

**G4803 Introduction to Quantum Mechanics II.** Prerequisite: 3803 or permission of instructor. Quantum mechanics of three-dimensional systems. Angular momentum. Approximation methods: perturbation theory, variational methods. Time-dependent perturbations: transition rates, selection rules. Interaction of radiation with matter. Applications. Quantum mechanics of atoms and molecules. (F)

**4813 Atomic and Molecular Physics (Slashlisted with 5813).**

Prerequisite: 4803. Hydrogen atom: fine structure and external field effects. Many-electron atoms. Interaction with radiation. Molecular bonding. Spectroscopy of diatomic molecules. No student may earn credit for both 4813 and 5813. (Sp)

**4970 Seminar-Selected Topics in Physics.** 1 to 3 hours. Prerequisite: permission of instructor. May be repeated with change of subject; maximum credit six hours. (Irreg.)

**4990 Independent Study.** 1 to 3 hours. Prerequisite: three courses in general area to be studied, permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**G5013 Mathematical Methods in Physics.** Prerequisite: graduate standing. Orthogonal transformations and tensor analysis; partial differential equations and special functions: spherical harmonics, Bessel functions, SHO and hydrogen atom wave functions; theory of complex variables; integral definition of special functions. (F)

**G5153 Classical Mechanics.** Prerequisite: 3053 or equivalent. Hamilton's principle, Lagrange's equations, mechanics of particles and rigid bodies, Hamilton's equations, canonical transformations, Poisson brackets. (F)

**G5163 Statistical Mechanics.** Prerequisite: 4153 or equivalent. Ensembles and thermodynamics, fluctuations, monatomic crystals, ideal gases, phase equilibrium, chemical equilibrium in ideal gas mixtures, ideal gas in an electric field, Bose-Einstein and Fermi-Dirac statistics, blackbody radiation, electrons in metals. (Sp)

**G5213 Nuclear and Particle Physics (Slashlisted with 4213).**

Prerequisite: 4803; graduate standing. Basic nuclear structure, nuclear models, radioactivity, nuclear reactions. Particle interactions and families, quark model, weak decays of quarks and leptons. No student may earn credit for both 4213 and 5213. (F)

**G5243 Solid State Physics (Slashlisted with 4243).** Prerequisite: 4803; graduate standing. Crystal structure, electrons in simple metals, electron band theory, semiconductors, superconductivity, phonons. No student may earn credit for both 4243 and 5243. (Sp)

**G5393 Quantum Mechanics I.** Prerequisite: 4803 or equivalent. Topics in nonrelativistic quantum mechanics including the Heisenberg and Schroedinger pictures, Dirac formalism, angular momentum, bound states of spherically symmetric potentials, time independent perturbation theory; potential scattering. (Sp)

**G5403 Quantum Mechanics II.** Prerequisite: 5393. Time-dependent perturbation theory, electromagnetic interactions, spin and angular momentum coupling, symmetry and statistics, density matrix, multiparticle systems. (F)

**G5573 Electrodynamics I.** Prerequisite: 4183 or equivalent. Topics covered include special relativity; 3+1 and 4-dimensional Maxwell theory; charged particle and electromagnetic field Langrangians; conservation of

energy, momentum and angular momentum; delta function sources and Green's function for Maxwell's theory. (F)

**G5583 Electrodynamics II.** Prerequisite: 5573. Topics include: applications of advanced and retarded Green's functions to time-dependent electric and magnetic dipoles, and acceleration point charges; synchrotron radiation; Bremsstrahlung; radiation damping and classical renormalization. (Sp)

**G5813 Atomic and Molecular Physics (Slashlisted with 4813).**

Prerequisite: 4803; graduate standing. Hydrogen atom: fine structure and external field effects. Many-electron atoms. Interaction with radiation. Molecular bonding. Spectroscopy of diatomic molecules. No student may earn credit for both 4813 and 5813. (Sp)

**G5910 Problems in Natural Science (Crosslisted with Botany,**

**Microbiology, Zoology 5910).** 1 to 2 hours. Prerequisite: admission to candidacy for degree of Master of Natural Science. (F, Sp, Su)

**G5970 Seminar—Selected Topics in Modern Physics.** 1 to 3 hours.

Prerequisite: permission. May be repeated with change of subject matter; maximum credit for master's degree six hours, for doctor's degree 12 hours. (F, Sp, Su)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp, Su)

**G5990 Special Studies.** Prerequisite: 12 hours of physics, permission. May be repeated with change of subject matter; maximum credit for a master's degree four hours, for a doctor's degree ten hours. (F, Sp, Su)

**G6213 Advanced Particle Physics.** Prerequisite: 5213, 5403 or equivalents. The theory and phenomenology of the "standard model" of particle physics which encompasses the electro-weak and strong interactions. Topics will include: symmetries, groups and conservation laws; bound states, quarkonium; Feynman diagrams, QED; QCD; weak interactions; gauge theories. (Irreg.)

**G6243 Advanced Solid State Physics.** Prerequisite: 4243, 5403, or equivalents. The physics of metals, semiconductors and insulators. Free electron theory, crystal structure and phonons, electron band theory, semiclassical model, applications to electronic and optical properties of solids, effects of magnetic fields. (Irreg.)

**G6283 Advanced Atomic/Molecular Physics.** Prerequisite: 5403, 5813, or equivalents. Calculation and evaluation of electronic wave functions for atoms and molecules via Hartree-Fock and configuration interaction methods; the Born-Oppenheimer approximation and ro-vibrational wave functions; molecular quantum states and group theory; fine and hyperfine structure. (Irreg.)

**G6333 General Relativity.** Prerequisite: 5013, 5583. The mathematical and physical basis for the relativistic theory of gravitation; the principle of equivalence; tensor analysis; Einstein's field equations; tests of general relativity; gravitational collapse; cosmology; toward a quantum theory of gravity. (Irreg.)

**G6433 Quantum Field Theory.** Prerequisite: 5403. Canonical quantization of scalar and spinor fields; perturbation theory and Feynman diagrams; renormalization; path integral formulation; renormalization group; gauge fields with selected applications to QED, electro-weak theory and QCD. (Irreg.)

**G6810 Seminar on Atomic and Molecular Collision Dynamics.** 1 to 3 hours. Prerequisite: permission. May be repeated with change of subject matter; maximum credit nine hours. A research seminar devoted to the study of specialized topics in atomic and molecular collisions. Topics selected will reflect the interests of instructor and students. (Irreg.)

**G6821 Seminar on Chemical Physics.** Prerequisite: permission of instructor. May be repeated with change of subject matter; maximum credit nine hours. A research seminar devoted to the study of specialized topics in chemical physics. Topics selected will reflect the interests of instructor and students. (Irreg.)

**G6831 Seminar on Applied Physics.** Prerequisite: permission of instructor. May be repeated with change of subject matter; maximum credit nine hours. A research seminar devoted to the study of specialized topics in applied physics. Topics selected will reflect the interests of instructor and students. (Irreg.)

**G6841 Seminar on Nuclear and Particle Physics.** Prerequisite: permission of instructor. May be repeated with change of subject matter; maximum credit nine hours. A research seminar devoted to the study of specialized topics in nuclear and/or particle physics. Topics selected will reflect the interests of instructor and students. (Irreg.)

**G6851 Seminar on Solid State Physics.** Prerequisite: permission of instructor. May be repeated with change of subject matter; maximum

credit nine hours. A research seminar devoted to the study of specialized topics in solid state physics. Topics selected will reflect the interests of instructor and students. (Irreg.)

**G6860 Advanced Topics in Mathematical Methods in Physics.** 1 to 3 hours. Prerequisite: 5013 or permission. May be repeated with change of content; maximum credit nine hours. Topics covered will be selected by instructor and announced prior to the term in which it will be offered. The course is intended to offer material currently used in theoretical physics. (Irreg.)

**G6980 Research for Doctor's Dissertation.** (F, Sp, Su)

## Political Science (P SC)

The department offers courses which are slashlisted so undergraduate students may take an undergraduate 4000-level course while graduate students may take a graduate 5000-level course. The lectures in a slashlisted course are the same. However, students in the 5000-level course have substantial additional requirements beyond those for students in the 4000-level course. These additional requirements are listed in the slashlisted course syllabus.

Courses offered through the Advanced Programs format have a two-hour credit award with a one-hour additional independent study option, and the course numbers are listed on the transcript as ending with 2 and 1. To gain the full equivalent of the content as the comparable course listed on campus, both the two-hour and one-hour enrollment must be completed.

**1113 American Federal Government.** Not accepted for major credit. A study of the structure, organization and powers of the executive, legislative and judicial branches including relationships between state and national governments. Emphasis upon political processes and popular government; elections, political parties, pressure groups, voting behavior. (F, Sp, Su) [III-PSC]

**2001 Political Science, Fields and Careers.** An introduction to the academic sub-fields of the discipline, and provides career guidance and information relevant to post-BA employment, graduate schools, law schools, and government service. (F, Sp)

**2013 Introduction to Political Analysis.** Prerequisite: 1113. Scientific method and the variety of approaches to a science of politics; problems of research design; methods and techniques of systematic political inquiry. (F)

**2103 Politics in America.** Prerequisite: 1113. Focuses on the practice of politics in the United States and the forces and ideas that shape political conflict and determines who wins. The three major national institutions of American government are considered: Congress, the presidency, and the judiciary. Examines their constitutional bases of power, their evolving relationships, and their roles in contemporary policymaking. Also considers how ideas and power relationships influence the shape of political conflict. Contemporary political issues will be integrated into course content. (F)

**2113 Introduction to American Political Process and Behavior.**

Prerequisite: 1113. Focuses on political processes and behavior. Elections, parties, interest groups, PAC's, social movements, and political culture will be given consideration. The primary focus will be the linkages between citizens, the government and public policies. Political representation and participation will be considered thoroughly. (Sp)

**2173 Administration and Society.** Prerequisite: 1113. Studies relation of public administration to legislators, executives, and courts; and challenges to public management, such as diversity, equality, and justice. Topics include government budgeting, personnel, leadership, and organizing and delivering programs and services. Focuses on how to maintain ethics and accountability and increase efficiency and effectiveness in public programs. (F, Sp)

**2223 Making Public Policy.** Prerequisite: 1113. Explores government actions to address social problems such as crime, poverty, health care, education, welfare reform, and the environment. Focuses on how to craft policy responses to conflict situations; resolve competing political demands for more services yet lower taxes; and achieve important societal goals of efficiency, equity, fairness, and freedom. (F)

**2503 Relations Among Nations.** Prerequisite: 1113. Introduces students to sources of continuity and change in world politics. Emphasis is given to the struggle for power and search for peace among state and non-state actors. Additional topics include the relevance of international law, foreign policy decision-making, balance of power, collective security, and moral choices in international politics. (F)

**2603 Governments Around the World (Crosslisted with International and Area Studies 2603).** Prerequisite: 1113. Gateway course in political science and international and area studies. Provides an introduction to the varieties of politics and governmental systems around the world. Students will develop skills in comparative analysis to understand why countries have distinct types of government. (F) [IV-WC]

**2703 Justice, Liberty and the Good Society.** Prerequisite: 1113. An introduction to the literature about the best form of government, how a just a free society should be designed, and what difficulties stand in the way of our pursuit of the good society. Topics may include: the classic idea of a republic, theories shaping American democracy, the theory of equality and liberty, and contemporary ideas for the critical analysis and improvement of democracy. (F, Sp)

**Unless otherwise noted, the prerequisite for courses in political science numbered 3000–3999 is five hours of political science, or 1113 and three hours of another social science, or junior standing and permission of instructor.**

**3020 Problems in American Government and Politics.** 1 to 3 hours. Prerequisite: 1113 or permission of instructor. May be repeated with change of subject matter; maximum credit nine hours. Will not assume prior knowledge on the part of the students in reference to the topics under examination. The focus is on the national government, including the political processes and policies that relate to it. (F, Sp)

**3023 Law and Courts.** Prerequisite: 1113 or permission of the instructor. This is an introduction to the judicial process, origin and sources of law, and the relationship between courts and other sectors of the American political system. It will focus on the criminal justice system, civil justice system, constitutional law, judicial selection, judicial policymaking, and how interest groups use the courts. (F)

**3033 Religion and Politics in America.** Prerequisite: 1113. Examines the diverse religious traditions in America and explores their political manifestations. Assesses the religious impact on voting, lobbying, political mobilization and political culture. Particular attention will be paid to the strategic environment in which religious political actors must operate. [IV-WC]

**3043 Gender, Power and Leadership in Politics and Administration (Crosslisted with Women's Studies 3043).** Prerequisite: 1113. Focuses on the relationship between gender, power, leadership, and government in politics and public administration. Causes of under-representation of women in elected office and the bureaucracy are explored. Historical, social, psychological, and organizational barriers are considered. (Irreg.)

**3053 Global Religion and American Foreign Policy.** Prerequisite: 1113 or permission of instructor. This course examines the intersection of American faith-based movements, global religious developments, and U.S. foreign policy. It explores how global religious conflicts impinge on American foreign policy, and how domestic religious groups attempt to shape U.S. policy on such concerns as human rights, humanitarian aid, and conflict mediation. (F, Sp)

**3090 Special Topics.** Prerequisite: 1113 or permission of instructor. May be repeated with change of content; maximum credit nine hours. Topics considered will deal with issues whose subject matter spans two or more subfields of the undergraduate curriculum in political science and/or public affairs and public administration. (Irreg.)

**3123 Social Statistics (Crosslisted with Sociology 3123).** Prerequisite: Sociology 1113 or permission of instructor. Descriptive and inferential statistics as they are used in sociology to analyze survey and macro-level data. Problems of research design and interpretation of analysis in sociological theory are major topics. A grade of C or higher in this course is a prerequisite for Sociology capstone courses. (F, Sp, Su)

**3133 Politics and Public Administration.** Examines the concept of the political role of the bureaucracy and the impact of other government institutions on bureaucratic structure, functions and behavior. The role of the bureaucracy in public policy making and the influence of politics on policy implementation is analyzed. (F) [III-SS]

**3143 U.S. Congress.** An introduction to the legislative process, with emphasis upon the United States Congress: the legislative process, committee systems; legislative leadership; the legislator and constituents; lobbyist and interest groups; legislative-executive relations. (Sp)

**3163 The American Presidency.** Prerequisite: 1113. Examination of the constitutional, electoral, administrative and political aspects of the contemporary American presidency; ending with an assessment of its capabilities in the context of its demands. (F)

**3170 Problems in Public Administration.** 1 to 3 hours. Prerequisite: five hours of political science or three hours of another social science, or junior standing and permission of instructor. May be repeated with change of subject matter; maximum credit nine hours. Special topics and/or problems in the field of public administration not covered in the regular curriculum or by supervised individual study. The course will involve readings appropriate to the subject matter and requires completion of a substantial paper. Additional requirements will be covered by the instructor in the syllabus. (Irreg.)

**3173 Theory of Public Organizations.** Prerequisite: 1113 and 2173. Analyzes public organizations to distinguish them from private organizations. Looks at the intellectual heritage of Adam Smith, Marx, Weber and Freud and the political theory of American public organizations from Wilson, through the "Principles" writers, to the administrative behavior schools and modern open systems. (F)

**3183 Politics of Government Budgeting.** Prerequisite: 2173. Provides an introduction to budgeting and the budgetary process in American government. Budgeting decision-making about government revenues and expenditures. (Sp)

**3203 Sexuality, Gender, and the Law.** Prerequisite: P SC 1113 or permission of the instructor. The course will examine a number of the most politically significant legal debates regarding gender and sexuality. Though the issues covered will vary by semester, they will include many of the following: discrimination on the basis of gender and sexual orientation, reproductive rights, the regulation of pornography, same-sex marriage, sexual harassment in the workplace, and the right to sexual privacy. (Irreg.)

**3213 Law, Politics, and Society.** Prerequisite: 1113 or permission of instructor. Examines how courts and other political actors use law to solve problems and how judicial decisions incorporate legal and political considerations. It explores how law shapes or alters the political community, the extent that law changes to fit needs of society, and the role of politics in interpretation of law. (Sp)

**3220 Topics in Public Policy.** 1 to 3 hours. Prerequisite: 1113. May be repeated with change of content; maximum credit six hours. Research and investigation on selected topics in public policy. (Irreg.)

**3233 Environmental Policy and Administration.** Prerequisite: 1113. Characterizes the evolution of public sector involvement in protection of the environment; addresses current issues associated in environmental protection including administrative efficiency and effectiveness and intergovernmental relations, and assesses potential solutions to emerging environmental problems. (F)

**3243 Health Policy.** Prerequisite: 1113 and junior standing. Analyze United States health policy, the impact of health policy on the nation's health, and contemporary health policy issues. (Irreg.)

**3253 Human Resource Management.** Deals with the techniques, problems and processes of human resource management at the undergraduate level. Specific topics include: civil service reform, recruitment and training in the public sector and public sector EEO and labor problems. (Sp)

**3303 The Government of Oklahoma.** Oklahoma government and politics; organization, structure, functions and administrative problems of Oklahoma state and local governments; constitution of Oklahoma; legislative, executive and judicial departments; political parties; election system; fiscal and administrative systems. (Irreg.)

**3313 Urban Government and Politics.** Structure and function of urban governments and analysis of politics in urban areas. (F)

**3323 State Government.** The organization, structure, functions, and administration of American state and local governments; federal-state relations; constitutions and legal systems; legislative, executive, and judicial departments; a study in the political process; problems of metropolitan areas; fiscal and administrative systems. (F)

**3403 Interest Groups and Social Movements.** Role of interest groups and collective action in the political process; theory of collective action and development of American pressure groups; group organization and internal behavior; patterns of external behavior; collective action and foreign political systems; and organized interests and democratic government. (F)

**3413 American Political Parties.** A descriptive and critical examination of the political processes in the United States, with special reference to the role and organization of political parties and their relationship to voter behavior and the popular control of government. (Irreg.)

**3423 Public Opinion.** Relies on three basic themes as a framework for the study of public opinion: coalitions, elites and masses. More specific

subjects studied include political socialization, the parties and the media. Students may not take both 3423 and 4013 for credit. (Irreg.)

**3433 Voters and Campaigns.** Prerequisite: 1113. Covers some of the literature on voting behavior and political campaigns: political socialization; political participation; election studies; influence on voting such as party, candidate, issues, and group affiliations; the legal framework and impact of reform; election outcomes and their policy import. Coverage of the campaign process includes party and interest group activity, campaign financing, strategy, the media, and campaign reform. (Irreg.)

**3443 Mass Media and American Politics.** Prerequisite: 1113. Role of mass media in American politics including origin and development of relationship between press and politics, how the press covers politics, effects of mass media on public opinion, political elites, and institutions. (Irreg.)

**3453 Southern Politics.** Prerequisite: 1113 and junior standing, or permission of instructor. Focuses on the history and evolution of southern politics and the role of race, religion, and political culture as these factors impact and give the region its distinctive political features. These factors, plus the realignment of the political parties in these states, contribute to southern political strength in Congress, which in turn impacts national politics as a whole. The course will examine all of these factors both in terms of institutional structures and behavioral values. (Sp) [III-SS]

**3463 American Political Development.** Prerequisite: 1113 or permission of instructor. Analyzes the institutional development of American politics. The premise is that institutions are created to solve conflicts at specific historical junctures. Once in place, these institutions create opportunities and constraints for future generations. Focus on explaining large-scale political change in the United States from the founding to the present. (Irreg.) [IV-WC]

**3503 Russian Foreign Policy.** Prerequisite: 1113 or permission of instructor. Traces the history of Russia's foreign relations from the Imperial period to the present, with an emphasis on the origins, conduct and conclusion of the Cold War. Consider Russia's contemporary geopolitical status, the emergence of new military doctrine, relations among the newly independent countries of the former Soviet Union, and Russian integration into the world economic system. (Sp)

**3513 Causes of War.** Prerequisite: 1113 or permission of instructor. This course will examine causes and consequences of war, looking at the changing nature of war, international relations theories about causes of war, and case studies, primarily from the 20<sup>th</sup> century. (Irreg.)

**3550 Topics in International Relations.** 1 to 3 hours. Prerequisite: 1113 or permission of instructor. May be repeated with change of content; maximum credit nine hours. Systematically explores contemporary problem areas in international relations. Will not assume prior knowledge on the part of the students in reference to the topics under examination. Meets in a seminar format where emphasis will be placed on classroom presentations and extensive research papers. (Irreg.)

**3553 International Political Economy.** Prerequisite: 1113. Focus on patterns, processes, and problems of international trade, monetary, technological, and investment relations. Deals with the roles played by key international organizations in managing conflict and cooperation among states. Students learn to apply theoretical approaches in analyzing issues in the global economy. (F) [IV-WC]

**3563 United States Diplomatic History (Crosslisted with History 3563).** Prerequisite: none. A survey of American diplomatic history from the War for Independence to the present, emphasizing relations with major European, Latin American and Far Eastern countries. [IV-WC]

**3600 Topics in Comparative Politics.** 1 to 3 hours. Prerequisite: 1113 or permission of instructor. May be repeated with change of content; maximum credit nine hours. Will examine contemporary issues in politics and government around the world. Meets in a seminar format where emphasis will be placed on classroom presentations and research. (Irreg.)

**3603 Government of England.** Historical background; the political environment; the constitutional structure; the monarch, the cabinet, and the public service; Parliament; political parties and interest groups; the law and courts; local government; external affairs. (F) [IV-WC]

**3613 Politics in Western Europe.** Comparative analysis of the governmental systems of selected European states, with special reference to France, Germany, and the Soviet Union; historical background and political environment; constitutional structure; legislative, executive, and judicial processes; political parties and interest groups; local government. (Sp) [IV-WC]

**3623 Politics of Transitional Areas.** The major characteristics of the political systems of the new states of Asia and Africa. Through an

examination of the common problems of these new nations, the student will not only survey such basic issues as nation building and political modernization, but will increase his/her understanding of new concepts in the field of comparative politics. (F, Sp)

**3633 Politics in East Asia.** Prerequisite: 1113 or permission of instructor. This course provides a survey of politics and political systems in select countries in east Asia and aims at developing comprehensive understanding of contemporary Asian politics. We will identify similarities and differences in the politics of these countries in specific dimensions and explore the basis of each of them. (F) [IV-NW]

**3643 Democracies and Democratization: A Comparative Inquiry.**

Prerequisite: 1113. Studies the theory, history, causes, and prospects for democracy in the world, beginning with ancient Greece and ending with the challenges of democracy and democratization in countries around the world today. Although primarily a social science course, questions about the philosophical underpinnings of democracy are also raised. (Sp) [IV-WC]

**3653 Government and Politics of Latin America.** Prerequisite: 1113 or permission of instructor. General survey of structure, organization and operation of Latin American governments. Problems of dictatorship, underdevelopment, social reform and relations with the United States are covered. (F) [IV-WC]

**3663 Politics of the Middle East.** Prerequisite: 1113 or permission of instructor. This course surveys the developments in current domestic politics in Middle Eastern countries. It will focus on the process of state building, great power politics, Islam and political ideologies, economic crises, and regime stability and change. (Irreg.)

**3673 Politics in Eastern Europe.** Prerequisite: 1113. Explore major developments in Eastern Europe in the post-World War II period. Focus on the revolution of 1989 and the current transition to new political and economic institutions. (Sp) [IV-WC]

**3683 The Politics of Russia.** Prerequisite: five hours of political science, or 1113 and three hours of another social science, or junior standing and permission. Introduction to domestic politics in the Russian Federation. An overview of Russian and Soviet history, focusing on recurrent dilemmas of Russian political life. Special emphasis will be on Gorbachev's reforms, the collapse of communism, the emergence of post-Soviet politics, and the future of Russian democracy, economic institutions and inter-ethnic relations. (F) [IV-WC]

**3703 From Plato to Machiavelli, the Classic Art of Politics.** Prerequisite: 1113 and sophomore standing. Study of the origins of political science or political philosophy in the thought of classical antiquity and of the continuing influence of the classic works. Topics may include: Plato and Aristotle's attempt at a systematic political science; Thucydides on democracy and war; the interaction of religion and politics; and the early modern rebirth of the classical republican era. (F) [IV-WC]

**3713 The Idea of a Liberal Society.** Prerequisite: 1113 and sophomore standing. Study of the major works of modern political thought that inspired the idea of a rights-oriented liberal society. Readings vary, but may include Thomas Hobbes and John Locke, their followers and critics in later centuries (such as Montesquieu, Rousseau, Kant, Hegel, and Mill), and those who later subjected the liberal idea to fundamental criticism (Marx, Nietzsche, and others). (Sp) [IV-WC]

**3723 Foundations of American Politics.** An examination of the principal issues and ideas of the American colonial, revolutionary and founding periods and their influence on, and relevance to contemporary American politics.

**3890 Political Science Interession.** 1 to 3 hours. Prerequisite: five hours of political science, or 1113 and five hours of another social science, or junior standing and permission of instructor. Special permission required for graduate students. May be repeated; maximum credit six hours. Course content varies with instructor. Will focus on specialized subject matter not covered in existing course offerings. (Interession)

**3910 Government Internship.** 2 to 3 hours. Prerequisite: good academic standing with 45 semester hours completed, including nine hours of political science; permission of instructor. May be repeated; maximum credit six hours. Interns observe and participate in the functions, processes and actions of governmental institutions at the federal, state and local level. Grade of S/U based on completion of directed readings, an academic research paper, performance reports. (F, Sp, Su)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Will consist of topics designated by the instructor in keeping with the student's major

program. The topics will cover materials not usually presented in the regular courses. (F, Sp, Su)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. The projects covered will vary. The content will deal with concepts not usually presented in regular coursework. (F, Sp)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Will provide an opportunity for the gifted honors candidate to work at a special project in the student's field. (F, Sp, Su)

**3990 Independent Study.** 1 to 3 hours. Prerequisite: one course in general area to be studied; junior standing; permission of instructor and department. May be repeated; maximum credit six hours. Through a written contract, independent study may be arranged for a topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**Unless otherwise noted, the prerequisite for courses in political science numbered 4000–4999 is eight hours of political science, or 1113 and six upper-division hours of another social science, or junior standing and permission of instructor.**

**4013 Public Opinion and Survey Research.** Prerequisite: 1113 and junior standing. Introduces students to the theory and practice of public opinion through a combination of traditional lecture format with a lab. The division of work is approximately 60% public opinion and 40% survey research, but both components benefit from the incorporation of the other. Students cannot take both P SC 3423 and 4013 for credit. (F)

**4023 Political Psychology and Survey Experiments.** Prerequisite: 1113 and junior standing. Introduction to theories of political psychology, including information processing, persuasion, opinion formation and the role of emotions in political evaluation. The course also introduces the methodology of survey experiments. The substance and method will be interwoven. (Sp)

**4033 Capitol and Community Scholars: A Service Learning Course.** Prerequisite: 1113 and permission of instructor. May be repeated with change of content; maximum credit six hours. The course uses service-learning and weekly seminars to focus on institutions, policy-making and politics in legislative and community settings. (F, Sp, Su)

**4043 Public Policy Implementation (Slashlisted with 5043).** Prerequisite: 2223. This course examines how public laws are implemented. It investigates actors, institutions and processes influential in decisions and actions regarding public program delivery. No student may earn credit for both 4043 and 5043. (Irreg.)

**4093 Capstone Seminar in Political Science.** Prerequisite: senior standing, completion of four of the following courses: 2103, 2173, 2223, 2503, 2603, 2703; and permission of department. Capstone seminar for major in political science. Explore topics in political science for students with substantial background in the discipline and includes a significant writing component. Specific subtitles will vary. (F, Sp) [V]

**G4113 American Foreign Policy from World War II to the Present.** Prerequisite: 1113 or permission of instructor. An analysis of American foreign policy in the twentieth century. Covers the emergence of the United States as a great power, abandonment of isolation, World War II and the development of internationalism, the Cold War and policies of containment, the American involvement in the Far East, Middle East and Latin America. (Irreg.) [IV-WC]

**4143 Policy/Program Evaluation.** Prerequisite: 2223. Introduces the planning and implementation of a variety of evaluation types and methods. Considers the utilization of findings in a political environment. (Irreg.)

**4193 The Profession of Public Management.** Prerequisite: 1113 or permission of instructor. Open to undergraduate students only. Focuses on the internal administrative processes of public agencies, concentrating on the generic management functions of planning, directing and controlling as they relate to the development and implementation of public policy programs. (Irreg.)

**4203 Capstone Seminar in Public Affairs and Administration.** Prerequisite: senior standing and permission of instructor. May be repeated once with change of content. The focus and subtitle will vary. Develops the ability to analyze and interpret the subject matter; contains a substantial writing component. (F, Sp) [V]

**4213 Regulatory Policy.** Prerequisite: junior standing or permission of instructor. Examines the topic of administration and the agencies that are

responsible for these government activities. Emphasizes the constitutional, legal, administrative, and political issues raised by the growth and nature of regulatory activities. (F)

**4220 Problems in Public Policy.** 1 to 3 hours. Prerequisite: 1113 or permission of instructor. May be repeated with change of content; maximum credit nine hours. Research and investigation on selected problems in the field of public policy. (Irreg.)

**4223 Public Policy Analysis.** Prerequisite: 2223. Introduces students to public policy theories and analytical methods. Public policy is placed within the context of similar disciplines and practical applications. (Irreg.)

**4233 Science, Technology and Public Policy.** Prerequisite: 1113 or permission of instructor. An examination of the impact of science and technology on the American political system; the responses of the national government to the technological society. An effort is made to project the consequences of new technologies and define alternative public policy responses. (Sp)

**G4273 Constitutional Interpretation.** Prerequisite: 1113 or permission of instructor. Asks basic questions about the nation's fundamental law: What is the Constitution? Who is authorized to interpret it? How might one authoritatively interpret it? Why should anyone try to interpret it? (F) [IV-WC]

**G4283 Civil Rights and Civil Liberties.** Prerequisite: 1113 or permission of instructor. Investigates the character, function, and enforcement of civil rights and civil liberties in the American constitutional system. (Sp) [IV-WC]

**4293 American Constitutionalism.** Prerequisite: 1113 or permission of instructor. This course focuses on the nature and meaning of constitutional government in America. It is particularly concerned with what is often described as our "unwritten" constitution, how constitutionalism shapes us as citizens, how we are obligated toward it, and how it may legitimately change. (Irreg.)

**4323 Political Communication (Crosslisted with Communication 4323).** Prerequisite: Grade of C or better in Communication 2713, Communication 3023, and Communication 3113. Considers the role of communication in political settings. Major topics include political persuasion, public speaking in political campaigns, political debating, political advertising, bias in news coverage of campaigns. (F, Sp)

**G4420 Topics in Electoral Behavior.** 1 to 3 hours. May be repeated with change of topic; maximum credit nine hours. Topics include voting behavior of the American mass public; cross-cultural research; the methodology of aggregate and survey analysis; computer applications; political attitudes, political socialization and attitude change; sociological, psychological, and cultural dimensions of electoral behavior; resultant behavior in the form of vote direction, registration, turnout, and participation; and theoretical consideration and implications for public policy. (Irreg.)

**G4523 International Organizations and Regimes.** Prerequisite: 1113 or permission of instructor. The course focuses on the organization of international politics via formal multilateral arrangements (international organizations) and informal multilateral agreements (international regimes). (F)

**G4543 The United Nations.** The history, purposes, and politics of the United Nations organization; its strengths and weaknesses in regulating the relations of states; current problems of the United Nations and the Western European institutions. (Irreg.)

**4553 The International Political System.** Prerequisite: 1113 or permission. Sources of continuity and change in the contemporary system of nation states, with an emphasis on theories of war and diplomacy, balance of power, collective security, conflicting values, integration, and political economy. (Irreg.) [IV-WC]

**4603 Comparative Public Policy.** Prerequisite: 2603. Introduces students to the study of public policy in advanced industrial societies; emphasis is placed on understanding differences in policy outcomes in countries with similar economic and political systems; introduces students to the thematic study of different areas of public policy. (Irreg.)

**4613 Conflict, Violence, Warfare: Current Analysis and Future Trends.** Introduces the student to the comparative analysis of different forms of conflict, violence and warfare in the national, regional and international arenas. Provides the means to assess present and future trends in reference to conflict, violence and warfare. (Irreg.)

**4623 Globalization and Industrial Democracy.** Prerequisite: senior standing. Examines the impact of globalization on political economies of the advanced industrial countries, including Germany, Japan, and the United States. Compares industrial policy for economic development and

corporate governance in these countries. Reviews the globalization of finance and commerce. Evaluates the convergence of political and economic activities under globalization. (Irreg.)

**4643 Politics of the European Union.** Prerequisite: 2503 or 2603, or permission of instructor. Examines the political processes and the institutions of the European Union. Particular attention is paid to the historical process of political integration in Europe and the economic and political force that drive integration. (Sp)

**4653 Politics, Literature, and Film.** Prerequisite: junior standing or permission of instructor. Examines important contemporary issues as they are portrayed in literature and film. The topics examined may include the role of women in politics, revolution, terrorism, poverty, etc. The literature and films will be drawn from many different world regions. (Irreg.) [IV-WC]

**4723 Philosophical Issues in American Politics.** Prerequisite: 3723 or permission of instructor. May be repeated with change of content; maximum credit six hours. An in-depth examination of specific philosophical issues and ideas of American politics. Content will vary but may include pluralism, liberalism and conservatism, representation, etc., as well as a focus on the work of specific American political theorists such as Robert Dahl or John Rawls. (Sp) [IV-WC]

**G4730 Topics in Political Theory.** 1 to 3 hours. Prerequisite: sophomore standing. May be repeated with change of content; maximum credit nine hours. Devoted to specific problems and issues in political theory. Content will vary from course to course. Each course will examine a principal problem or issue in some depth. Descriptions of specific courses may be obtained from the department prior to pre-enrollment. (Irreg.)

**G4763 Existential Political Thought.** Prerequisite: 1113 or permission of instructor. An examination of the relationship between existentialist philosophy and western political thought, with particular emphasis upon the influence of Martin Heidegger. Specific topics examined are: development of new outlooks upon traditional conceptions of politics in the West, personal responsibility in a political setting, reexamination of the concept of freedom and rights, and existentialism as a basis of political reform. (Irreg.) [IV-WC]

**4990 Independent Study.** 1 to 3 hours. Prerequisite: three courses in general area to be studied; senior standing; permission of instructor and department. May be repeated; maximum credit six hours. Through a written contract, independent study may be arranged for a topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**Unless otherwise noted, the prerequisite for courses in political science numbered 5000–5999 is 12 hours of political science, or senior standing and permission of instructor.**

**G5003 Introduction to Public Administration.** Prerequisite: graduate standing. An introductory graduate seminar surveying the field of public administration and its role and position in contemporary government, providing a basis from which to undertake advanced studies of theoretical and substantive nature. Attention will be given to key themes in past and present of mainstream public administration, such as the foundation, personnel, organization, and policies of government. (F, Sp, Su)

**G5013 History and Theory of Urban Planning (Crosslisted with Regional and City Planning, Sociology 5013).** Open to seniors in social science departments, civil engineering and architecture, and to graduate students in regional and city planning. An introductory course on the history and theory of contemporary planning, focusing on the physical, social, institutional and economic structure and dynamics of human settlements, and on the role and responsibilities of the professional planner. (F)

**G5023 Problems in American Government.** Content varies with instructor; may be repeated for credit with change of content. The focus is on the national government, including the political process and policies that relate to it. (Irreg.)

**G5043 Public Policy Implementation (Slashlisted with 4043).**

Prerequisite: graduate standing. This course examines how public laws are implemented. It investigates actors, institutions and processes influential in decisions and actions regarding public program delivery. No student may earn credit for both 4043 and 5043. (Irreg.)

**G5103 Organizations: Design, Structure and Process.** Prerequisite: full graduate standing or permission of instructor. Analyzes large, complex organizations, particularly governmental units and other public sector agencies. Attention will be given to the principal theoretical models for their design and structure. Also seeks to understand system-subsystem relationships in the processes of decision making, communication, influence, leadership and technology. (F)

**G5113 Federalism and Intergovernmental Relations.** Covers the origins, development, and operational aspects of federalism in the U.S. Intergovernmental relations as the dynamics of federalism are studied as they impact on decision-making, administrative and fiscal patterns. Decentralization and reorganization are analyzed as they affect the administration of national programs. (Sp)

**G5123 The Making of American Foreign Policy.** A study of American policy formulation with its problems and limitations. Current American foreign policies and alternate courses of action are examined critically. (Irreg.)

**G5133 Strategic Planning and Performance Measurement.** Prerequisite: graduate standing or permission of instructor. Introduces students to strategic planning, performance measurement, and benchmarking in the public sector. Provides an overview of strategic management and illustrates the development, implementation and reformulation of public policy and operational strategy. Emphasis on the changes in an organization's environment. (Irreg.)

**G5143 Program Evaluation.** Methodology of planning and evaluation of government programs. Emphasizes research design, especially experimental and quasi-experimental design, and alternative methods for handling threats to validity of research results. Includes measurement problems, control of variables, and the politics of program planning and evaluation. (Sp)

**G5153 Public Sector Labor Relations.** Prerequisite: none. Covers the techniques of contract negotiations in the public sector, the elements of contract administration, impasse resolution procedures and the variety and complexity of laws under which public sector labor relations occur. (Irreg.)

**G5163 Legislative Process and Behavior.** Prerequisite: graduate standing or permission of instructor. Examination of character of legislative process in United States Congress, American state legislatures and foreign legislative bodies; in-depth exploration of empirical hypotheses and related data concerning legislative process and behavior; major focus on legislature (especially Congress) as institution and on such topics as: committees; norms; socialization; leadership; staff; voting cues. (Irreg.)

**G5170 Problems in Public Administration.** 2 to 3 hours. May be repeated; maximum credit six hours. Research and investigation on selected problems of public administration. Some alternative subjects; administrative theory and organizational theory; bureaucracy; organization and management; government corporations; administrative policy making; responsibility and accountability. (Irreg.)

**G5173 Bureaucracy and Politics.** Prerequisite: graduate standing. Examines the concept of the political role of the bureaucracy and the impact of other government institutions on bureaucratic structure, functions and behavior. The role of the bureaucracy in public policy making and the influence of politics on policy implementation is analyzed. (Sp)

**G5183 Public Budgeting and Finance.** Prerequisite: graduate standing or permission of instructor. Examines the techniques and politics of raising and spending public funds. Discusses topics such as deficit politics, legislative and executive powers, and the budgetary role of the courts. Assesses the impacts of taxing and spending policies. Explores issues relevant to national, state, and local governments. (Sp)

**G5193 Comparative Administration.** Will compare analytically the political, legal, economic and cultural influences. Similarities and contrasts in the bureaucratic functions and structures will be examined and attention given to organization around the chief executive, both centrally and in departments and ministries. (Irreg.)

**G5203 Urban Land Use Controls (Crosslisted with Regional and City Planning, Sociology 5203).** Open to seniors in social sciences, architecture and civil engineering, and to graduate students in regional and city planning. Provides a study of the historical development of property systems; of zoning law, ordinance preparation, and administrative procedures; of subdivision regulations and other codes used in the regulation and control of land use. (Sp)

**G5213 Administrative Law.** With appellate court decisions and other analytical materials, the relationships between regulatory agencies and the public are developed; the consideration of such subjects as the delegation of powers, the elements of fair administrative procedures, and the judicial control of administrative determinations. (F)

**G5223 Public Policy Analysis.** An introduction to public policy analysis and policy making with emphasis on the examination of selected policy issues. (F)

**G5233 Health Policy.** Prerequisite: graduate standing. This course is designed to provide students with a clear understanding of the nature and dynamics of health policy making and administration in the United States. (Irreg.)

**G5243 Managing Public Programs.** Introduces MPA students to the general principles of management as they are applied in the public sector. Topics include: systems theory, systems design (PERT), organization design, techniques of supervision, public sector labor relations, public sector personnel practices, agency interface with political actors in the environment. (Irreg.)

**G5253 Human Resource Administration.** An analysis of the structure and role of manpower in all levels of U.S. government, focusing on the development of the public service, manpower planning, unionization of public employees and recent trends in public personnel relations. (Sp)

**G5263 Congress in the Political System.** Prerequisite: graduate standing or permission of instructor. Empirically based course considering United States Congress and its role in American political system; examination of relationships between Congress and other institutions and actors. Possible topics include: Congress and the Presidency; interest groups, and lobbyists; Congress and Supreme Court; Congress and foreign policy; Congress and executive bureaus. (F)

**G5273 The Judiciary.** The U.S. Supreme Court, through its use of the Constitution as a standard, has become a significant institution in the making of national policy. Survey and analysis of that policy-making function, and how it has become a significant part of the entire American political process. Primary attention is paid to the analysis of decisions made by the Court, although this entails considerable attention to the institutional processes which result in such decisions. The following areas of concern are examined: the judicial process, economic policy, equality, criminal justice, presidential power, personal rights and the frontiers of judicial policy making. Additional readings in substantive judicial policy areas will be assigned. A research paper will be required. (Sp)

**G5283 Problems in Law and the Constitution.** Course content will vary. Intensive analysis of specific problems in legal or constitutional theory. Topics could include slavery and the constitution, capitalism and constitutional order, constitutional crisis and failure, law and morality, and jurisprudence. (Irreg.)

**G5293 Administration, Ethics and American Government.** Prerequisite: graduate standing. An exploration of the role of ethics in American government, especially in public administration. Topics to be studied include codes of professional ethics for administrators, ethics and constitutionalism, law and ethics, and the ethical implications of differing approaches to administrative work and to democracy. (Irreg.)

**G5303 Research, Writing and Analysis for Public Administration.** Prerequisite: graduate standing. An online, self-paced course introducing public administration graduate students to the practice of applied research, analysis and writing for the public sector. Topics will include administrative writing, the use and presentation of data and research, analytic skills in policy and administration, and ethical issues related to writing and analysis. (Irreg.)

**G5313 Urban Management.** Concepts, processes and techniques of managing urban political systems to include problems of leadership, decision making, conflict resolution, group behavior, developmental methods and strategies. (Irreg.)

**G5323 Problems in Public Policy.** May be repeated with change of content; maximum credit six hours. Content varies with professor. Focus on topics related to public policy issues at all levels of government, including the design, implementation, and evaluation of specific policy initiatives. (Irreg.)

**G5333 Environmental Policy and Administration.** Prerequisite: graduate standing. United States environmental policy, environmental movements, policy process, cost-benefit analysis, risk analysis and management, clean air policy, hazardous waste policy, other topical policy areas, global environmental issues. (Irreg.)

**G5343 Public Policy and Inequality.** Prerequisite: graduate standing or permission of instructor. Explores alternative definitions of equality and their implications in terms of public policy. Specific topics include the role of issue definition and agenda-setting in policy formation, the causes and politics of inequality, the difficulties in measuring inequality, and institutional dynamics that exacerbate or ameliorate inequality. (F)

**G5353 State and Local Public Finance and Budgeting Systems (Crosslisted with Regional and City Planning 5353).** Prerequisite: graduate standing or permission. An overview of the process and methods

for local capital improvement programs and capital budget preparation, and an examination of the relationships between local development policies and fiscal decision making, including revenue potential. (CE)

**G5363 Public Financial Management.** Prerequisite: graduate standing or permission of instructor. Introduces students to important concepts, procedures, and skills associated with managing public monies. Major topics include government accounting, debt management, forecasting, cash management, and capital budgeting. (Irreg.)

**G5373 Decision Analysis and Risk Management.** Prerequisite: graduate standing. Individual-level decision making, decision analysis, values integration, heuristics and biases in judgment, group decisions, game theory, negotiations, societal risk management, risk assessment, perception and communication, applications to health safety, and environmental risks. (Irreg.)

**G5383 Survey of Political Communication (Crosslisted with Communication 5383).** Prerequisite: graduate standing. Surveys communication in the political system. Discusses theory and research on interpersonal, public and mass communication in politics, particularly political campaigns. (F)

**G5393 Regulatory Policy.** Prerequisite: graduate standing or permission of instructor. Examines the reasons for the growth of administration regulation, regulatory agencies and processes, the nature of their formal, legal and informal powers, organization and procedures, and of their relationships with legislature, chief executives, courts, and interest groups, including consumer interests. (Irreg.)

**G5400 Problems in Political Behavior.** 2 to 3 hours. Prerequisite: graduate standing, qualified senior by permission of instructor. May be repeated; maximum credit six hours. Content varies, representative topics would include interdisciplinary contributions to the study of political behavior, political socialization, decision making, voting behavior, belief systems, political violence, personality and politics and political culture. (Irreg.)

**G5403 Mediating Institutions: Parties, Interest Groups and Mass Media.** Prerequisite: graduate standing. Surveys literature on parties, interest groups and mass media as institutions linking citizens and governments. (Irreg.)

**G5413 Rational Choice and Politics.** Prerequisite: graduate standing or permission of instructor. Rational choice and politics—the theory, applications, and critiques. Builds on the assumption that humans are narrowly self-interested and proceeds to examine whether this assumption can illuminate and explain various political outcomes, both in the abstract and in the particular context of American political institutions. (Sp)

**G5423 Mass Politics: Public Opinion, Voting, Realignment.** A survey of the literature on public opinion, voting behavior and realignment (or electoral change). Additional topics may include political socialization, participation and elite-mass interactions. (Irreg.)

**G5433 American Constitutional Development.** Prerequisite: Graduate standing or permission of instructor. This course focuses on changing conceptions of our national institutions and political thought that have led to dramatic changes in our view of the Constitution. (F)

**G5453 The Presidency.** Will survey recent literature on the institution of the American presidency and examine behavior of recent presidents. A research paper is required. (Irreg.)

**G5513 International Relations Theory.** Overview and appraisal of the state of the field of international relations. Primary emphasis will be placed on scope and method issues and on a review of theoretical attempts to explain general and specific aspects of international relations. (Irreg.)

**G5523 Morality and Foreign Policy.** Review of general debate regarding morality and foreign policy. Identification and analysis of moral issues regarding various foreign policy areas: use of force, nuclear deterrence and war, nonviolence, revolution, rich nation—poor nation issues, global interdependence issues. (Irreg.)

**G5533 The United Nations and U.S. Foreign Policy.** Prerequisite: graduate standing or permission of instructor. Examines the role of the United Nations in the execution of American foreign policy. An analysis of the viability of the United Nations as an international actor in a world infinitely more complex than the world system of 1945 provides the framework for the course. (F)

**G5543 International Organizations and Regimes.** Prerequisite: graduate standing. The course focuses on the organization of international politics via formal multilateral arrangements (international organizations) and informal multilateral agreements (international regimes) from a theoretical perspective. (F)

**G5550 Problems in International Relations.** 2 to 3 hours. May be repeated; maximum credit six hours. Analysis of current international conflicts and problems with study of possible solutions. May include study of the role and current problems of the United Nations. (Irreg.)

**G5553 International Security.** Prerequisite: Graduate standing. This course examines major theoretical approaches to the study of international security, including traditional approaches, the role of weapons, and new dimensions in internal security. (F)

**G5563 International Political Economy.** Prerequisite: graduate standing or permission of instructor. The organization of the international economic system and the opportunities and constraints faced by national governments in managing economic relations with other countries. Also examines the role of international agencies in managing economic crises and the globalization of the world economy. (Irreg.)

**G5573 Political Economy of Emerging Nations.** Prerequisite: graduate standing or permission of instructor. Examines political, economic, and social development in emerging nations. The course investigates first how colonialism affected Asia, Latin America, and Africa, and then analyzes development under the post-independence government. (Irreg.)

**G5600 Problems in Comparative Government.** 2 to 3 hours. May be repeated; maximum credit six hours. Content varies, but involves systematic comparative treatment of such central themes as the transitional society, change and revolution, modernization, political groups, constitutionalism, and bureaucracy. (Sp)

**G5603 Russian Politics in Comparative Perspective.** Prerequisite: Graduate standing or permission of instructor. Designed to demonstrate how comparativists who focus on Russia have engaged in seminal works in the subfield of comparative politics. (Irreg.)

**G5613 Political Economy of Industrial Democracies.** Prerequisite: graduate standing. Examines the interrelationship of political and economic factors in influencing both political and economic outcomes. A key element will be application of microeconomic theory to obtain a better understanding of decision-making processes. Topics will include theory of collective action, comparative economic performance, political business cycles and theories of economic voting. (Irreg.)

**G5623 International Terrorism.** Will study the phenomenon of international terrorism. After analyzing different types of incidents the students will explore patterns of terrorism and the tactical and strategic responses to the threat along with policy implications on all levels. (Irreg.)

**G5633 Comparative Public Policy Analysis.** Analyzes the content of public policies cross-nationally, comparing the United States and several Western European democracies. Particular attention is given to social and economic policies, i.e., welfare state issues. (Irreg.)

**G5643 Politics in Western Europe.** Analyzes western European politics in a comparative perspective. Attention will be given to both processes and structures of governments in western European countries with particular emphasis on interest articulation and policy outcomes. (Irreg.)

**G5653 Low Intensity Conflict: Nature, Processes, Policies.** Prerequisite: graduate standing or permission of instructor. Introduces the student to the nature and dynamics of low intensity conflict with an emphasis on the processes of revolutionary warfare; identifies and analyzes major strategies associated with low intensity conflict; evaluates alternative policies associated with engaging in or responding to low intensity conflict. (Irreg.)

**G5663 Politics of the Middle East.** Prerequisite: Graduate standing or permission of instructor. This course will survey the political structure of Middle Eastern states and societies. It will highlight the processes of state and nation building, the growth of political ideologies, and economic change in the region. A number of theoretical perspectives will be used. (F)

**G5673 Comparative Political Economy.** Prerequisite: graduate standing or permission of instructor. Examines the organization of economic institutions in different national settings, asking in particular how political systems help shape the economic institutions and outcomes. Specific issues include the organization of economic actors and their influence on economic policy, the impact of technology, and globalization. (Irreg.)

**G5683 Politics in Latin America.** Prerequisite: graduate standing or permission of instructor. Covers recent approaches to understanding politics in Latin America, with an emphasis on questions of transitions to democracy and regime stability, the nature of democratic rule, and the role of political institutions, the economy, and the military. (F)

**G5693 Intelligence: Process, Policy, and Management.** Prerequisite: graduate standing or permission of instructor. Explores issues associated

with the role of intelligence in a democratic society by focusing on the U.S. intelligence community. Areas of inquiry include: the role of intelligence in national security, the major elements of intelligence, the major organizations within the intelligence community, future threats, oversight, and policy issues. (Irreg.)

**G5713 Classical Political Theory.** Prerequisite: 3703 or other undergraduate work introducing classical political thought. Open to qualified undergraduate students with permission of instructor. Devoted to study of the political thought developed in classical antiquity, at which time the quest for a systematic and rational understanding of political life emerged and permanently altered the way we think about politics. Emphasis will be given to the works of Plato and Aristotle. (Irreg.)

**G5723 Modern Political Theory.** Prerequisite: 3713 or other undergraduate work introducing modern political thought. Open to qualified undergraduate students with permission of instructor. Devoted to major works in modern political theory, from Machiavelli through Hegel, Marx and Nietzsche in the nineteenth century. Emphasis will be given to those thinkers whose ideas contribute to shaping the major forms of society and government found in the modern state. (Irreg.)

**G5733 Contemporary Political Theory.** Prerequisite: open to qualified undergraduates with permission of instructor. Will study selected issues in contemporary political theory. Specific topics will include the modern theory of a "social science," problems of modern democratic theory, contemporary Marxism, the crisis of the idea of progress, economics and politics, historicism, contemporary analysis of natural law and natural right and others. (Irreg.)

**G5773 Political Theory and Representation.** Prerequisite: permission of instructor for undergraduates. Focus is upon theories and problems in representation. Readings will include *The Federalist Papers*, *Democracy in America*, and contemporary works in democratic theory. (Irreg.)

**G5910 Government Internship.** 2 to 8 hours. Prerequisite: 15 hours of political science or 24 hours of social science. May be repeated; maximum credit eight hours. (F, Sp, Su)

**G5913 Introduction to Analysis of Political and Administrative Data.** Presents an introduction to the foundations and use of quantitative methods in political science/public administration. Topics covered include: conducting systematic research in political science/public administration, measurement theory, bivariate analysis, hypothesis testing and statistical inference. (F)

**G5923 Measurement and Analysis for Public Administrators.**

Prerequisite: 5913 or permission of instructor. Prepares students and practicing administrators for conducting applied research in the public administration/public policy area. Major topics include: research problems in PA.; research design; measurement techniques; and using analysis for decision making. (Irreg.)

**G5933 Intermediate Analysis of Political Data.** Prerequisite: 5913; 5000-level prerequisite. Continues the study of the foundations and use of quantitative methods in political science. Topics covered include: probability theory, distribution theory, control table analysis, analysis of variance and correlation and regression analysis. (Sp)

**G5940 Advanced Research Methods: Special Topics.** 1 to 3 hours. Prerequisite: 5913 or permission of instructor. May be repeated with change of subject matter; maximum credit six hours. Provides introduction into advanced qualitative or quantitative analytical methods for students who will pursue a career in research. Topics will vary but may include such methodologies as ethnographic, cultural, discriminant, or factor analysis. (Irreg.)

**G5943 Maximum Likelihood Estimation for Generalized Linear Models.** Prerequisite: 5933. Introduces a number of new and useful statistical models that move beyond standard linear regression. Among the topics covered are logit and probit models for both binary, multinomial and ordinal dependent variables, event count models, duration models, and models of heteroskedastic regressions. Maximum likelihood provides a single, coherent approach to estimation and a way of thinking about how data are generated. (Irreg.)

**G5950 Research Problems.** 2 to 5 hours. May be repeated with change of subject matter; maximum credit 10 hours. Students must indicate field of research and hours credit at the time of enrollment. To be subdivided topically as follows: American national government, public administration, American state and local government, public law, popular government, international relations, comparative government, political theory, elections and political behavior, behavioral laboratory. (F, Sp, Su)

**G5960 Directed Readings.** 1 to 3 hours. Prerequisite: graduate standing or permission of instructor. May be repeated; maximum credit six hours. (F, Sp, Su)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, six hours. (F, Sp, Su)

**Unless otherwise noted, the prerequisite for courses numbered 6000-6993 is graduate standing and permission of instructor. All seminar courses may be repeated with change of subject matter.**

**G6003 Political Science: Survey of a Discipline.** Prerequisite: admission to doctoral program in political science. Traces the development of the discipline of political science as well as the epistemological and theoretical foundations of the field. Emphasis is given to the role of research design for political analysis. Attention also is devoted to the professional norms and expectations of an academic career in political science. (Every third semester)

**G6023 Field Seminar in American Politics.** Prerequisite: graduate standing. Seminar designed to introduce as much of the field of American politics as possible. Includes epistemology and paradigms, institutionalism, the various political institutions that structure our politics, and the role of the individual in American politics. (Irreg.)

**G6103 Field Seminar in Public Administration.** Prerequisite: graduate standing. Review of the field of public administration. Investigates epistemology and paradigms of the field and considers the role of bureaucratic organizations in the American system of governance. (Irreg.)

**G6123 Seminar in American Politics and Bureaucracy.** Content varies; examination of topics relating to the role of bureaucracy in the American political system and the economic, political and cultural impact of other institutions upon bureaucracy. (Irreg.)

**G6143. Seminar in Public Organization Behavior.** Covers the literature of organization theory which led to the organization behavior movement. Deals with the models or organization behavior in a cultural as well as organizational/governmental framework. (Irreg.)

**G6163 Seminar in Legislative Studies.** Prerequisite: graduate standing. Will be devoted to intensive examination of issues in legislative studies. (Irreg.)

**G6173 Seminar—Public Administration.** Directed research in selected areas of public administration. Commentary and discussion by instructor over general area or areas selected for research. Paper prepared by students and based upon individual research presented to the seminar for analysis and discussion. Example of topic: Decision making in governmental bureaucracy. (Irreg.)

**G6223 Seminar—Public Policy.** Analyses of various approaches to the study of public policy. Research papers may focus on either specific approaches to the study of public policy or the use of a particular approach in analyzing a specific policy area. (Irreg.)

**G6383 Seminar in Political Communication (Crosslisted with Communication 6383).** May be repeated with change of topic; maximum credit nine hours. Considers current topics in political communication theory and research. (F)

**G6603 Field Seminar in Comparative Politics.** Prerequisite: graduate standing. This course is an exploration of the central theoretical concepts and problems of comparative politics. (Irreg.)

**G6753 Seminar in Political Theory.** Participants should have a basic knowledge of the history of political theory and should have taken at least one core graduate course in the field (5713, 5723, 5733) or the equivalent. The intensive study of a major text or issue in political theory. Topics examined in recent years include the politics of Aristotle, Rousseau, the political theory of the Enlightenment, and the Greek theory of the Polis. (Irreg.)

**G6980 Research for Doctor's Dissertation.** (F, Sp, Su)

## Portuguese (PORT)

**1115 Beginning Portuguese.** Develop the skills necessary to grasp fundamental principles of Portuguese and Luso-Brazilian culture, and to acquire basic proficiency in the four skills of language learning: listening, speaking, reading and writing. This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics. (F, Sp) [I-FL]

**1225 Beginning Portuguese Continued.** Prerequisite: 1115. Give continuity to the skills acquired during the first semester of Portuguese in order to become more fluent in the spoken language as well as more

proficient in writing. This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics. (F, Sp) [I-FL]

**1235 Intensive Portuguese for Spanish Speakers.** Prerequisite: Spanish 2223, French 2223, Italian 2223 or special permission. This course is designed to compress the course content of Portuguese 1115 and Portuguese 1225 into a one-semester option for speakers of Spanish or other Romance languages. The course provides students with an intensive practice of Portuguese in speaking, listening, reading and writing. (F, Sp) [I-FL]

**2113 Intermediate Portuguese.** Prerequisite: 1225. Develops reading skills and control of grammar while cultivating depth of oral and writing ability. Emphasis on expansion of vocabulary and strong reinforcement of grammatical structures. Reading and discussion of texts of literary and cultural interest. Oral and written assignments. (F, Sp)

**2223 Intermediate Portuguese (Continued).** Prerequisite: 2113. Refines reading skills and mastery of grammar. Emphasis on sophisticated vocabulary and understanding of grammatical structures. Literary and cultural texts discussed in oral and essay form. (F, Sp)

**3113 Advanced Portuguese.** Prerequisite: 2223. Develops further reading skills and control of grammar, cultivates speaking and writing ability, and exposes students to a wide range of topics covered daily by Brazilian newspapers and magazines. (F)

**3223 Advanced Portuguese Continued.** Prerequisite: 3113. Continuation of 3113. Develops further reading skills and control of grammar while cultivating depth of oral and writing ability. Exposes the student to a wide range of topics covered daily by Brazilian newspapers and magazines. (Sp)

**3990 Independent Study.** 1 to 3 hours. Prerequisite: one course in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. (F, Sp)

**4990 Independent Study.** 1 to 3 hours. Prerequisite: one course in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. (F, Sp)

## Psychology (PSY)

**1113 Elements of Psychology—Beginning Course.** A survey of the scientific study of human behavior. Emphasis is placed upon scientific method, basic life processes, mechanisms of adaption, individual differences and group behavior. Students have the opportunity to be exposed to the research process either by serving as participants in research experiments or by conducting reviews of research topics. (F, Sp, Su) [III-SS]

**2003 Understanding Statistics.** Cannot be substituted for 2113. Prerequisite: Math 0123 or satisfactory score on math placement test. An introductory applied statistics course which will focus on descriptive and inferential statistical methods. Emphasis will be placed on in-class activities and homework which help the student learn by experience. Topics include measures of central tendency and variability, z-scores, normal distribution, correlation, regression, sampling distributions, hypotheses testing, t-tests and chi-square tests. **Laboratory** (F, Sp, Su) [I-M]

**2113 Research Methods I: Statistics.** Prerequisite: 1113 and satisfactory score on the math placement test (equivalent to completion of Math 0123). An introduction to scientific method in psychological research. Topics include: philosophical issues; hypothesis formulation; experimental design; and data collection, organization and interpretation. **Laboratory** (F, Sp, Su)

**2213 Survey in Information Processing, Perception and Cognition.** Prerequisite: 1113 or permission. Surveys the sensory, perceptual and information processing systems of the human. Covers the basic mechanisms of the major senses, how stimuli are identified and classified, and how this information is then processed by the brain. (Irreg.)

**2403 Introduction to Personality.** Prerequisite: 1113. Processes of personality formation and development. "Normal" and "neurotic" personalities; basic principles of personality development. (F, Sp, Su)

**2503 Computing for Behavioral Sciences.** Teaches basic programming skills necessary for experimental and theoretical science. The language will be PASCAL. (F, Sp, Su)

**2513 Psychology of Personal Adjustment.** Prerequisite: 1113. An applied personality course for majors and nonmajors. Basic information and principles from personality, social psychology and learning are applied to

real-life problems to help students gain insight into ways and means of coping with their personal concerns. (Irreg.)

**2603 Developmental Psychology.** Prerequisite: 1113. Survey of the psychological changes across the life span; the changes in cognitive, social and emotional physiological development from conception to death will be included. (F, Sp, Su)

**2910 Special Topics in Psychology.** 1 to 3 hours. Prerequisite: 1113 or permission. May be repeated once with change of topic; maximum credit six hours. Special topics in psychology requiring a minimal background in psychology. Topics typically will be of an applied nature. (F, Sp, Su)

**3003 Advanced Undergraduate Statistics.** Prerequisite: 2113 or equivalent. Review of previous material, SAS, multiple comparisons, two-way ANOVA, power calculations, repeated measures designs, multiple linear regression, general linear model, nonparametric methods. Designed to help students prepare for graduate statistics courses. (Irreg.)

**3043 Sensory Functions (Crosslisted with Zoology 3043).** Prerequisite: 1113 or Zoology 1114 and 1121. A comparative survey of the anatomy and physiology of visual, auditory and olfactory systems, as related to their biological significance. Topics covered include sensory functions in communication, predator avoidance and prey capture. (Irreg.)

**3083 Animal Behavior (Crosslisted with Zoology 3083).** Prerequisite: eight hours of zoology including 1114 and 1121 or permission of instructor. History, philosophy and methods of ethology; causation, ontogeny, function and evolution of behavior; orientation and navigation; sociobiology. (F)

**3092 Animal Behavior Laboratory (Crosslisted with Zoology 3092).**

Prerequisite: junior standing; concurrent or previous enrollment in 3083. Students will conduct both laboratory and field experiments on various aspects of animal behavior, including communication, foraging, parental care and aggression. (F)

**3114 Research Methods II: Applications and Experimental Design.**

Prerequisite: 1113 and 2113. Laboratory investigation of processes involved in animal and human learning, information processing, motivation, perception, sensation, social-personality, developmental, physiological and comparative psychology. **Required of all undergraduate psychology majors.** **Laboratory** (F, Sp, Su)

**3202 Laboratory in Cognition.** Prerequisite: 2113 or permission of instructor, and 3203 or concurrent enrollment. Laboratory study of human cognitive processes. Experiments illustrate topics in attention, perception, learning, memory, language, reasoning, decision making and problem solving. **Laboratory** (Irreg.)

**3203 Cognitive Psychology.** Prerequisite: 1113, 2113 or permission of instructor. Surveys how people extract relevant information from their environment and store, retrieve and utilize such information at a later time. Topics will include memory storage and retrieval, attention, imagery, mnemonic devices and other cognitive processes. (F, Sp)

**†G3303 Introduction to Learning and Conditioning.** Prerequisite: 1113, 2113, or permission of instructor. The origin of theory and research in learning, primarily classical and instrumental conditioning. (F)

**3603 Child Development.** Prerequisite: 1113, 2113. Focus on development from conception to adolescence. Examines child development in terms of learning, cognition, language, personality, social, biological, intellectual, etc. dimensions. (Irreg.)

**3703 Social Psychology.** Prerequisite: 1113, 2113. Research methods and results of research in such areas as social attitudes, attitude change, social learning, social motivation, social cognition and social judgment. (F, Sp)

**3803 Physiological Psychology.** Prerequisite: 1113 or equivalent and Zoology 1114 or equivalent. An introduction to physiological and neurological foundations of behavior. Some emphasis will be placed on contemporary issues and theoretical models. (F, Sp)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program, 2113. May be repeated; maximum credit six hours. Will consist of topics designated by the instructor in keeping with the student's major program. The topics will cover materials not usually presented in the regular courses. (F, Sp, Su)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program, 2113. May be repeated; maximum credit six hours. The projects covered will vary. The content will deal with concepts not usually presented in regular coursework. (Irreg.)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program, 2113. May be repeated; maximum credit six hours. Will provide

an opportunity for the gifted honors candidate to work at a special project in the student's field. (F, Sp, Su)

**3990 Independent Study.** 1 to 3 hours. Prerequisite: one course in general area to be studied, 2113 or permission of instructor. May be repeated; maximum credit, six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**†G4023 Psychological Tests and Measurements.** Prerequisite: 1113, 2113, junior standing. An introduction to the measurement of human behavior. Special reference is given to tests of intelligence, achievement, personality and interest. (Irreg.)

**4113 Capstone Survey of Major Fields in Psychology.** Prerequisite: 3114 or permission of instructor, senior standing. Lecture-based course focusing on major areas of psychology. Attempts to instill in the student an understanding of the integration and diversity of the field of psychology. (Sp) [V]

**4143 Capstone Practicum Experience.** Prerequisite: 2403, 3114, 4453, senior standing and permission of instructor. Provides students with the experience of working in an arena involving the practice of psychology. Student is to develop a written description of the experience and the psychological principles applied. (F, Sp) [V]

**4153 Capstone History of Psychology.** Prerequisite: 1113, 2113, 3114 or permission of instructor, and senior standing. Introduction to the origin of modern psychology within science. The origins of psychology will be examined from the ancient Greeks through philosophy, physiology and astronomy. Special emphasis will be placed on the historical trends and the people involved in these. (F) [V]

**†G4213 Attention and Perception.** Prerequisite: 2113, 3203. In-depth review of issues in early stages of information processing. Topics covered include: divided attention, iconic memory, subliminal perception, automatic processes, pattern recognition, perception, optical illusion, neurophysiology of sensory systems, etc. (F)

**†G4233 Language and Comprehension.** Prerequisite: 3203 or permission of instructor. In-depth review of issues in language comprehension, grammar, reading, vocabulary acquisition, test comprehension, discourse process, psycholinguistics, speech perception, pragmatics and inferences. The emphasis will be on current research investigations. (Irreg.)

**†G4243 Decision Making and Problem Solving.** Prerequisite: 2113, 3203. Review of issues in inductive thinking, deductive reasoning, inference generation, problem solving, insight, expertise, algorithms, and heuristics. The emphasis will be on current research investigations. (Irreg.)

**4253 Selected Topics in Cognitive Science.** Prerequisite: 1113, 2113, 3114; 3203 or permission of instructor. May be repeated with change of content; maximum credit six hours. Seminar focusing on specific issues in cognitive science. Topics include memory representation and retrieval, symbol and referent processing, knowledge structure, expert and novice differences, imagery, etc. (Irreg.)

**G4313 Motivation.** Prerequisite: 2113 and 3303. Primary motivational states and learned motivational states (e.g., fear, frustration, anxiety, etc.) will be considered as well as emotion and curiosity. Topics of current interest in both human and animal motivation will also be covered. (Irreg.)

**G4403 Advanced Personality.** Prerequisite: 1113, 2113, 2403, 2603 or 3603, 3114 or concurrent enrollment, and junior standing; or permission of instructor. An examination of the major approaches, concepts, issues and research findings in the field of personality. (Irreg.)

**G4453 Abnormal Psychology.** Prerequisite: 1113, 2113, and 2403, or permission of instructor. An examination of the major clinical and research findings in the field of abnormal psychology. Topics include studies of conflict, anxiety, neurosis, character disorders, schizophrenia and psychotherapy. (F, Sp)

**4510 Applications of Psychology Practicum.** 1 to 3 hours. Prerequisite: 2113, 12 hours of psychology, permission of instructor. May be repeated, undergraduates limited to two enrollments. Individualized field experiences in an area of interest in psychology. (F, Sp)

**G4533 Introductory Behavior Modification Techniques.** Prerequisite: 1113, 2113 and junior standing; or permission of instructor. Applications of behavior principles of reinforcement and punishment to various areas of human endeavor are discussed with emphasis on recently reported literature. Some example topics include: behavior modification in self-adjustment; education; industry; or therapy. (F)

**4553 Seminar: Multicultural Understanding.** Prerequisite: senior standing and 12 hours of social science or permission of instructor. May be

repeated with change of topic; maximum credit six hours. Examines how individual racial/ethnic subcultures influence the style of cognitive processing of African-American, Native American Indian, Hispanic/Latino, Asian American, and Euro-American. Examines the implications of differences for various issues (academic performance, standardized test scores, differential interest, concept development, and the educational curriculum). (F, Sp, Su)

**G4613 Current Topics in Developmental Psychology.** Prerequisite: 2603 or 3603, 2113 or permission of instructor. May be repeated with change of subject matter; maximum credit six hours. An advanced seminar dealing with contemporary issues in developmental psychology. Content will vary with the instructor. (Irreg.)

**G4703 Psychology of Leadership.** Prerequisite: senior standing or permission of instructor. Provide students with an understanding of the psychological principles underlying leadership in government, industry, and society. Review psychological research on leadership and management, examining topics such as leadership skills, leading changes in organization, leader-follower relationships, and leadership tactics. Students will participate in various exercises to analyze leadership strategies and assess their potential strengths and weaknesses as leaders. (Sp)

**†G4733 Selected Topics in Social Psychology.** Prerequisite: 2603 or 3603, 2113 or permission of instructor. May be repeated once with change of topic; maximum credit six hours. Content will vary with the instructor. Deals with central topical areas of study in social psychology (i.e., attitudes and social cognition; person perception; groups and group dynamics; or theory construction). (Irreg.)

**4753 Industrial Psychology.** Prerequisite: 1113, 2113 or permission of instructor. A study of the application of psychological principles, methods and techniques in business and industry. (Irreg.)

**4793 Psychology of Groups.** Prerequisite: 1113. Provides students with an understanding of the psychological principles underlying group behavior. Topics covered will include group formation and development, cohesion and norms, social influence, power, inter-group relations, stereotyping and prejudice, group decision making, diversity within groups, stigma in the workplace, social identity, leadership in groups, group performance, and staffing organizational groups. (Irreg.)

**4823 Developmental Psychobiology.** Prerequisite: 2113, 2603 or 3803; or permission of instructor. Advanced seminar which will include such topics as: prenatal, neural and sensory development and cultural differences in child rearing. Discussion of specific developmental issues from the behavioral and biological levels of analysis. (Irreg.)

**4843 Animal Cognition.** Prerequisite: 2113 and Zoology 1114, or permission of instructor. How animals represent space, time, and number; estimate averages, form concepts, make inferences, assess risk, recognize, communicate and deceive. How these processes are implemented in navigation, foraging decisions, predator avoidance, mate localization and selection, and other fitness-related activities. (Sp)

**G4853 Neurobiology of Memory (Crosslisted with Zoology 4853).** Prerequisite: 3803 or Zoology 3103. Advanced seminar dealing with current research on how the nervous system responds to, and is changed by, experience. Experience is broadly defined and may include learning, maturation and/or pathology.

**4910 Instructional Aides.** 1 to 3 hours. Prerequisite: 1113, 2113, and junior standing (or honors students). May be repeated once. Enrollment limited to majors with grade point averages of at least 3.00 and acceptance of an application, or by invitation by faculty member. Designed for students contemplating graduate school to offer experience in all aspects of instruction. Individual assignments of special instructional tasks in psychology. Supervised instructional experience will be part of each enrollment. (F, Sp, Su)

**4913 Bachelor of Science Thesis.** Prerequisite: 2113, 3114, admission to B.S. program in psychology and permission of B.S. adviser. B.S. candidates are required to generate an independent research project, under the direct supervision of their specific faculty sponsor and overseen by the B.S. adviser. This course will be used for this function and **only** this function. (F, Sp, Su)

**G4920 Current Topics in Basic and Applied Psychology.** 1 to 3 hours. Prerequisite: 1113 and 2113, or 1113 and six hours of other social sciences; or permission of instructor. May be repeated with change of topic; maximum credit nine hours. Content and number of credit hours varies with instructor and section. Focus on current topics in psychology not covered in existing course offerings. Intended for purpose of offering

high interest course topics during regular semester, summers and intersession. (F, Sp, Su)

**G4923 Theories and Systems in Psychology.** Prerequisite: 1113, 2113, junior standing. Introduction to theoretical psychology; uses of systems and theories; techniques of theory construction; analysis of such concepts as intervening variable, explanations, model, system. The content, uses and historical antecedents of modern theory, including field theory, information theory, dissonance theory and various learning theories. (F, Sp)

**G4940 Seminar in Psychology.** 1 to 3 hours. Prerequisite: 1113, 2113, junior standing, permission. May be repeated once with change of topic; maximum credit six hours. Advanced seminar dealing with contemporary issues and problems in psychology. Content varies with instructor. (F, Sp, Su)

**4990 Independent Study.** 1 to 3 hours. Prerequisite: 2113, three courses in general area to be studied, 3114, and permission of instructor. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**G5003 Psychological Statistics I.** Prerequisite: graduate standing and undergraduate statistics course, or permission of instructor. Applied statistics with emphasis upon statistical problems in behavioral sciences research. Includes probability, descriptive statistics, estimations and test of hypotheses. Techniques covered in depth include t-test, one and two factor ANOVA methods, multiple comparison methods (e.g., Scheff, Tukey, Ryan, etc.), and the robustness of these techniques to violation of their assumptions.

**G5013 Psychological Statistics II.** Prerequisite: 5003 or equivalent, or permission of instructor. The general linear model is covered as it applies to the analysis of variance including fixed, mixed, and random models, individual comparisons, analysis of covariance, and multiple regression. Also, some nonparametric techniques are discussed including chi-square and distribution free procedures.

**G5043 Quantitative Methods in Evaluation Research.** Prerequisite: 5003 or equivalent. The role of quantitative analysis in psychological, educational and program evaluation is discussed, with emphasis on experimental design, sampling theory, randomization tests, analysis of covariance models and structural equation methods. (Irreg.)

**G5053 Exploratory Data Analysis.** Prerequisite: 5003 or equivalent. Uses new statistical approaches by Tukey, Mosteller and others to introduce students to EDA. Topics include graphical data analysis, robustness and resistance, data transformations and fitting mathematical models to data.

**G5103 Physiological Psychology.** Prerequisite: graduate standing or permission. Surveys the neuroanatomical, hormonal and neurochemical bases of food and water intake, sleep and dreaming, emotion, reward and punishment, learning and memory, mental disorders. (Irreg.)

**G5203 Survey in Cognitive Psychology.** Prerequisite: graduate standing or permission. Survey of the field of cognitive psychology designed to provide a foundation for the study of human higher mental processes. Topics include: pattern recognition, attention, episodic memory, semantic memory, psycholinguistics, comprehension, reasoning, decision making and problem solving.

**G5280 Seminar in Cognitive Processes.** 1 to 4 hours. Prerequisite: 5203 or permission of instructor. May be repeated with change of subject matter; maximum credit six hours. Considers special topics in cognitive psychology emphasizing recent research literature.

**G5303 Classical Conditioning.** Prerequisite: undergraduate course in psychology of learning and graduate standing or permission. Methods of classical conditioning variables, empirical results and theory are considered. (Irreg.)

**G5403 Theories and Methods in Developmental Psychology.** Prerequisite: graduate standing in the department or permission of instructor. Examination of the theories and methods specific to life-span developmental psychology. (Irreg.)

**G5413 Personality.** Prerequisite: graduate standing or permission of instructor. Survey of modern personality theory and research. Strong emphasis on current limited domain theories of personality, research methodology unique to personality research, and major issues facing this area. Individual research proposals are developed.

**G5423 Current Theories in Social Psychology.** Prerequisite: graduate standing and permission of instructor. An overview of current theory and research in social psychology, including such topics as motivated cognition, automatic and controlled processing, stereotyping, impression formation,

attributions, the self-concept and self-regulation, relationships, emotions, attitudes, altruism, and aggression. (Irreg.)

**G5433 Classic Issues in Social Psychology.** Prerequisite: Graduate standing and permission of instructor. An overview of classic theories and studies from the first 100 years of social psychology. Topics include attitudes and persuasion, group processes, attraction, social influence, conformity, helping, aggression, dissonance, emotions, and attribution. (Irreg.)

**G5703 Survey of Industrial/Organizational Psychology.** Prerequisite: graduate standing. An overview of the theory and practices used in industrial/organizational psychology. Focus on the general principles involved in applying psychological theory in the work place, considering applications at the individual, group, and organizational level. Also considers the major methodological techniques used to support those applications. (F)

**G5713 Training and Development.** Prerequisite: 5703. Design and development of training courses as well as practical considerations in the delivery of training in organizational settings. (Sp)

**G5783 General Seminar in Industrial and Organizational Psychology.** Prerequisite: 5703. May be repeated with change of content; maximum credit nine hours. Examine in-depth one or more topics that provide a basis for current work in industrial and organizational psychology. May include topics such as leadership, motivation, performance management, job satisfaction, and individual differences. (F)

**G5901 Foundations of Psychological Science I.** Prerequisite: admission to graduate psychology program. Overview of current research in psychological science. Discussion of ethics, professional development, the pedagogical arts, methodology and grantsmanship. Participants complete a first year research project including a grant proposal, presentation at a professional meeting and presentation at departmental speaker series.

**G5911 Foundations of Psychological Science II.** Prerequisite: 5901. Continuation of 5901. Advanced topics in professional development, research planning, funding and communication.

**G5960 Directed Readings in Psychology.** 1 to 4 hours. Prerequisite: graduate standing, permission of instructor, adviser and dean. Maximum credit nine hours. Supervised reading of selected topics in psychology by agreement of instructor and student. (F, Sp, Su)

**G5970 Pre-Master's Research in Psychology.** Prerequisite: graduate standing; pre-master's status; permission of instructor. May be repeated; maximum credit nine hours. Supervised research in area agreed upon by student and instructor. Students conducting research for the master's thesis should enroll in 5990. (F, Sp, Su)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp, Su)

**G6003 Measurement and Scaling.** Prerequisite: 5003, 5013 or familiarity with matrix algebra and permission. The development of psychological measurement theory and scaling methods is traced through history, culminating in an in-depth study of current multidimensional scaling (MDS) methods. MDS models covered include the classical MDS model, unfolding models, ALSCAL, INDSCAL and cluster models.

**G6013 Factor Analysis and Structural Equation Models.** Prerequisite: 5003, 5013 or equivalent. Several exploratory factor analysis models are discussed including principle factors, maximum likelihood, and alpha-factors analysis. Factor-analytic-like models such as components analysis and image analysis are also covered. Offers an overview of the application of structural equations in the social sciences. (Irreg.)

**G6023 Statistical Models of Tests Scores.** Prerequisite: 5003, 5013 or equivalent. Topics include classical test theory, item-sampling theories, latent ability test theory, item analysis and test validation. (Irreg.)

**G6063 Seminar in Quantitative Psychology.** Prerequisite: 5013 or permission of instructor. May be repeated with change of topic; maximum credit 15 hours. The topic or topics to be covered depend upon the faculty member or members in charge of the seminar at the time it is offered.

**G6073 Experimental Design for Psychology.** Prerequisite: 5003, 5013, or permission of instructor. Classical experimental design applied to research problems in the behavioral sciences; completely randomized, randomized blocks, factorial, Latin square, fractional factorial and repeated measures designs, confounding, and related topics are discussed. (F)

**G6103 Comparative Cognition.** Prerequisite: 5103, 5203, 5303, or graduate standing and permission of instructor. Evolutionary perspectives on knowledge. Includes: representation of time, space and number; abstraction, concept formation, analogical and deductive reasoning;

decision and choice; communication, language and deceit. Equal emphasis given to selective pressures and mechanisms underlying animal cognition.

**G6123 Physiological Psychology Laboratory.** Prerequisite: 5103 or graduate standing and permission of instructor. Instruction in techniques and concepts used in physiological psychology research to include neurophysiological, neuroanatomical and neuropharmacological analyses of behavior.

**G6133 Seminar in Biopsychology.** Prerequisite: 5103, 6103, 6163 or permission. May be repeated with change of topic; maximum credit nine hours. Special topic areas in biopsychology will be considered in detail. (Irreg.)

**G6203 Advanced Tools and Methods in Cognition.** Prerequisite: 5203 or permission. Demonstration and application of the tools and methods of the cognitive scientist, with a special emphasis on software tools, including Mathematica, SAS, S Plus, Neuralware, and Unix.

**G6213 Attention and Memory.** Prerequisite: 5203 or permission. Detailed examination of current data and theory in attentional and automatic processes, short- and long-term memory, implicit memory, and the effect of knowledge on memory.

**G6223 Quantitative Models in Cognition.** Prerequisite: 5203 or permission. Survey of quantitative models in cognition, with an emphasis on memory and reaction time. Techniques for model testing and development will be taught and supported by exercises.

**G6253 Psycholinguistics.** Prerequisite: 5203 or permission. Detailed examination of current data and theory in the psychology of language including grammar, syntactic processing, memory for language, inference making, implicatures, discourse processing, reading, and language acquisition.

**G6263 Introduction to Cognitive Science.** Prerequisite: 5203 or permission. In-depth consideration of the interdisciplinary approach to mind. Includes topics in cognitive psychology, artificial intelligence, linguistics, philosophy, and neuro-science.

**G6280 Advanced Seminar in Cognitive Processes.** 1 to 4 hours. Prerequisite: 5203 or permission. May be repeated with change of subject matter; maximum credit 12 hours. Special topics in human learning and memory or in memory and cognitive processes will be considered in detail, emphasizing recent research literature and development of research proposals. (Irreg.)

**G6413 Stereotyping and Prejudice.** Prerequisite: Graduate standing and permission of instructor. Classic and contemporary approaches in social psychology to the nature of prejudice and its motivational substrates, as well as the formation, content, use, and consequences of stereotypes. (Irreg.)

**G6423 Seminar in Social Psychology.** Prerequisite: graduate standing and permission of instructor. May be repeated with change of topic; maximum credit nine hours. Intensive study of major problem areas in social psychology, including intrapersonal processes, group dynamics, the self, and research methods. Course topic will vary. (Irreg.)

**G6433 Seminar in Theories of Personality.** Prerequisite: graduate standing in Psychology or permission of instructor. May be repeated with change of topic; maximum credit 12 hours. Intensive exploration of both traditional and modern theories of personality. Examples from several major categories of personality theory are examined through intensive primary readings, writing, and discussion. (Irreg.)

**G6453 Seminar in Interpersonal Relationships.** Prerequisite: Graduate standing and permission of instructor. Covers classic and contemporary theories and findings in the social psychological literature on interpersonal relationships, with a focus on the biological, motivations, social and personality factors that contribute to attraction, closeness, satisfaction, and stability in dyadic relationships. (Irreg.)

**G6643 Seminar in Developmental Psychology.** Prerequisite: graduate standing or permission of instructor. May be repeated with change of topic; maximum credit 12 hours. Involves in-depth study of theory and research in major areas of developmental psychology, e.g., social cognition, peer relations, emotions, temperament and personality, morality, aggression, theory of mind. (Irreg.)

**G6703 Advanced Seminar in Industrial and Organizational Psychology.** Prerequisite: 5703. May be repeated with change of content; maximum credit nine hours. Focus in-depth on one or more topics examining the area with respect to new theoretical developments and major research findings. Topics may include active, emergent research areas likely to lead to changes in theoretical and professional practice including motivation, team effectiveness, work and family issues, changes in job design, etc. (Sp)

**G6903 Seminar in Contemporary Problems.** Prerequisite: five graduate courses including 5003 or permission of instructor. May be repeated with change of topic; maximum credit eighteen hours. Content dependent upon faculty member in charge of the seminar at the time it is offered. Intensive consideration of major contemporary issues in psychology. (F, Sp, Su)

**G6910 Readings in Psychology.** 1 to 4 hours. Prerequisite: advanced graduate standing (post-master's). May be repeated; maximum graduate credit nine hours. Supervised reading for advanced students. Topics chosen by agreement of instructor and student.

**G6920 Research in Learning, Motivation and Comparative Psychology.** 1 to 6 hours. Prerequisite: by permission of instructor only. May be repeated; maximum graduate credit 18 hours. Supervised individual laboratory research on major projects in an area of mutual interest with a faculty member. Upon advice of the instructor involved, enrollment for work on minor research projects in the above areas may alternatively be in 4990. (F, Sp, Su)

**G6923 History of Psychology.** Prerequisite: graduate standing. Introduction to origin of modern psychology within science. Origins are examined from the ancient Greeks through philosophy, physiology, and astronomy. Special emphasis placed on the historical trends and the people involved.

**G6930 Research in Cognitive Processes, Sensation-Perception and Physiological Psychology.** 1 to 6 hours. Prerequisite: by permission of instructor only. May be repeated; maximum graduate credit eighteen hours. Supervised laboratory research on major projects in an area of mutual interest with a faculty member. Upon advice of the instructor involved, enrollment for work on minor research projects in the above areas may alternatively be in 4990. (F, Sp, Su)

**G6933 Seminar in Human Learning and Motivation.** Prerequisite: permission of instructor. Special topics in human learning, motivation, and memory are considered in detail. Emphasis is placed on recent research literature and development of research proposals.

**G6940 Research in Personality: Social and Developmental Psychology.** 1 to 6 hours. Prerequisite: by permission of instructor only. May be repeated; maximum graduate credit 18 hours. Supervised individual laboratory research on major projects in an area of mutual interest with a faculty member. Upon advice of the instructor involved, enrollment for work on minor research projects in the above areas may alternatively be in 4990. (F, Sp, Su)

**G6960 Research in Industrial and Organizational Psychology.** 1 to 6 hours. Prerequisite: 5703 and permission of instructor. May be repeated; maximum credit twelve hours. Provide guided research experiences preparatory for master's and doctoral degrees. Topics selected in consultation with faculty member may include leadership, management ethics, and motivation. Exposure to key aspects of the research process including literature reviews, study design, data analysis, report preparation, proposal writing, paper presentation, and article writing. (F, Sp, Su)

**G6970 Post-Master's Research in Psychology.** Prerequisite: master's degree and permission of instructor. May be repeated; maximum credit 12 hours. Supervised research for advanced graduate students on major projects of mutual interest with a faculty member. (F, Sp, Su)

**G6980 Research for Doctor's Dissertation.** (F, Sp, Su)

various environmental assessment methodologies or "tools", including assessments of socio-economic, physical/chemical and biological impacts at the pre-project, operational and post-project phases on human and non-human components of the environment. No student may earn credit for both 4863 and 5863. (Sp)

**G5003 The Global City and Planning Issues (Crosslisted with Geography 5003; Slashlisted with 4003).** Prerequisite: graduate standing. An introduction to the concept of globalization and its effects on cities, and the city planning issues related to those effects. Characteristics, theories, and strategies of city development are reviewed. Cities are observed from several perspectives: natural and built environment, governance, society, economics, and history. No student may earn credit for both 4003 and 5003. (Sp)

**G5013 History and Theory of Urban Planning (Crosslisted with Political Science, Sociology 5013).** Prerequisite: open to seniors in social science departments, civil engineering and architecture, and to graduate students in regional and city planning. An introductory course on the history and theory of contemporary planning, focusing on the physical, social, institutional and economic structure and dynamics of human settlements, and on the role and responsibilities of the professional planner. (F)

**G5033 Sociology of Housing (Crosslisted with Sociology 5033).** Prerequisite: 12 hours of sociology and graduate standing; open to graduate students in regional and city planning. A study of major developments in housing in the U.S. since 1860, including housing reform agitation, sociological problems, ecological patterns of housing areas, minimum standards for healthful housing, government intervention and its current role, and problems of providing adequate housing for different social groups. (F)

**G5053 Planning Management.** Prerequisite: 5525. Planning management draws on the skills and experiences in previous courses, internships, and/or planning studio to prepare students for the day-to-day life of a professional planner. Topics covered include planners' roles in a democratic society, citizen participation, planning ethics, communication and presentation skills, project management, proposal and grant writing, and systems management. (Sp)

**G5113 Urban Planning Research Methods.** Prerequisite: graduate standing or permission of instructor. Introduces the basic research and statistical methods used by urban planners and related professions. The course emphasizes application of statistical methods to urban planning problems. (F)

**G5173 Urban and Regional Analysis (Crosslisted with Economics 5173).** Prerequisite: 5113 or equivalent. A lecture-seminar-problems-oriented course designed to acquaint the student with the scientific techniques used to analyze urban and regional social, economic, political and environmental problems. Oriented to reflect requirements for studies leading to the preparation of goals, policies and plans for urban and regional scale development. (Sp)

**G5203 Urban Land Use Controls (Crosslisted with Political Science, Sociology 5203).** Prerequisite: open to seniors in social sciences, architecture and civil engineering, and to graduate students in regional and city planning. A study of the historical development of property systems; of zoning law, ordinance preparation, and administrative procedures; of subdivision regulations and other codes used in the regulation and control of land use. (Sp)

**G5213 Principles and Practice of Urban Planning (Crosslisted with Geography 5213).** Prerequisite: open to seniors in social science departments, architecture and civil engineering, and to graduate students in regional and city planning. Examines the physical, social, economic, and public interest determinants of land use; the economic, population, and land use studies required to provide the basis for planning; space and location requirements and design characteristics for residential, commercial, industrial, and public uses of land; and the study of urban traffic as a function of land use in terms of structure and systems of movement. (Irreg.)

**G5343 Urban Facilities Planning (Crosslisted with Architecture 5343).** Prerequisite: upper-division or graduate standing. Long- and short-term considerations in urban facilities planning. Tactical facility planning and management in organizational environment; site, layout, economic criteria, human factors, facility planning-programming standards.

**G5353 State and Local Public Finance and Budgeting Systems (Crosslisted with Political Science 5353).** Prerequisite: graduate standing or permission. An overview of the process and methods for local capital improvement programs and capital budget preparation, and an

## Regional and City Planning (RCPL)

**2113 Introduction to the City (Crosslisted with Geography 2113).** Cities and regions; cities and suburbs; housing for rich and poor; industry and commerce; transportation; public policies and urban politics; planning responses to urban problems. (Irreg.)

**4003 The Global City and Planning Issues (Crosslisted with Geography 4003; Slashlisted with 5003).** Prerequisite: English 1213 and junior standing. An introduction to the concept of globalization and its effects on cities, and the city planning issues related to those effects. Characteristics, theories, and strategies of city development are reviewed. Cities are observed from several perspectives: natural and built environment, governance, society, economics, and history. No student may earn credit for both 4003 and 5003. (Sp)

**G4863 Environmental Assessment Methodologies (Slashlisted with 5863; Crosslisted with Environmental Science 4863).** Prerequisite: Environmental Science 3603 or graduate standing. Develop knowledge of

examination of the relationships between local development policies and fiscal decision making, including revenue potential. (Irreg.)

**G5373 Transportation Economics (Crosslisted with Civil Engineering 5373).** Prerequisite: graduate standing or permission. Financial and economic aspects of transportation planning, with emphasis on highway and public mass transportation systems. Federal, state, and local financing and administration; practical analysis techniques; and related issues such as government policy and transit productivity. (Irreg.)

**G5453 Public Mass Transportation Systems (Crosslisted with Regional and City Planning 5453).** Prerequisite: 3884 or permission of instructor. Service characteristics of the principal modes of public mass transportation with emphasis on urban transit (fixed-route bus, light rail, subways, commuter rail, paratransit, taxi); legislation and regulations; institutional structures; financing; need and demand studies; planning strategies; management; operations and record keeping; case studies of leading systems. (Irreg.)

**G5463 Computer Mapping and GIS in Planning.** Prerequisite: graduate standing or permission of instructor. Introduces students to the regional and city planning application of microcomputer-based mapping and geographic information systems (G.I.S.) **Laboratory** (Irreg.)

**G5483 Urban and Regional Transportation Planning (Crosslisted with Civil Engineering 5483).** Prerequisite: graduate standing or permission. Characteristics of urban and regional passenger and freight demand; travel demand forecasting methodologies; long- and short-range planning strategies; role of governments; characteristics of major modes of transport; decision-making strategies; case studies. (Sp)

**G5493 Transportation and Land Development (Crosslisted with Civil Engineering 5493).** Prerequisite: graduate standing or permission. Study of interactions between land development activity and the transportation network. Application of planning and design techniques to manage the impacts of development upon the transportation system.

#### **G5513 Subdivision and Planned Unit Development Planning.**

Prerequisite: graduate standing. Theories, concepts, and methods used to plan and assess the subdivision of land based on typical legal code requirements. Topics include legal requirements, human settlement issues, economic aspects, environmental analysis, infrastructure systems, land use, and city planning requirements of preliminary and final plats. (Sp)

#### **G5515 Urban Planning Laboratory (Crosslisted with Landscape**

**Architecture 5515).** Prerequisite: 5213, 5613, enrollment in regional and city planning or permission of staff. A laboratory course, using the problems system, designed to indicate both theoretical and practical solutions to planning problems, and to demonstrate some of the methodology, techniques, basic studies and skills which are employed in urban planning. **Laboratory** (Sp)

**G5525 Comprehensive Regional and City Planning Project.** Prerequisite: 5513 or 5515. Theories, concepts, and methods used to develop and implement a comprehensive regional or city plan. Topics include the methods to assess, analyze, plan and implement the elements of a comprehensive plan such as citizen participation, human settlement issues, demographics and economics, environmental factors, infrastructure systems, transportation systems, land use, community facilities, and typical legally mandated city planning processes. **Laboratory** (F)

**G5603 Environmental Protection (crosslisted with Civil Engineering 5603 and Environmental Science 5603).** Prerequisite: permission of instructor. Mitigation of human health and environmental problems with a focus on differences between developing and developed countries. Topics include baseline health indicators, population growth, toxicology, epidemiology and risk assessment, water and waste-water, air quality, solid and hazardous waste and environmental management systems. (F)

**G5633 Urban Environmental Systems (Crosslisted with Civil Engineering 5633).** Prerequisite: senior standing in Civil Engineering and Environmental Science or permission; for professional elective, graduate standing. Designed to bring together all of the physical elements of the urban system treated separately in civil engineering and environmental science such as water, sewage, watersheds, etc., into an organized system. The model and parameter of the elements are first described and then followed by the whole system, its goals, alternatives, components, arrangement, model of effectiveness and methods of forecasting. (Irreg.)

**G5643 Urban Design Analytics (Crosslisted with Architecture 5643).** Prerequisite: graduate standing in Architecture or Regional and City Planning. A survey of analysis techniques applicable to the field of urban design, including the interpretation of basic demographic statistics, an introduction to survey and observation research techniques, visual survey

methodologies, environmental assessment strategies, forecasting, gaming and decision analysis. (Sp)

**G5653 Urban Design Seminar (Crosslisted with Architecture 5653).** Prerequisite: permission of instructor. May be repeated with change of content; maximum credit six hours. Advanced seminar in urban design problems and issues through an in-depth and on-site investigation and evaluation of significant national and international urban development projects. Topics covered will be announced by instructor in the term prior to course offerings. (F, Sp)

**G5713 Urban Economic Development Planning.** Prerequisite: graduate standing or permission of instructor. An introductory course on planning for economic development in the United States at the local, substate and state level. Topics include organizing the economic development planning process, identifying appropriate development strategies, the role of different community components, business attraction and retention, infrastructure issues, industrial parks, financing, training, and programmatic assistance currently available. (Sp)

**G5723 Community Development and Revitalization.** Prerequisite: graduate standing or permission. An overview of community development, revitalization and preservation programs, their historical context, principles and procedures, current approaches and function in the planning process. Topics also include housing, public/private cooperation, financing methods, historic issues, legal context and case studies. **Laboratory**(F, Sp)

**G5733 Real Estate Development in Urban Planning.** Prerequisite: graduate standing or permission. A survey of the real estate development process that introduces the urban planner and other professions to the concepts and terminology of essential topics, beginning with site selection and including financing, zoning, forms of ownership, market feasibility, information resources, working with related professions, marketing and transferring ownership of property.

**G5803 Solid Wastes Systems Planning (Crosslisted with Civil Engineering, Environmental Science 5803).** Prerequisite: senior or graduate standing. Sorting and classification of solid wastes; size reduction; engineering aspects of solid waste disposal by sanitary landfills; composting and combustion; systems planning on solid waste management; industrial solid waste management. (Sp)

**G5813 Environmental Planning Methods.** Prerequisite: graduate standing or permission. An introduction to the use of environment factors in the urban planning process. Current methodologies for minimizing detrimental environmental impacts are introduced and applied to case study examples. Alternative approaches are compared and contrasted.

**G5823 Rural and Regional Planning.** Prerequisite: graduate standing or permission of instructor. Examines regional planning and the methods it utilizes. Explores issues of land use competition, federal and state land utilization policies, and other matters pertaining to rural regional environmental planning process. (Sp)

**G5853 World Economic Development (Crosslisted with Economics 5853).** Prerequisite: graduate standing. The economics of the developing nations; a review and analysis of common problems and issues. (Irreg.)

**G5863 Environmental Assessment Methodologies (Slashlisted with 4863; Crosslisted with Environmental Science 5863).** Prerequisite: Environmental Science 3603 or graduate standing. Develop knowledge of various environmental assessment methodologies or "tools", including assessments of socio-economic, physical/chemical and biological impacts at the pre-project, operational and post-project phases on human and non-human components of the environment. No student may earn credit for both 4863 and 5863. (Sp)

**G5960 Directed Readings.** 1 to 6 hours. Prerequisite: enrollment in regional and city planning. May be repeated; maximum credit six hours. Designed to permit the individual student to read extensively in one or more phases of urban or regional planning. (F, Sp)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp, Su)

**G5990 Special Studies in Urban and Regional Planning.** 2 to 6 hours. Prerequisite: enrollment in regional and city planning. May be repeated with change of subject matter; maximum credit 15 hours. A research problems course designed for the specific needs of students desiring intensive study in a specialized phase of urban or regional planning. Studies are provided in urban and regional analysis, community organization and action programs, and similar areas of concern.

**Laboratory** (F, Sp, Su)

**G6520 Field Studies.** 1 to 6 hours. Prerequisite: 5213, 5613, enrollment in regional and city planning or permission of staff. Provides the individual student with practical experience in working on a professional staff on a specific planning project. The design of the project and the staff situation under which the student will work is carefully controlled to provide opportunity for significant and meaningful experience. (F, Sp, Su)

**G6643 Urban Design Theory (Crosslisted with Architecture and Landscape Architecture 6643).** Prerequisite: graduate standing. A survey of theory relevant to the urban design process, including social and behavioral concepts, visual and aesthetic theory, spatial and geographic factors of urban form. (Sp)

## Religious Studies (RELS)

**2003 Special Topics in Introduction to Religious Studies.** May be repeated with change of content; maximum credit six hours. Various topics in introduction to religious studies including comparative studies and theories in the study of religion. (Irreg.)

**1113 Introduction to Religious Studies.** Introduction to the study of religion. Examines inner workings and external practices of religion, including various definitions of religion, and how religion functions in the world through ritual, myth, and symbol. Analysis of varieties of religious experience, human destiny and the use of sacred texts among the world's religions. Not a comparative course, this course employs case studies. (F, Sp) [IV-WC]

**2013 Introduction to Religious Traditions.** May be repeated with change of content; maximum credit nine hours. An introduction to religious traditions, examining traditions such as Buddhism, Hinduism, Islam, Christianity, and native traditions as well as other religious traditions. (Irreg.)

**2403 Introduction to Comparative Religion.** A general study of the world's most representative religious traditions, including Hinduism, Buddhism, Taoism, Confucianism, Judaism, Christianity, and Islam. A comparative consideration of the differences and similarities among the religions. (Irreg.)

**2413 Religion, Culture, and the Meaning of Life.** Examines religion as a resource for understanding values and for making meaning of life. The study will include comparative consideration of some religious traditions, as well as critical questions and analysis regarding the proper role and adequacy of religion. (Irreg.) [IV-WC]

**2703 Introduction to Buddhism.** An introductory study of Buddhism, including sacred text and concepts; Examines the four noble truths, the noble eight-fold path; the four immeasurables, and the three traditions of Buddhism; Theravada, Mahayana, and Vajrayana Buddhism. Examines the development of Buddhism from its Asian origins to its adaptation to western culture. (Irreg.)

**2803 Introduction to Hinduism.** Study of the tradition of Hinduism. Examines the historical development of the tradition as well as the thoughts of modern philosophers. Examines Aryan and early Indian culture, epics, scriptures, and philosophies that have developed. Explores fundamental premises and guiding principles and organic process of change. Generally inquires into the historical development of the Hindu religious tradition. (Irreg.)

**2900 Special Topics in Religious Studies.** May be repeated with a change of content; Maximum credit six hours. Special topics in religious studies not accommodated by the current curriculum. (Irreg.)

**2903 Introductory Topics in Judaic Religious Tradition.** May be repeated with a change of content; Maximum credit six hours. An introductory course in the religious traditions of Judaism. Includes historical context of the tradition, basic teachings and different approaches to their interpretations. Examines organic process of religious and/or philosophical change. (Irreg.)

**2913 Introductory Topics in Christian Religious Tradition.** May be repeated with a change of content; Maximum credit six hours. An introductory course in the religious tradition of Christianity. Includes historical context of the tradition, basic teachings, and different approaches to their interpretations. Examines organic process of religious and/or philosophical change. (Irreg.)

**2923 Introductory Topics in Islamic Religious Tradition.** May be repeated with a change of content; maximum credit six hours. An introductory course in the religious tradition of Islam. Includes historical context of the tradition, basic teachings and different approaches to their interpretations. Examines organic process of religious and/or philosophical change. (Irreg.)

**2933 Introductory Topics in Eastern Religious Traditions.** May be repeated with a change of content; maximum credit six hours. An introductory course in a religious tradition such as Buddhism, Hinduism, Shinto, Taoism, Confucianism or other Eastern tradition. Includes historical context of the traditions, basic teaching and different approaches to their interpretation. Examines organic process of religious and/or philosophical change. (Irreg.)

**2943 Introductory Topics in Indigenous Religious Traditions.** May be repeated with a change on content; maximum credit six hours. An introductory course in an indigenous or folk religious tradition. Includes historical context of the tradition, basic teachings and different approaches to their interpretation examines organic process of religious and/or philosophical change. (Irreg.)

**2960 Directed Readings.** 1 to 3 hours. Prerequisite: Permission of instructor. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major. Topics will cover materials not usually presented in the regular course offerings. (F, Sp, Su)

**3013 Special Topics in Religious Texts.** Prerequisite: Junior standing or permission of instructor. May be repeated with change of text; maximum credit nine hours. An examination of religious texts, and may include the Koran, Jewish scriptures, Christian scriptures, Bhagavad Gita, Vedas, etc. (Irreg.)

**3023 Special Topics in Religious Traditions.** Prerequisite: junior standing or permission of instructor. May be repeated with a change of content; maximum credit nine hours. An examination of religious traditions, and may include traditions such as Buddhism, Hinduism, Islam, Judaism, Christianity, native traditions or other religious traditions. (Irreg.)

**3033 Special Topics in Religion, Literature & the Arts.** Prerequisite: junior standing or permission of instructor. May be repeated with a change of content; maximum credit nine hours. An examination of the relationship of religion, literature, and the arts, and may include study of various religious expressions through art, music, or literature; or the influence of religious traditions upon the art, music, or writing of a culture or society. (Irreg.)

**3043 Special Topics in Religion, Social Organization & Politics.**

Prerequisite: junior standing or permission of instructor. May be repeated with a change of content; maximum credit nine hours. An examination of issues and topics in religion, social organization and politics. (Irreg.)

**3053 Special Topics in Religion and History.** Prerequisite: junior standing or permission of instructor. May be repeated with a change of content; maximum credit nine hours. An examination of religious phenomena throughout history, appearance and development of religious traditions, or special issues or topics in religion and history. (Irreg.)

**3063 Special Topics in Religion and Philosophy.** Prerequisite: junior standing or permission of instructor. May be repeated with a change of content; maximum credit nine hours. An examination of issues and topics in religion and philosophy. (Irreg.)

**3113 Internship in Religious Studies.** Prerequisite: Major in Religious Studies, junior standing, and permission of instructor. Practical vocational experience in the community directed by a Religious Studies faculty member; includes a significant research paper. (Irreg.)

**3123 Comparative American Christianity.** Prerequisite: junior standing or permission of instructor. An overview and analysis of American Christianity, including the comparison of various denominational origins and traditions. (Irreg.)

**3133 Introduction to Christianity.** Prerequisite: junior standing or permission of instructor. Broad phenomenological study of the religious tradition of Christianity. Examines origins and early myths, the teacher and key element of his teachings, founders of the early movements, the spread of the tradition, sacred texts, key practices and rituals, symbols, moral codes and ethical issues, polity and leaders, challengers to its system of faith, and the globalization of Christianity. (Irreg.)

**3143 Christian Scriptures.** Prerequisite: junior standing or permission of instructor. Using historical criticism, students will study the dating authorship, historical setting, and liturgical and literary forms of the texts. Attention will be given to the canonization process and a brief look at some of the deuteron-canonical texts from recent archaeological finds that shed new light on the history and development of the Christian sacred texts. (Irreg.)

**3153 Historical Jesus.** Prerequisite: junior standing or permission of instructor. Examines the character in the Christian Scriptures known as Jesus. Study of the historical figure through a variety of scholarly perspectives in order to understand the diversity of beliefs within the

Christian religion. Employs a variety of scholarly and historical schemes for understanding and interpreting the man and his life. (Irreg.)

**3203 Women, Religion, and Secularism.** Prerequisite: junior standing or permission of instructor. Examines the historical and contemporary experiences of women in light of the ways in which religious beliefs and ideologies influence religious, social, economic, and political institutions. Investigates how the role of women is used symbolically in ethno-religious conflicts and the contemporary political role of religion and its impact on women's lives. (Irreg.)

**3213 Religion and Violence.** Prerequisite: junior standing or permission of instructor. Examines the causes, characteristics, and consequences of religious violence around the world, and investigates religion's unique relationship to violence as the only institution other than the state that can legitimate violent action. Treats the particular ways in which religion frames political violence in terms of a struggle between the sacred and the profane, good and evil. Focuses on theories from sources such as sacred texts, social/psychological explanations, and global processes. (Irreg.)

**3403 Studies in Comparative Religion.** Prerequisite: junior standing or permission of instructor. An advanced study of religious ideas and practices, texts and traditions, to identify areas of similarity, areas of difference, and the various influences religions may have upon each other as well as on society and culture. (Irreg.)

**3413 Approaches to the Study of Religion.** Prerequisite: junior standing or permission of instructor. Examines ways religion may be studied in order to better understand it. The course will include theory and the methodologies of the social sciences and humanities. (Irreg.)

**3643 Special Topics in Religious Studies: Travel Abroad.** Prerequisite: RELS major or minor, junior standing, permission of instructor and satisfaction of criteria established by OU Education Abroad office (including overall GPA of 2.5). May be repeated with change of content/location; maximum credit six hours. An examination of themes, shifts, events or major sites of various religions. (Irreg.)

**3703 Legal Issues in Church/State Relations.** Prerequisite: junior standing or permission of instructor. Examines case and statutory laws that have implications for the legal relationship between church and state. Acquaints students with the use of legal research materials in order to answer legal questions; Students will read and analyze material regarding the history, sociological, and political issues surrounding the religion clause of the constitution. (Irreg.)

**3713 Modern Catholicism.** Prerequisite: junior standing or permission of instructor. Study of the origins and development of the Catholic tradition and its relationship to other Christian and Non-Christian traditions. Explores the highlights of Catholic church history, and development of doctrinal positions, with a focus on the fundamentals of Catholic social teaching and their place in historical debates about industrial capitalism, Marxism, liberal democracy, religious freedom, and post-modernity. (Irreg.)

**3900 Special Topics.** 1 to 4 hours. Prerequisite: junior standing or permission of instructor. May be repeated with change of topic; maximum credit nine hours. Topics in Religious Studies not accommodated by the existing curriculum. (Irreg.)

**3903 Topics in Judaic Religious Tradition.** Prerequisite: junior standing or permission of instructor. May be repeated with a change of content; maximum credit six hours. An upper division course in the religious tradition of Judaism. Includes historical context of the tradition, basic teachings and different approaches to their interpretations. Examines organic process of religious and/or philosophical change. (Irreg.)

**3913 Topics in Christian Religious Tradition.** Prerequisite: junior standing or permission of instructor. May be repeated with change of content; maximum credit six hours. An upper division course in the religious tradition of Christianity. Includes historical context of the tradition, basic teachings and different approaches to their interpretations. Examines organic process of religious and/or philosophical change. (Irreg.)

**3923 Topics in Islamic Religious Tradition.** Prerequisite: junior standing or permission of instructor. May be repeated with a change of content; maximum credit six hours. An upper division course in the religious tradition of Islam. Includes historical context of the tradition, basic teachings and different approaches to their interpretations. Examines organic process of religious and/or philosophical change. (Irreg.)

**3933 Topics in Eastern Religious Traditions.** Prerequisite: junior standing or permission of instructor. May be repeated with a change of content; Maximum credit six hours. An upper division course in a religious tradition such as Buddhism, Hinduism, Shinto, Taoism, Confucianism or other

eastern tradition. Includes historical context of the tradition, basic teachings and different approaches to their interpretation. Examines organic process of religious and/or philosophical change. (Irreg.)

**3943 Topics in Indigenous Religious Traditions.** Prerequisite: junior standing or permission of instructor. May be repeated with a change of content; maximum credit six hours. An upper division course in an indigenous or folk religion. Includes historical context of the tradition, basic teachings and different approaches to their interpretation. Examines organic process of religious and/or philosophical change. (Irreg.)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: Admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. Topics will cover materials not usually presented in the regular course offerings. Will provide an opportunity for the gifted Honors candidate to work at a special project in the student's field. (F, Sp, Su)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: Admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. Topics will cover materials not usually presented in the regular offerings. Will provide an opportunity for the gifted Honors candidate to work at a special project in the student's field. (F, Sp, Su)

**3990 Independent Study.** 1 to 3 hours. Prerequisite: 1113, Anthropology 1823, Philosophy 1203 or 2403; junior standing, and permission of instructor. May be repeated; maximum credit six hours. Through a written contract, independent study may be arranged for a topic not currently offered in regularly scheduled courses. Independent study may include library and/or field projects. (F, Sp, Su)

**4203 Religion, Nationalism, and Ethnic Conflict.** Prerequisite: junior standing or permission of instructor. Examines the role of religion in the formation and maintenance of ethnic groups, in the rise of nationalism, and in conflicts between different groups; evaluates the role religion and religious communities have played, and continue to play, in ethnic conflict around the world. (Irreg.)

**4323 Capstone.** Prerequisite: Major in Religious Studies and permission of instructor. Capstone provides the opportunity to integrate knowledge about the major and apply it to a project culminating in a presentation and senior paper. The project will develop a selected problem, issue, or controversy in religious studies. (F, Sp)

**4990 Independent Study.** 1 to 3 hours. Prerequisite: 1113, Anthropology 1823, Philosophy 1203 or 2403; senior standing, and permission of instructor. May be repeated; maximum credit six hours. Through a written contract, independent study may be arranged for a topic not currently offered in regularly scheduled courses. Independent study may include library and/or field projects. (F, Sp, Su)

**G5960 Independent Study in Religious Studies.** 1 to 3 hours. Prerequisite: graduate standing and/or permission of instructor. May be repeated with change of content; maximum credit nine hours, maximum of six hours with one professor/instructor. Independent study/directed reading arranged between the professor and student on a special topic in religious studies, to give students the opportunity to complete intensive readings in field of study under direct guidance of the student's advisory committee. F, Sp, Su)

**G6960 Advanced Readings in Religious Studies.** Prerequisite: permission of instructor; student must be at Ph.D. level. May be repeated with change of content; maximum credit nine hours. Advanced independent study/directed reading, arranged between the professor and student on a special topics in religious studies. Designed to give students the opportunity to complete intensive readings in field of study under direct guidance of his/her advisory committee. (F, Sp, Su)

## Russian (RUSS)

**1115 Beginning Russian.** An elementary course in understanding, speaking, reading and writing Russian. This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics. (F, Sp, Su) [I-FL]

**1225 Beginning Russian (Continued).** Prerequisite: 1115. An elementary course in understanding, speaking, reading and writing Russian. This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics. (F, Sp) [I-FL]

**2003 Masterpieces of Russian Literature in Translation: Turgenev, Dostoevsky, Tolstoy.** Acquaints the students who have had no previous background in the Russian language or Russian literature with the most important writers of the classical period of Russian culture. Analyzes the works of Russian classics in depth with consideration of their impact beyond the frontiers of Russia. May not be used to meet College of Arts and Sciences intermediate foreign language requirement. This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics. (Correspondence)

**2113 Intermediate Russian.** Prerequisite: 1225. Training in reading, writing, speaking, and understanding contemporary Russian. Emphasis on expansion of vocabulary and strong reinforcement of grammatical structures. (F, Sp)

**2223 Intermediate Russian (Continued).** Prerequisite: 2113. Continued training in reading, writing, speaking, and understanding contemporary Russian. Emphasis on expansion of vocabulary and strong reinforcement of grammatical structures. (F, Sp)

**2323 Advanced Russian Reading and Composition.** Prerequisite: 2223. A systematic grammar review with a view toward improving the student's control of written Russian. (F)

**3023 Beginning Business Russian.** Prerequisite: twenty hours of Russian. Intended to enable Russian students to read, write, and translate business Russian. Readings in this course will consist of translating contracts, agreements, and other areas of commercial correspondence. (Irreg.)

**3073 Russian Conversation.** Prerequisite: 2223. Intensive practice in speaking Russian on topics of everyday life. (F, Sp)

**3123 Advanced Business Russian.** Prerequisite: twenty hours of Russian, 3023. Enables Russian reading and translation of more advanced Russian business texts. Readings will consist of translating business orders, contracts, agreements and other areas of commercial correspondence. (Correspondence)

**3203 Scientific Russian.** Prerequisite: ten hours of Russian. Training in the reading of scientific material of gradually increasing difficulty. (Irreg.)

**3213 Scientific Russian.** (Continued) Prerequisite: 3203. Training in the reading of scientific material of gradually increasing difficulty. (Correspondence)

**3313 Russian Phonetics.** Prerequisite: 2113. A detailed study of the sounds of Russian and the inculcation of proper speech habits. (Irreg.)

**3323 Advanced Russian: Reading and Composition.** Prerequisite: 2223. A systematic grammar review with a view toward improving the student's control of written Russian. (F)

**3423 Advanced Russian Reading and Composition (Continued).**

Prerequisite: 3323. A systematic grammar review with a view toward improving the student's control of written Russian. (Sp)

**The prerequisite for courses numbered 3900-4999 is 17 hours of Russian. Other specific prerequisites are so indicated.**

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. The topics will cover materials not usually presented in the regular courses. (F, Sp, Su)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. The projects covered will vary. The content will deal with concepts not usually covered in regular coursework.

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work at a special project in the student's field. (F, Sp)

**3990 Independent Study.** 1 to 3 hours. Prerequisite: one course in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp)

**4173 Topics in Nineteenth-century Russian Literature and Culture.**

Prerequisite: 3423. May be repeated once with change of content; maximum credit six hours. A course for advanced students of the Russian language. All reading assignments and lectures will be in Russian. (F)

**4183 Topics in Twentieth- and Post-twentieth Century Russian Literature and Culture.** Prerequisite: 3423. May be repeated once with change of content; maximum credit six hours. A course for advanced students of the Russian language. All reading assignments and lectures will be in Russian. (Sp) [V]

**4990 Independent Study.** 1 to 3 hours. Prerequisite: three courses in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp)

**The prerequisite for courses numbered 5000 or over is 25 hours of Russian. Other specific prerequisites are so indicated.**

**G5910 Problems in Research.** 2 to 4 hours. May be repeated with change of content; maximum credit nine hours. An individual course of intensive research with the area and problem to be determined by the student and directing instructor. (F, Sp)

## Social Work (S WK)

**2113 Introduction to Social Work.** Prerequisite: Sociology 1113 or concurrent enrollment; sophomore or junior standing. This course familiarizes students with the social work profession, beginning with the social welfare history and development of social work in the U.S. This provides the context to understand modern social work's purposes, values, scope and methods. (F, Sp)

**2223 Statistics for Social Work.** Prerequisite: Math 0123 or satisfactory score on math placement exam. Introduction to statistics and data analysis in social work and the helping professions. Covers descriptive statistics (univariate and bivariate), inferential statistics (estimation and significance tests) and data interpretation (causality and generalizability). (F, Sp, Su) [I-M]

**3003 Interviewing Skills for Generalist Practice.** Prerequisite: majors only; corequisite: 3103, 3233. An introduction to the basic interviewing process for conducting ethical generalist practice in a multicultural society. Interviewing skills presented will include: basic attending, empathic listening, observation, reflection of feelings, supportive confrontation and structuring of an effective non-judgmental interview. (F)

**3103 Generalist Practice with Individuals and Families.** Prerequisite: majors only; corequisite: 3003 and 3233. First of three methods courses in the social work practice sequence using a generalist practice model focused on knowledge, values and skills of professional social work practice with various client systems. Course emphasizes development of skills for assessment and intervention with individuals and families. (F)

**3113 Generalist Practice with Families and Groups.** Prerequisite: 3103; corequisite: 3243. Second of three methods courses in the social work practice sequence using a generalist model focuses on knowledge, values and skills requisite for social work practice with various client systems. Course emphasizes development of knowledge and skills specific for work with families and groups. (Sp)

**3233 Human Behavior: Individuals and Families.** Prerequisite: majors only; corequisite: 3003, 3103. Within a social systems framework and biopsychosocial perspective, students learn empirically-based theories which deal with life-span development and family behavior. This course provides a theoretical foundation for micro and mezzo level generalist practice. (F)

**3243 Human Behavior: Groups, Organizations and Communities.** Prerequisite: 3233; corequisite: 3113. Building on the theoretical content in 3233, students learn theories related to group, organization and community dynamics and behavior. Special attention is given to establishing theoretical foundations for the assessment of mezzo and macro level systems. (Sp)

**3313 Social Welfare Policy: Analysis and Practice.** Prerequisite: 2113, 3323. An overview of social welfare in modern times, including its philosophy, history, values, and ethics, is studied within a broad social science framework. Policy practice is presented from a generalist perspective. (Sp)

**3323 Cultural Diversity and Oppression.** Prerequisite: majors only, or permission of instructor; Sociology 1113; and junior standing. Focuses on social and cultural diversity, including the interests and needs of social and cultural minorities from their perspectives. The nature of diversity is stressed while theoretical explanations of oppression, racism, and discrimination are examined. (F)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Will consist of topics designated by the instructor in keeping with the student's major program. The topics will cover materials not usually presented in regular coursework. (F, Sp, Su)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite; admission to Honors Program. May be repeated; maximum credit six hours. The projects covered will vary. The content will deal with concepts not usually presented in regular coursework.

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Will provide an opportunity for the gifted honors candidate to work at a special project in the student's field. (F, Sp, Su)

**4010 Special Topics in Social Work and Social Welfare (Slashlisted with 5010).** 2 to 3 hours. Prerequisite: upper-division standing or permission of director. May be repeated up to three times with change of content; maximum credit nine hours. Focus is on issues significant to social work or social welfare. No student may earn credit for both 4010 and 5010. (F, Sp, Su)

**4083 Social Work Research I.** Prerequisite: senior standing; 2223 or equivalent, and 3113. An introduction to research methods applied to the profession. Problem identification and formulation, study design and instrumentation are included. The student is required to develop a research design appropriate to generalist social work practice. (F)

**4093 Social Work Research II.** Prerequisite: 4083. The project based on the research design developed in Social Work 4083 is completed. Students are engaged in practice evaluation using skills in data collection, analysis of data, and report writing. (Sp)

#### **4103 Generalist Practice with Organizations and Communities.**

Prerequisite: 3113, 3243; corequisite: 4311, 4315. Third of three methods courses in the social work practice sequence using a generalist model focuses on knowledge, values and skills requisite for social work practice with various client systems. Course emphasizes development of knowledge and skills specific for assessment and intervention with organizations and communities. (Sp)

**4311 Practicum Seminar I.** Prerequisite: senior standing and 3113; corequisite: 4315. Integration of knowledge, values, and skills derived in social work courses with practicum situations. (F, Sp, Su)

**4315 Practicum I.** Prerequisite: senior standing and 3113; corequisite: 4311. A structured, educationally directed experience in social work practice, provided under the supervision of a qualified social worker as practicum instructor. (F, Sp, Su)

**4322 Practicum Seminar II.** Prerequisite: 4311, 4315; corequisite: 4325. A continuation of the educational experience in 4315. In combination with 4325, this course comprises the General Education capstone experience in social work. Focus is on the integration of theories, principles, and skills for evaluating generalist practice competency. (Sp) [V]

**4325 Practicum II.** Prerequisite: 4311, 4315; corequisite: 4322. A continuation of the educational experience in 4315. In combination with 4322, this course comprises the General Education capstone experience in social work. (F, Sp, Su) [V]

**G4333 Alcohol and Drug Abuse.** Prerequisite: junior standing or above. Survey of theoretical and research writings on the etiology, dynamics and social work treatment of substance abuse (alcohol and drugs) in contemporary American society. Considerable emphasis on social work practice (casework and group work) with substance abusers. (F)

**4990 Independent Study.** 1 to 3 hours. Prerequisite: three courses in general area to be covered; permission of instructor and undergraduate program coordinator. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field practicum projects. (F, Sp, Su)

**G5010 Special Problems in Social Work and Social Welfare (Slashlisted with 4010).** 2 to 3 hours. Prerequisite: graduate standing or permission of instructor. May be repeated with change of content; maximum credit 12 hours. Focus is on issues significant to social work or social welfare. Non student may earn credit for both 4010 and 5010. (F, Sp, Su)

**G5083 Social Work Research Methods I.** Prerequisites: Graduate standing in social work and an introductory course in statistics. The course is an introduction to the design and implementation of quantitative and qualitative research methods that are appropriate to social work and human services program evaluation. (F)

**G5093 Social Work Research Methods II.** Prerequisites: Graduate standing in social work and 5083. The course is a continuation of 5083 and is an introduction to applied data analysis methods that are appropriate to research in social work practice and human services program evaluation. (Sp)

#### **G5103 Generalist Practice with Individuals, Families, and Groups.**

Prerequisite: Graduate standing in social work. The first of two required foundation year method courses in generalist social work practice. The course explicates a generalist perspective that focuses on the knowledge, values, skills, and techniques appropriate to assessment and interventions with individuals, families, and groups. (F)

#### **G5113 Generalist Practice with Groups, Organizations, and Communities.**

Prerequisite: 5103. The second of two required foundation year method courses in the generalist social work practice. Continuation of the exploration of the generalist perspective focusing on the knowledge, values, skills, and techniques appropriate to assessment and interventions with groups, organizations, and communities. (Sp)

**G5143 Models for Gender and Culturally Sensitive Practice.** Prerequisite: second-year graduate standing in social work. Feminist and culturally sensitive methods of facilitating empowerment at all-sized system levels will be presented within a generalist practice model. A strengths and wellness perspective will be emphasized. Issues related to diversity among women and special populations will be interwoven throughout the course content. (F)

**G5203 Social Work and the Law.** Prerequisite: graduate standing or permission of instructor. Examines law and the legal system. Special attention is given to legal issues impacting social service programs, clients, and the profession of social work. (F)

**G5233 Human Behavior: Individuals and Families.** Prerequisite: graduate standing in social work. Within a social systems framework and biopsychosocial perspective, students learn empirically-based theories which deal with life-span development and family behavior. This course provides a theoretical foundation for micro and mezzo level generalist practice. (F)

#### **G5243 Human Behavior: Groups, Organizations, and Communities.**

Prerequisite: 5233. Building on the theoretical content in S WK 5233, students learn theories related to group, organization, and community dynamics and behavior. Special attention is given to establishing theoretical foundations for the assessment of mezzo and macro level systems. (Sp)

**G5313 Social Welfare in a Changing World.** Prerequisite: graduate standing in social work. An historical and descriptive review of U.S. social welfare programming, introduction to social welfare policy analysis, and the role of the social work profession in affecting change in social welfare policy. (F, Sp)

**G5333 Human Diversity and Societal Oppression.** Prerequisite: graduate standing in social work. Focuses on social work practice issues in the context of human diversity, differential power, societal oppression, and discrimination. Emphasis is on the interpersonal transactions between and within groups who differ by race, ethnic/cultural heritage, religion, gender, socio-economic status, sexual orientation, physical limits, and generational status. (F)

**G5413 Social Work Practicum I.** Prerequisite: graduate standing in Social Work; 5103 or concurrent enrollment. A professionally supervised practicum placement in an area social service agency. (F, Sp, Su)

**G5423 Social Work Practicum II.** Prerequisite: graduate standing in Social Work; 5103, 5113 or concurrent enrollment; 5413 or concurrent enrollment. A professionally supervised practicum placement in an area social service agency; continuation of 5413. (F, Sp, Su)

**G5490 Research Investigations in Social Work.** 1 to 6 hours. Prerequisite: graduate standing and permission of instructor, advisor, and graduate program coordinator. May be repeated; maximum credit 12 hours. Initiation and completion of an individual or group research project dealing with some aspect of social work. Students are expected to demonstrate knowledge of the scientific method as applied to social work. Emphasis will be on student's capacity to elaborate implications of research findings for social work theory and practice. (F, Sp, Su)

**G5503 Advanced Direct Practice.** Prerequisite: second-year graduate standing in social work. Advanced social work practice using a social systems orientation. The course focus includes system dynamics, client system assessment, intervention and evaluation of outcomes. Special attention is paid to issues associated with poverty, oppression, cultural diversity, and promotion of client well-being. (F)

**G5553 Administration in Social Work.** Prerequisite: second-year graduate standing in social work, concentration in administration and community practice, concurrent enrollment in 5763 and 5633. First in a sequence of two advanced practice seminars in the school's administration and community practice concentration. Course content is based on a social systems model. Primary attention is given to the roles of administrator and planner in social work/social welfare settings. (F)

**G5603 Supervision and Consultation.** Prerequisite: second-year graduate standing or permission of the instructor. Addresses the development of skills in supervision and consultation of social work practice in agency context. The tasks of supervision and consultation are addressed in a social systems context and address the issues confronting supervisors in a multicultural society. (F)

**G5613 Advanced Group Work.** Prerequisite: second year graduate standing in social work. Advanced social group work practice using a social systems perspective to enhance well-being in the group context. (F)

**G5623 Advanced Social Work Practice with Families.** Prerequisite: second-year graduate standing in social work. Provides an integrated learning experience in the theory and practice of social work with families. An overview of theories of family functioning and contemporary approaches to family-oriented practice which provides a systemic base for understanding and utilizing the helping process with special attention given to the design and implementation of practice evaluation. (F)

**G5633 Program Planning and Implementation.** Prerequisite: second-year graduate standing in social work, concentration in administration and community practice, concurrent enrollment in 5553 and 5763. Designed to enable students to obtain skills in planning and program implementation through development of funding proposals. (F)

**G5713 Adult Psychopathology.** Prerequisite: graduate standing or permission of instructor. The study of adult psychopathology based on the current diagnostic and statistical manual of mental disorders. Several diagnostic categories will be addressed from a biopsychosocial perspective, emphasizing the theoretical foundation for these mental illnesses. (F)

**G5763 Community Analysis and Organization.** Prerequisite: second-year graduate standing in social work and concentration in administration and community practice, concurrent enrollment in 5553 and 5633. Examines the community and the state as a social system. Within this framework, several concepts, theories and approaches to practice are examined. Special attention is given to social problem identification, assessment, funding advocacy and related matters. (F)

**G5820 Social Work Practicum III.** 12 hours. Prerequisite: second-year graduate standing in social work. A professionally supervised practicum placement in area social service agencies that includes an experiential practice skills laboratory. (Sp)

**G5960 Directed Readings.** 1 to 4 hours. Prerequisite: graduate standing and permission of instructor, advisor and graduate program coordinator. Directed readings and/or literature reviews under the direction of a faculty member. May be repeated; maximum credit six hours. (F, Sp, Su)

#### **G5973 Empirical Social Work Practice: An Integrated Approach.**

Prerequisite: second-year graduate standing in social work. A seminar in the application of research findings and empirical outcome evaluation techniques to professional practice. (Sp)

**5980 Research for Master's Thesis.** Prerequisite: permission of instructor. Research for Master's thesis. Variable enrollment, two to six hours; maximum credit applicable toward degree: six hours. (F, Sp, Su)

**G5983 Social Service Monitoring and Evaluation.** Prerequisite: second-year graduate standing in social work, and concentration in administration and community practice. This seminar is designed to enable students to integrate learning experiences in the administration and community practice concentration through monitoring and evaluation. (Sp)

## Sociology (SOC)

The department offers courses which are slashlisted so undergraduate students may take an undergraduate 4000-level course while graduate students may take a graduate 5000-level course. The lectures in a slashlisted course are the same. However, students in the 5000-level course have substantial additional requirements beyond those for students in the 4000-level course. These additional requirements are listed in the slashlisted course syllabus.

**1113 Introduction to Sociology.** The fundamental concepts of sociology; foundations of group life; social change, processes, and problems. (F, Sp, Su) [III-SS]

**1523 Social Problems.** Analysis of major social problems of contemporary U.S. and policy debates concerning them. Examination of social science theory and research that are relevant to understanding these problems.

Development of social institutions in which social problems occur. (F, Sp, Su) [IV-WC]

**2003 Introduction to Women's Studies (Crosslisted with Women's Studies 2003).** Designed to incorporate interdisciplinary perspective on women's history, sociology and psychology as well as their contributions to the arts, literature, and science. Multi-cultural and international dimensions of women's studies are integral to the course. In addition to assigned readings, students are to execute regular writing assignments and group projects. (F, Sp) [IV-WC]

**Unless otherwise noted, the prerequisite for courses in sociology numbered 3000-3999 is 1113, junior standing, or permission of the instructor.**

#### **3123 Social Statistics (Crosslisted with Political Science 3123).**

Prerequisite: 1113 or permission of instructor. Prerequisite: 1113 or permission of instructor. Descriptive and inferential statistics as they are used in sociology to analyze survey and macro-level data. Problems of research design and interpretation of analysis in sociological theory are major topics. A grade of C or higher in this course is a prerequisite for Sociology capstone courses. (F, Sp, Su)

**3133 Methods of Social Research.** Prerequisite: 1113 or permission of instructor. Basic elements of the scientific method as applied to the study of human group life. Attention is given to the problem of conceptualization, the formulation of hypotheses, designs of proof, the interdependence of theory and fact and the techniques and procedures for assembling and ordering of data. A grade of C or higher in this course is a prerequisite for Sociology capstone courses. (F, Sp, Su)

**3523 Sociology of Crime and Delinquency.** Prerequisite: 1113 or sophomore standing. A study of the nature and causes of various forms of deviant and illegal behavior, especially serious personal injury and property crimes (e.g., homicide, burglary). While some consideration is given to biological and psychological explanations, the primary focus is on sociological theories that attempt to explain crime, criminality, and victimization in modern societies. (F, Sp)

**3533 The System of Criminal Justice.** Prerequisite: 1113 or permission of instructor. An analysis of the sociological literature on the American system of criminal justice, viewed as a system of social control. Emphasis is on the functional significance of the system in relation to the various interests represented in the law. Attention given to special problems in each of the major components of the system: law enforcement, the administration of justice and corrections. (F, Sp)

**3543 Sociology of Deviance.** Prerequisite: 1113 or permission of instructor. The sociological study of deviant behavior with emphasis on so-called victimless crimes (e.g., drug use) and on normative violations that are not necessarily illegal (e.g., mental illness). Focus is on sociological theories and processes by which behaviors are defined as deviant, and how these definitions affect the individual. (F, Sp)

**3553 Sociology of Law.** Prerequisite: 1113 or permission of instructor. Provides a sociological understanding of the interrelationship between law and society. Covers the origins of law, types of legal systems, theories of punishment, and examines law as an independent variable (i.e., as a mechanism for social change) and as a dependent variable (i.e., how laws are created or changed by social pressure). (F, Sp)

**3623 Minority and Ethnic Groups.** Prerequisite: 1113 or permission of instructor. Intergroup conflict resulting from the efforts of subordinate groups. Consideration of theories of prejudice and discrimination as devices of control over racial, religious, ethnic and other minority groups. (Irreg.)

**3643 Population and Society.** Prerequisite: 1113 or permission of instructor. Introduction to population study. Analysis of human mortality, fertility and migration. Evaluation of demographic theories with emphasis on social and cultural factors. (Irreg.)

**3683 Wealth, Power, and Prestige.** Prerequisite: 1113 or sophomore standing or above. Examines the systems in which the central elements of class stratification—wealth, power, and prestige—are created and distributed and addresses the issue of “who gets how much and why?”. Topics include a review of the theories and evidence in current stratification studies and an assessment of the racial, ethnic, and religious correlates of inequality. (F, Sp)

**3713 Medical Sociology.** Prerequisite: 1113 or permission of instructor. A study of cultural and class factors in health and morbidity. Focus is on the social organization of medical services, including discussion of the hospital as a social institution. The role of medical and paramedical personnel and

the interaction of the medical system with other social institutions such as government, church, education, and family. (Irreg.)

**3723 Sociology of Family.** Prerequisite: 1113 or sophomore standing or above. The sociological study of the family as an institution; the origin and development of the family; the interrelationships of the family and the larger society; the environmental conditions which seem to favor the development and continuance of the major family forms; the rise of the modern democratic family; characteristic patterns of change in the contemporary family. (F, Sp)

**3733 Sociology of Gender.** Prerequisite: 1113 or permission of instructor. Sociological analysis of the reinforcement of gender roles by the major institutions of society. Examine the effects on gender roles of education, mass media, economics, public policy, law, religion, and society. (Irreg.)

**3753 Sociology of Africa.** Prerequisite: 1113 or permission of instructor. A systematic consideration of Africa. Topics include issues of cultural uniqueness and national character, population dynamics, family structures and values, and economic and political institutions. Emphasis is placed on a global perspective and encourages cross-national contrasts. (Irreg.) [IV-NW]

**3803 Inequality in a Global Perspective.** Prerequisite: 1113 or permission of instructor. Examines the causes and consequences of socioeconomic inequality in contemporary societies (including the U.S.) by using theories and research evidence from the vantage point of international political economy. Topics include: the nature, structure, and hierarchy of the global economy; the link between international and national distributions of wealth and power; and the racial, ethnic, and religious correlates of social inequality. (Irreg.)

**3813 Socialization Across the Life Course.** Prerequisite: 1113 or permission of instructor. A survey of the interrelationship of the individual with society, the processes of socialization, personality development. Focus on continuation of socialization from childhood through adulthood and old age. (Irreg.)

**3833 Urban Sociology.** Prerequisite: 1113 or permission of instructor. Urbanization as a process involving an explanation of the causes and consequences of the rise of cities. Topics include: comparative world urbanization, the social and cultural correlates of urban life and population change related to urbanization. (Irreg.)

**3843 Sociology of Aging.** Prerequisite: 1113 or permission of instructor. Comprehensive description of the dimensions of aging. The point of departure is the notion that to talk meaningfully about one aspect of aging requires consideration of its other dimensions. (Irreg.)

**3853 Social Problems in Contemporary Russia and Eastern Europe (Crosslisted with International and Area Studies 3853).** Prerequisite: Junior standing or permission of instructor. Interdisciplinary study of social problems in Russia and eastern Europe. Topics include human and physical geography, lingering aspects of Soviet life, privatization, the impact of transition on social and governmental institutions, and the relationship between social structure and crime throughout the country. (Irreg.)

**3873 Religion and Society.** Prerequisite: junior standing. An analysis of the functional significance of religion in society. Topics include the distinction between magic and religion, the functional approach to social phenomena, the relationship between religion and the problem of order in human societies, the relationship between religion and other major institutional arrangements (e.g., the economy and the polity). (F, Su)

**3883 Political Sociology.** Prerequisite: 1113 or permission of instructor. An analysis of power and authority relations, sources of political conflict and social change, and processes by which political consensus is created. Topics include theoretical origins, national and community power structures, political ideologies, voting behavior, social movements and revolutions. (Irreg.)

**3890 Special Topics for Non-Majors.** 1 to 3 hours. Prerequisite: 1113 or permission of instructor. May be repeated with change of content; maximum credit six hours. This course cannot be used to satisfy the major requirements in sociology. (F, Sp, Su)

**3900 Special Topics in Sociology.** 1 to 3 hours. Prerequisite: 1113 or permission of instructor. May be repeated with change of content; maximum credit six hours. Cover topics not currently offered in regularly scheduled courses. (Irreg.)

**3903 Gangs and Violence.** Prerequisite: 1113 and 3523. The course provides an overview of the gang problem in the United States, both historically and as presently defined. Will examine different theories about gangs and gang membership and will examine different types of gangs. (Irreg.)

**3913 The Death Penalty in the United States.** Prerequisite: 1113 and 3523. Provides an overview of capital punishment in the United States,

and Oklahoma in particular, from a sociological perspective. History of capital punishment in the United States specific cases related to the death penalty, and arguments for and against the use of capital punishment. (Irreg.)

**3923 Alcohol, Drugs and Society.** Prerequisite: 1113 and 3523. Explores sociological explanations of alcohol and drug use with a special emphasis on current issues in the United States. (Irreg.)

**3933 Criminal Law.** Prerequisite: 1113 and 3523. Provides a basic understanding of criminal law in the United States by examining what conduct is criminal under what circumstances. Also examines what criminal law should provide in light of the social and private interests involved and the ability of the law to influence behavior. (Irreg.)

**3943 American Law.** Prerequisite: 1113 and 3523. Provides a basic understanding of law in American society by examining the concept and process of American common law. Analysis and interpretation of judicial opinions. Considers the relationship between law and social change. (Irreg.)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: 1113 and permission of instructor and admission to Honors Program. May be repeated; maximum credit six hours. Will consist of topics designated by the instructor in keeping with the student's major program. The topics will cover materials not usually presented in the regular courses. (Irreg.)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: 1113 or permission of instructor and admission to Honors Program. May be repeated; maximum credit six hours. The projects covered will vary. The content will deal with concepts not usually presented in regular coursework. (Irreg.)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: 1113 or permission of instructor and admission to Honors Program. May be repeated; maximum credit six hours. Will provide an opportunity for the gifted honors candidate to work at a special project in the student's field. (Irreg.)

**Unless otherwise noted, the prerequisite for courses in sociology numbered 4000–4999 is six hours of sociology including 1113 or permission of instructor.**

**+G4163 Advanced Social Statistics.** Prerequisite: 1113, 3123 (B or better), 3133 (B or better); or permission of instructor. Statistical inference, applied multiple regression and multivariate analysis will be covered. Computer applications using statistical packages and sociological data will be included. No prior computer background is assumed. (Irreg.)

**+G4263 Qualitative Research Methods.** Prerequisite: 1113, 3123 (B or better), 3133 (B or better), or permission of instructor. Explores the ethics and techniques of qualitative research, including ethnographic research, in-depth interviewing, historical analysis, and content analysis. The focus will be on strengths and weaknesses of qualitative methodologies, ethical issues, data gathering techniques, data analysis techniques, and data presentation. (Irreg.)

**4363 Sociological Theory.** Prerequisite: 1113, 3123 (B or better), 3133 (B or better) or permission of instructor. Consideration of classical sociologists including Durkheim, Weber, and Marx. Attention is devoted to the application of classical theories to current research issues. (Irreg.)

**4603 Internship in Criminology.** Prerequisite: 1113, 3123, 3133, and at least two of the following: 3523, 3533, 3543, 3553. Work experience in the field of criminology under the supervision of a faculty member. While the instructor will assist in finding internship opportunities, the ultimate responsibility is with the student. Internships may be served in any setting related to the field of criminology. Student will be required to develop a paper linking the work experience to scholarly research in criminology. (F, Sp, Su)

**4843 Capstone in Criminology.** Prerequisite: 1113, 3123 © or better), 3133 © or better), and at least two of the following: 3523, 3533, 3543, 3553, or permission of instructor. As a key component of this course, students will actively participate in an in-depth analysis and discussion of a current research topic or topics in the sociological study of criminology (crime and delinquency, deviance, sociology of law, criminal justice). Students will be expected to use material they have learned in Sociology 3123 and 3133, as well as material in 3000-level substantive courses, and will be required to demonstrate in written assignments their ability to understand and critique current quantitative research. Other topics in the course will be at the discretion of the instructor but within the University guidelines for Capstone courses. (F, Sp) [V]

**4943 Capstone in General Sociology.** Prerequisite: 1113, 3123 © or better), 3133 © or better), and at least two of the following: 3523, 3623, 3643, 3683, 3713, 3723, 3733, 3753, 4363, or permission of instructor. As a component of this course, students will actively participate in an in-depth analysis and discussion of a current research topic or topics in

sociology (i.e., inequality, family, demography). Students will be expected to use material they have learned in Sociology 3123 and 3133, as well as material in 3000-level substantive courses, and will be required to demonstrate in written assignments their ability to understand and critique current quantitative research. Other topics in the course will be at the discretion of the instructor but within the University guidelines for Capstone courses. (F, Sp) [V]

**4990 Independent Study.** 1 to 3 hours. Prerequisite: Fifteen hours of Sociology (including 1113, 3123, 3133) and permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**Unless otherwise noted, the prerequisite for courses in sociology numbered 5000 and above is 12 hours of sociology and graduate standing. Any exceptions must be approved by the departmental chairperson.**

**G5013 History and Theory of Urban Planning (Crosslisted with Political Science, Regional and City Planning 5013).** Prerequisite: open to seniors in social science departments, civil engineering and architecture, and to graduate students in regional and city planning. An introductory course on the history and theory of contemporary planning, focusing on the physical, social, institutional and economic structure and dynamics of human settlements, and on the role and responsibilities of the professional planner. (F)

**G5033 Sociology of Housing (Crosslisted with Regional and City Planning 5033).** A study of major developments in housing in the U.S. since 1860, including housing reform agitation, sociological problems, ecological patterns of housing areas, minimum standards for healthful housing, government intervention and its current role, and problems of providing adequate housing for different social groups. (F)

**G5203 Urban Land Use Controls (Crosslisted with Political Science, Regional and City Planning 5203).** Prerequisite: open to seniors in social sciences, civil engineering and architecture, and to graduate students in regional and city planning. Provides a study of the historical development of property systems; of zoning law, ordinance preparation, and administrative procedures; of subdivision regulations and other codes used in the regulation and control of land use. (Sp)

**G5283 Advanced Sociological Statistics I.** Prerequisite: 3123, 3963, or graduate standing, or permission of instructor. Advanced statistical concepts and analysis; analysis of variance and covariance; multiple regression analysis; use of computers for statistical analysis. (F)

**G5293 Advanced Methods of Social Research.** Prerequisite: 3123, 3963, or graduate standing or permission of instructor. Advanced research methodology; heavy focus of attention will be on concept measurement, index formation and survey research. (Sp)

**G5313 Qualitative Research Methods (Crosslisted with Communication 5313).** Prerequisite: graduate standing. Survey of different qualitative methodological strategies used in the social sciences to collect, code, and analyze information. (Sp)

**G5323 Advanced Qualitative Research (Crosslisted with Communication 5323).** Prerequisite: 5313. Designed to immerse students in the actual experience of conducting qualitative research in the field, emphasis on participatory observation, ethnographic research, and textual analysis. (F)

**G5333 Seminar in the Criminal Justice System.** Prerequisite: graduate standing or permission of instructor. A critical examination of the American system of criminal justice. Attention will be given to the unique problems of the system and to each of its component parts. Special emphasis is placed on the role of extralegal factors in discretionary decision making by the principal actors within the system. (Irreg.)

**G5383 Social Stratification.** Prerequisite: graduate standing or permission of instructor. In-depth treatment of sociological theories, methods and research in the area of stratification and inequality. (Irreg.)

**G5523 Criminology.** Prerequisite: graduate standing or permission of instructor. Examines the patterns and correlates of crime at the individual, situational, and aggregate levels. Also includes examination of the history of criminological thought as well as contemporary explanations of crime, with an emphasis on critical evaluation of these explanations. (Irreg.)

**G5543 Deviance and Social Control.** Prerequisite: graduate standing or permission of instructor. A critical examination of the literature on deviance and social control with special emphasis on the scope of the field. The frame of reference for the examination will consist of one or more of the

major theoretical perspectives in sociology: the functional, the conflict and the symbolic interactionist. (Irreg.)

**G5623 Race and Ethnicity.** Prerequisite: graduate standing or permission of instructor. Review of concepts and terminology of social differentiation, and in-depth study of the theories of prejudice and discrimination, power and dominance, and patterns of inter-group relations. Includes a history and analysis of race and ethnicity in the United States and other selected countries. (Irreg.)

**G5703 Sociology of Education (Crosslisted with EDFN 5703).** Prerequisite: eight hours of education or permission. Social structure in the community wherein the schools must operate, and the nature of human relations within the school; social processes and patterns involved in our educational system relative to other aspects of our society; effect of the school on the behavior and personality of its participants. Lectures, class discussions, audiovisual materials and outside readings, both scientific and literary, portraying the American social scene. (F)

**G5723 Sociology of the Family.** Prerequisite: graduate standing or permission of the instructor. Analysis of the family as a social institution, focusing on the problems created by changes in the family. The family is examined in historical, cross cultural and demographic perspectives. Applications include consideration of alternative arrangements, including discussion of the probable future of family arrangements in Western society. (Irreg.)

**G5733 Sociology of Gender.** Prerequisite: graduate standing or permission of instructor. Theoretical and empirical approaches to the study of gender within several substantive areas of sociology such as family, work, race and ethnicity, and social class. (Irreg.)

**G5790 Special Sociological Issues.** 2 to 3 hours. May be repeated with change of subject matter; maximum credit 12 hours. Intensive survey of the literature in a selected area of sociology under the direction of a member of the staff. Instructors rotate each semester. (Sp)

**G5823 Demographic Analysis.** Prerequisite: graduate standing or permission of instructor. Introduction to the four variables that comprise the subject matter of demography: fertility, mortality, migration and age structure. Sources of demographic data for the study of these variables are examined and basic demographic statistics are covered. (Irreg.)

**+G5831 Teaching Seminar I.** Preparation for teaching sociology. Taken prior to assignment of sole responsibility for teaching a course in sociology. (Sp)

**G5833 Social Psychology.** Prerequisite: graduate standing or permission of instructor. Examines issues regarding research in social psychology and personality psychology. Addresses the history of social psychology research issues, some class controversies, and new research directions in the field. Specific topics include social cognition attitudes, attribution, the self, groups, expectation states, collective behavior, the life course. (Irreg.)

**+G5841 Teaching Seminar II.** Prerequisite: 5831. For graduate students who are engaged in teaching a sociology course. (F)

**G5863 Sociology of Law.** Prerequisite: graduate standing or permission of instructor. Examines the relationship between law and society. Examines the origins of law, different legal systems and theories of punishment. How laws are created by social pressure and how laws contribute to social change. (Irreg.)

**G5913 Evaluation Research.** Prerequisite: graduate standing or permission of instructor. A systematic appraisal of social programs with the use of sociological research methods and statistics. (Irreg.)

**G5933 Sociological Theory.** Prerequisite: graduate standing or permission of instructor. Intensive analysis of the original writings of classical sociologists including Durkheim, Weber and Marx. Attention is devoted to the application of classical theories to current research issues. (F)

**G5943 Inequality in a Global Perspective.** Prerequisite: graduate standing or permission of instructor. Provides an in-depth review and analysis of the sociological concepts and theories used to study how wealth (and its correlates, power and prestige) are created and distributed. Special emphasis is placed upon how these processes occur within a global system. (Irreg.)

**G5960 Directed Readings in Sociology.** 1 to 4 hours. Prerequisite: graduate standing, 12 hours of upper-division sociology. No more than six hours may be counted toward the M.A. degree. No more than 12 hours may be counted toward the Ph.D. degree. Intensive survey of literature in a selected area of sociology under the direction of a sociology faculty member. (F, Sp, Su)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp, Su)

**G6233 Advanced Sociological Statistics II.** Prerequisite: 5283 and 5293. Specialized treatment of theoretical and applied topics in research methodology for advanced students. Primary focus is placed upon survey research. (Su)

**G6243 Advanced Quantitative Analysis.** Prerequisite: 5283, 5293, 6233. Instruction and extensive hands-on experience in categorical data analysis, structural equation modeling, repeated measure analysis of variance, longitudinal analysis, and confirmatory factor analysis. (Irreg.)

**G6313 Seminar in Social Change.** Prerequisite: graduate standing or permission of department. Analysis of social change utilizing historical as well as contemporary data. Major perspectives include social trends, modernization, planned change, change in large systems (e.g., nation states). Discussion of various theories of social change, including class conflict, technological and ideological factors, social movements and revolution. (Irreg.)

**G6343 Special Topics in Criminology.** May be repeated once. Covers in depth one significant topic in the area of criminology such as (but not limited to) deterrence, longitudinal research, ecology of crime, drugs and alcohol, societal reaction theory, macro-normative theory, micro-normative theory, penology, mental illness, victimology, and violence.

**G6353 Special Topics in Demography.** Prerequisite: graduate standing or permission of instructor. May be repeated once; maximum credit six hours. Covers in depth a topic in the area of demography such as (but not limited to) migration, mortality, fertility, population composition, and segregation. (Irreg.)

**G6363 Special Topics in Social Differentiation.** May be repeated once. Covers in depth one significant area of social differentiation such as (but not limited to) racial prejudice/discrimination, status attainment, poverty and welfare, work and occupations, community power and social elites.

**G6373 Special Topics in the Family.** Prerequisite: graduate standing or permission of instructor. May be repeated once; maximum credit six hours. Considers (but is not limited to) such topics as family violence, divorce and remarriage, family and work and methodological issues in family research. (Irreg.)

**G6753 Historical and Comparative Sociology.** Prerequisite: graduate standing or permission of instructor. Examines how religious, educational, economic, and political institutions influence peoples lives from a historical and comparative perspective. Examines general principles and conditions for how societies evolve over time. (Irreg.)

**G6833 Seminar in Mortality.** Prerequisite: graduate standing or permission of instructor. Introduction to the study of human mortality from the perspective of social demography. Examines how different aspects of social stratification and different variables in the social environment are associated with risks of mortality by age and cause of death. Also, examines the implications for health promotion and public policy. (Irreg.)

**G6843 Seminar in Fertility.** Prerequisite: graduate standing or permission of instructor. Focus on fertility and its impact on society. Examines the contribution of family planning programs and economic development to fertility change. Examines fertility behavior within gender roles and social norms. (Irreg.)

**G6853 Seminar in Migration and Immigration.** Prerequisite: graduate standing or permission of instructor. Examines migration and immigration with a special focus on recent immigration to the U.S. Examines migration and immigration from three perspectives: why do people migrate, how do migrants adapt to the receiving society, and the impact migrants have on the receiving society. (Irreg.)

**G6903 Issues in Sociological Theory.** Prerequisite: 5933. M.A. students may enroll only once; Ph.D. students may repeat the course once with a change of topic; maximum credit six hours. Examines a particular sociological theory in detail at a level appropriate for students who have completed 5933. Topics will vary and may include conflict theory, functionalism, symbolic interactionism, exchange theory, etc. (Irreg.)

**G6913 Public Service Internship.** Prerequisite: 5913 and graduate standing, or permission of instructor. Provides students with the opportunity to work in social service agencies in the Oklahoma City metropolitan area. The work is quite structured in that the students are required to prepare a written report on the results of their applied research. (Su)

**G6980 Research for Doctor's Dissertation.** (F, Sp, Su)

**G6990 Special Studies in Sociology.** 1 to 4 hours. Prerequisite: eighteen hours of sociology and permission of instructor. Individual research in a selected field; a problem is analyzed under the direction of a member of the staff. (F, Sp)

## Spanish (SPAN)

**1115 Beginning Spanish.** An elementary course in understanding, speaking, reading and writing Spanish. This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics. **Laboratory** (F, Sp, Su) [I-FL]

**1225 Beginning Spanish (Continued).** Prerequisite: 1115. An elementary course in understanding, speaking, reading and writing Spanish. This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics. **Laboratory** (F, Sp, Su) [I-FL]

**2113 Intermediate Spanish.** Prerequisite: 1225 or equivalent. Develops reading skills and control of grammar while cultivating depth of oral and writing ability. Emphasis on expansion of vocabulary and strong re-enforcement of grammatical structures. Reading and discussion of texts of literary and cultural interest. Oral and written assignments. (F, Sp, Su)

**2223 Intermediate Spanish (Continued).** Prerequisite: 2113. Refines reading skill and mastery of grammar. Emphasis on sophisticated vocabulary and understanding of grammatical structures. Literary and cultural texts discussed in oral and essay form. (F, Sp, Su)

**3073 Spanish Conversation.** Prerequisite: 2113 and 2223. Intensive practice in speaking Spanish on topics of everyday life. (F, Sp)

**+C3423 Advanced Spanish Composition.** Prerequisite: 2113 and 2223. The inculcation of proper writing habits, at an advanced level, toward the achievement of idiomatic Spanish. (F, Sp)

**3623 Business Spanish I.** Prerequisite: 2223. Introduces the specialized language used in commercial transactions, the organization and management of companies, the production of goods and services, the management of personnel and labor relations, financial resources, and real property. Emphasis on cultural aspects in Spain and Latin America that affect domestic and international trade. This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics. (F, Sp)

**3723 Business Spanish II.** Prerequisite: 3623. Concentration on domestic and international marketing practices, market segmentation, advertising, export/import, financing, retail/wholesale, and entry into international markets. Special attention is given to the training of the future manager for international trade. This course does not count for major credit in the Department of Modern Languages, Literatures and Linguistics. (Sp)

**3733 Medical Spanish.** Prerequisite: 2223. Develops oral proficiency for communication with Spanish-speaking patients in hospitals, clinics and offices. Intercultural issues will be continuously explored. This course may not count for major credit at the University of Oklahoma. (F)

**3743 Legal Spanish.** Prerequisite: 2223. Provides language proficiency for students in the legal professions. Intercultural issues will be continuously explored. This course may not count for major credit at the University of Oklahoma. (Sp)

**3853 Readings in Spanish Literature.** Prerequisite: 2223. Designed to improve reading comprehension and to introduce the language techniques of literary analysis. Representative works from the various literary genres will be studied. (F)

**The prerequisite for courses numbered 3900–4999 is 17 hours of Spanish. Other specific prerequisites are so indicated.**

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. The topics will cover materials not usually presented in the regular courses. (F, Sp)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. The projects covered will vary. The content will deal with concepts not usually presented in regular coursework. (F, Sp, Su)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted honors candidate to work at a special project in the student's field. (F, Sp)

**3990 Independent Study.** 1 to 3 hours. Prerequisite: one course in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**G4093 Survey of Spanish-American Literature I.** Prerequisite: 3853. A study of representative works from the colonial period to 1888. (F)

**G4103 Survey of Spanish-American Literature II.** Prerequisite: 3853. A study of representative works from 1888 to the present. (Sp)

**G4153 Survey of Spanish Literature to 1700.** Prerequisite: 3853. A study of representative works from the beginning to the Neo-Classical period. (F)

**G4163 Survey of Spanish Literature (Continued).** Prerequisite: 3853. A study of representative works from 1700 to the present. (Sp)

**4183 Senior Capstone.** Prerequisite: 3853, Spanish major and senior standing. Synthesis of Hispanic contributions to world literature and culture. (F, Sp) [V]

**G4313 Spanish Civilization.** Prerequisite: 3423, History 2613 or 2623. Spanish cultural heritage from the beginnings to the present day. (Sp)

**4323 Latin American Civilization and Culture.** Prerequisite: 3423, and History 2613 or 2623. Latin American cultural heritage from the beginnings to the present day. (F)

**4990 Independent Study.** 1 to 3 hours. Prerequisite: three courses in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**The prerequisite for courses numbered 5000 or over is 25 hours of Spanish. Other specific prerequisites are so indicated.**

**G5113 Traditional Novel in Spanish America: Romanticism to the Vanguard.** Prerequisite: graduate standing or permission of instructor. Beginning with the earliest forms of long prose, the course treats the Romantic novel, the Naturalistic novel, the Novel of the Land, and the Indianist novel. Representative texts of each mode will provide a thorough grounding in the characteristics of the different forms of prose. (Irreg.)

**G5203 Prose Fiction of Cervantes-The Quijote.** Prerequisite: graduate standing or permission of instructor. Style, structure, content, and fundamental criticism of Cervantes' masterpiece. (Irreg.)

**G5213 The New Novel in Spanish America.** Prerequisite: graduate standing or permission of instructor. Beginning with Vanguard fiction of the post-Modernists, the course treats the explosion of experimental, prize-winning novels as they developed in Spanish America through the sixties. Representative texts will deal with the wide variety of long fiction during the seminal years that saw political revolution echoed in literary revolution. (Irreg.)

**G5233 The Modernista Movement in Spanish-American Literature.** Inspiration, influences and objectives; study of the principal writers. (Irreg.)

**G5333 Studies in Medieval Literature.** Prerequisite: graduate standing or permission of instructor. May be repeated once with change of content; maximum credit six hours. A study of the representative works and genres of the Middle Ages. (Irreg.)

**G5353 Renaissance and Baroque Drama.** Prerequisite: graduate standing or permission of instructor. May be repeated once with change of content; maximum credit six hours. The theatre of the Spanish *siglo de oro*. Works by Lope de Vega, Ruiz de Alarcón, Tirso de Molina, Calderón de la Barca, and others. Comedia theory and special topics such as kingship, honor, God. (Irreg.)

**G5413 The Spanish-American Novel of the Post-Boom.** Prerequisite: graduate standing or permission of instructor. Beginning with novels that are reactions to the new novel, often by the same novelists, the course treats the different forms that have characterized the novel in Spanish America since the seventies. The novelists portray ordinary characters whose quiet desperation and existential suffering is portrayed different from the new novel. (Irreg.)

**G5423 The Spanish-American Essay.** The main currents of Spanish-American thought as they appear in the essay, from Simon Bolívar to the present. (Irreg.)

**G5433 Spanish-American Drama.** Prerequisite: graduate standing or permission of instructor. The study of the canonical works tracing the development of Spanish-American drama from colonial times to the present. (Irreg.)

**G5443 Post-Modernista Poetry in Spanish America.** A survey of Spanish-American poetry after World War I. (Irreg.)

**G5453 The Spanish-American Short Story.** The development of the genre from colonial times to the present. (Irreg.)

**G5513 Colonial Literature: The Encounter.** Prerequisite: Graduate standing or permission of instructor. The objective of this course is to familiarize students with early colonial Latin American discourse and its cultural/literary/historic context. Beginning with the letters of Christopher Columbus, the course includes early chronicles and histories. (Irreg.)

**G5523 Colonial Literature: The Criollos.** Prerequisite: Graduate standing or permission of instructor. This course familiarizes students with colonial Latin American discourse and its cultural/literary/historic context. The course primarily focuses on writers raised in colonial Spanish America approximately 100 years after the encounter. (Irreg.)

**G5603 Studies in Renaissance and Baroque Prose.** Prerequisite: graduate standing or permission of instructor. May be repeated once with change of topic; maximum credit six hours. The study of representative narrative from the Spanish Golden Age, including the Picaresque, Pastoral, Sentimental, Chivalric, Mystical and Byzantine traditions. Works by Quevedo, Fray Luis de León, Cervantes, Jorge de Montemayor, Gracián, and others. (Irreg.)

**G5623 Studies in Renaissance and Baroque Poetry.** Prerequisite: graduate standing or permission of instructor. May be repeated once with change of content; maximum credit six hours. Poetry of Garcilaso, Boscan, Fray Luis de Leon, Fernando de Herrera, Luis de Gongora, Francisco Quevedo, Lope de Vega, and others. Concepts of imitatio, cultismo, conceptismo, and the petrarchan and satirical traditions. (Irreg.)

**G5673 Studies in Eighteenth-Century Peninsular Literature.** Prerequisite: graduate standing or permission of instructor. May be repeated once with change of content; maximum credit six hours. A survey of the drama, poetry, and prose of representative writers of the Spanish eighteenth century. Authors include Feijoo, Jonellawos, Luzán, Moratín, Meléndez, Valdés, Cadalso and others. (Irreg.)

**G5683 Studies in Modern Peninsular Prose.** Prerequisite: graduate standing or permission of instructor. May be repeated once with change of content; maximum credit six hours. Representative writings in the development of the nineteenth- and twentieth-century Spanish narrative. The essay, short story, and novel of the Romantic, Realist, Naturalist, Modernist, Vanguard, and post Civil War periods are some of the themes to be covered. (Irreg.)

**G5693 Studies in Modern Peninsular Poetry.** Prerequisite: graduate standing or permission of instructor. May be repeated once with change of content; maximum credit six hours. Representative poetry of modern Spain. Topics include the works of Romantic, Realist, and Modernist poetry: the Generation of '98; the Generation of '27; and post Civil War poets. Representative poets include Espriñeda, Bécquer, Machado, Jiménez, Lorca, Salinas, Guillén, Diego, Alberti, Aleixandre, Cernuda, and others. (Irreg.)

**G5713 History of the Spanish Language.** Prerequisite: ten hours of college Latin or equivalent. A study of the developments from Vulgar Latin until the present day. (Irreg.)

**G5723 Studies in Modern Peninsular Drama.** Prerequisite: graduate standing or permission of instructor. May be repeated once with change of content; maximum credit six hours. Representative writers and works of the modern Spanish theater. Topics include Romanticism, Realism, Expressionism, theater of the absurd, and the Esperpento. Dramatic works of Valle Inclán, García Lorca, Buero Vallejo, Alfonso Sastre, and others will be included. (Irreg.)

**G5910 Problems in Research.** 2 to 4 hours. May be repeated with change of content; maximum credit nine hours. An individual course of intensive research with the area and problem to be determined by the student and directing instructor. (F, Sp, Su)

**G5930 Seminar in Spanish Literature.** 1 to 3 hours. May be repeated with change of subject matter; maximum credit nine hours. (F, Sp)

**G5940 Seminar in Spanish-American Literature.** 1 to 3 hours. May be repeated with change of subject matter; maximum credit nine hours. (F, Sp)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp)

**G5990 Independent Studies.** 1 to 3 hours. Prerequisite: graduate standing, permission of instructor. May be repeated; maximum credit 12 hours. Independent reading on one or more topics under the general direction of a faculty member. (F, Sp, Su)

**G6980 Research for Doctor's Dissertation.** 2 to 16 hours. (F, Sp)

## Supply Chain Management (SCM)

**3223 Logistics Management (Crosslisted with Marketing 4223).**

Prerequisite: Student must be approved for degree candidacy by Price College, Marketing 3013 or concurrent enrollment. The physical supply and distribution function in business management, including channel selection, transportation, facility location and materials management; concentrates on the analytical and managerial methods necessary for the development and control of an integrated logistics system. (F, Sp)

**3263 Global Class Operations.** Prerequisite: Student must be approved for degree candidacy by Price College. Operations management is about converting inputs into outputs (creating goods and services); global class operations is about making this conversion efficiently and effectively in domestic and international environments. Addresses analyzing and understanding contemporary changes in the nature of competitiveness and how organizations adapt to evolving requirements. (F, Sp)

**3323 Purchasing and Buyer Behavior (Crosslisted with Marketing)**

**3323.** Prerequisite: Marketing 3013, Marketing 3113 or concurrent enrollment in Marketing 3113. Consumer and organizational buying processes are examined. Individual and organizational decision-making frameworks, information technology, and the external environment are studied in the context of forming marketing strategies and tactics. Topics include make or buy decision making; supplier development and outsourcing; supplier evaluation, selection, and management; buyer-seller relationships; purchasing capital goods and services; international and electronic commerce; information processing; social and economic influences; preference formation and change; and image creation and positioning. (F, Sp)

**3523 Production/Operations Management.** Prerequisite: Student must be approved for degree candidacy by Price College. A study of the principles and practices related to production and operations management including product decisions, process planning, project planning, work measurement, plant location, facilities layout, scheduling and associated analytical techniques. (F, Sp, Su)

**G4023 Principles of Inventory and Materials Management.** Prerequisite: Student must be approved for degree candidacy by Price College, all 3000-level Business core courses. A study of inventory management with emphasis on order quantities, inventory cost, forecasting, perpetual inventory systems, periodic inventory systems and material requirements planning. (F, Sp)

**4323 Supply Chain Management.** Prerequisite: 4223. Supply chain operating practices and principles (i.e., the fundamentals of materials and logistics management). Studies and analyzes the dynamic nature of supply chain management for products and services and addresses the impact of the global economy on the management process. The course also develops a solid grounding in the theory of supply chain design, which includes strategies for customer service, quality, logistics, inventory management, and integrated supply chain management. Includes forecasting, postponement, sourcing (in particular, global sourcing), network design, and virtual integration (web-centric) and illustrates these concepts through cases. (Sp)

**4710 Special Topics in Supply Chain Management.** Prerequisite: Student must be approved for degree candidacy by Price College, all 3000-level Business core courses. May be repeated with change of subject matter; maximum credit six hours with 18 hour major and three hours with 15 hour major. (Irreg.)

**G5053 Production/Operations Analysis.** Prerequisite: graduate standing and Mathematics 1743 or equivalent, and permission. A study of production and operations with emphasis on policy decisions, product decisions, network analysis, job design, facilities decisions, plant layout, forecasting, production planning and associated analytical techniques. (F, Sp)

**G5153 Inventory Systems and Materials Management.** Prerequisite: graduate standing, permission (Director, CBA Graduate Programs). A study of the significance of materials to the effective functioning of an organization. Emphasis is placed on the economic selection of inventory systems and models. Topics include forecasting, fixed order size systems, fixed order interval systems, single order systems, material requirements planning and aggregate inventory control. (Sp)

## Telecommunications (TCOM)

**G5113 Telecommunications Industry Overview.** Prerequisite: graduate standing. Studies the development of telecommunications technology, industry, and policy in the United States, stressing inter-relationships among industry, government bodies and policies, and users. Provides a broad view of telecommunications and of the direction of the industry. (F)

**G5123 Wireless Communications (Crosslisted with Electrical and Computer Engineering 5123).** Prerequisite: Electrical and Computer Engineering 3793 or permission. Wireless communications principles, multiple access techniques, wireless networking, and systems and standards. (F)

**G5133 Multimedia Communications.** Prerequisite: Electrical and Computer Engineering 3793 or permission. Basic concepts of compression and networking techniques for multimedia signals. (F, odd-numbered years)

**G5213 Network Design and Management.** Prerequisite: graduate standing. Covers the basic issues in the design and management of telecommunications networks. (Sp)

**G5223 Optical Systems and Networks.** Prerequisite: ECE 3793.

Comprehensive study of new developments and how optical technology is used in optical systems and networks; covers optical fiber applications as the best transmission medium for high capacity traffic in communications networking; also how advanced photonic technology has enable networks to transport broadband exceeding terabits/second/fiber. (Sp)

**G5253 Computer and Communications Security.** Prerequisite: Boolean algebra or permission. Introduction to security problems in computing and communications, basic encryption and decryption techniques, secure encryption systems, cryptographic protocols and practices, security in networks and distributed systems, legal and ethical issues in computer security. (Sp)

**G5272 Telecommunications Laboratory.** Prerequisite: 5113. Core course designed to enhance the understanding of concepts and principles discussed in the computer networking text through a variety of networking exercises. Also emphasizes network performance, simulation, and internet protocols. Includes approximately eight lab modules, with a short report required for each. (Su)

**G5353 E-Commerce Architecture.** Prerequisite: graduate standing or permission. Comprehensive study of web commerce solutions, current and future. Includes designing, building, and managing web-enabled systems; gaining understanding of e-commerce strategies and how to specify, select customize, and manage web-enabled and digital business. (Sp or Su)

**G5553 Telecommunications Technology.** Prerequisite: graduate standing or permission. The ways and means by which voice, data and video traffic are moved long distances. Topics include data networks, telephone systems, video, and optical systems. (F)

**G5671 Professional Project Proposal Development.** Prerequisite: admission to the TCOM program. May be repeated; maximum credit two hours. Supervised individual study to develop a comprehensive project, which will conclude TCOM studies. The proposal should demonstrate the student's comprehensive grasp of his/her field of study. (F, Sp, Su)

**G5682 Professional Project.** Prerequisite: 5671. May be repeated; maximum credit four hours. A comprehensive project that is jointly selected by the project supervisor and the student. The program is to be completed during the final semester. (F, Sp, Su)

**G5960 Readings in Telecommunications.** 1 to 3 hours. Prerequisite: graduate standing. May be repeated with change of content; maximum credit nine hours. Students will study relevant material in the area of telecommunications or information systems. (Irreg.)

**G5970 Topics in Telecommunications.** 1 to 3 hours. Prerequisite: graduate standing. May be repeated with change of content; maximum credit nine hours. Covers material from specialized topics in the area of telecommunication and information technology. (Irreg.)

## University Courses (UNIV)

**1000 University Course.** Prerequisite: variable, generally at freshman level. May be repeated without restriction with change of subject matter. An interdisciplinary course, with subject matter, credit and format variable, and usually of an ad hoc and/or experimental nature. (F, Sp, Su)

**1210 Freshman Mentoring Program.** Introduction to the academic community; individual and group meetings to encourage student-faculty interaction and foster awareness of academic and cultural resources available to freshmen. (F, Sp)

**2000 University Course.** Prerequisite: variable, generally at sophomore level. May be repeated without restriction with change of subject matter. An interdisciplinary course, with subject matter, credit and format variable, and usually of an ad hoc and/or experimental nature. (F, Sp, Su)

**3000 University Course.** Prerequisite: variable, generally at junior level. May be repeated without restriction with change of subject matter. An interdisciplinary course, with subject matter, credit and format variable, and usually of an ad hoc and/or experimental nature. (F, Sp, Su)

**4000 University Course.** Prerequisite: variable, generally at senior level. May be repeated without restriction with change of subject matter. An interdisciplinary course, with subject matter, credit and format variable, and usually of an ad hoc and/or experimental nature. (F, Sp, Su)

## University College (UCOL)

**1001 Speed Reading on Computer.** Prerequisite: ACT subtest reading score of 19 or above or COMPASS subtest reading score of 83 or above. Development of skills needed for improved reading speed and comprehension at the college course level. Course pedagogy is computer-based. This course does not count for major credit in any department. However, the course may count for elective credit as granted by a department. (F, Sp)

**1002 Gateway to College Learning.** Orientation course to introduce freshmen to topics including the nature of higher education, library use, time management, essential academic skills (critical reading, writing, listening as well as test taking), campus policies, campus resources, and career education. The course assists students in the transition from high school to college. This course does not count for major credit in any department. However, the course may count for elective credit as granted by a department. (F, Sp)

**1012 Phillips Scholars Seminar I.** Prerequisite: acceptance to Phillips Scholars Program. Orientation course which emphasizes academic skills, life skills, OU resources, Phillips resources, and internships. Discovery of necessary tools to complete a rigorous course of college study and further career possibilities with Phillips Petroleum. This course does not count for major credit in any department. However, the course may count for elective credit as granted by a department. (F)

**1022 Freshman Seminar.** May be repeated with change of content; maximum credit four hours. Each seminar is developed and taught by an individual faculty member who leads students through an in-depth exploration of a specific intellectual topic. This course does not count for major credit in any department. However, the course may count for elective credit as granted by a department. (F, Sp)

**1030 Leadership Practicum.** Prerequisite: permission of Freshman Programs Office. May be repeated with change of content and credit hours; maximum credit six hours. Leadership practicum content to include but not limited to campus cultural programming, presentation/public speaking, interviews/resumes, student program budgets, and peer assistant training. This course does not count for major credit in any department. However, the course may count for elective credit as granted by a department. (F, Sp)

**2002 Strategies for Success.** Prerequisite: permission of instructor. Required for University College students the semester they are placed on probation or notice. The course will emphasize study skills, time management, motivation, responsibility, goal setting, and research techniques. (F, Sp)

**2012 Phillips Scholars Seminar II: Process Analysis and Quality Tools.** Prerequisite: 1012. Basic concepts of flow charting work processes and application of quality management tools to improve work flow, productivity and accountability of work tasks. Discover real life work processes and present findings for improvements. This course does not count for major credit in any department. However, the course may count for elective credit as granted by a department. (F)

**3012 Phillips Scholars Seminar III: Developing a Safety, Health, and Environmental Mindset.** Prerequisite: 2012. Safety, health, and environmental responsibility as seen from a workplace perspective. Topics include industrial hygiene and toxicology, common standards and procedures, role of audits, risk management, incident investigation, and environmental stewardship. Emphasis on employee ownership of these

concepts. This course does not count for major credit in any department. However, the course may count for elective credit as granted by a department. (F)

### 4012 Phillips Scholars Seminar IV: Preparing for the Workplace.

Prerequisite: 3012. Study of the transition from University to office/plant workplace. Topics include leadership and fellowship, career development, professional etiquette, organizational change, diversity, interpersonal relations and presentation skills. Presentation of research on specific workplace trends. This course does not count for major credit in any department. However, the course may count for elective credit as granted by a department. (F)

## Women's Studies (W S)

**1220 Title to be Specified by Department Offering the Course.** 1 to 3 hours. Interdisciplinary course in women's studies. 1220 preceded by the department name will be an introductory women's studies course in two (or more) departments.

### 2003 Introduction to Women's Studies (Crosslisted with Sociology)

**2003.** Designed to incorporate interdisciplinary perspective on women's history, sociology and psychology as well as their contributions to the arts, literature, and science. Multicultural and international dimensions of women's studies are integral to the course. In addition to assigned readings, students are expected to execute regular writing assignments and group projects. (F, Sp) [IV-WC]

### 2120 Interdisciplinary Course in Women's Studies.

1 to 3 hours. Prerequisite: appropriate standing. May be repeated in a given department, maximum credit nine hours, provided that the course title and content is different in each instance. (Irreg.)

### 3043 Gender, Power and Leadership in Politics and Administration

(Crosslisted with Political Science 3043). Prerequisite: Political Science 1113. Focuses on the relationship between gender, power, leadership, and government in politics and public administration. Causes of under-representation of women in elected office and the bureaucracy are explored. Historical, social, psychological, and organizational barriers are considered. (Irreg.)

**3220 Title to be Specified by Department Offering the Course.** 1 to 3 hours. 3220 preceded by the department name will be a junior level interdisciplinary course in women's studies. May be repeated with change of title and content; maximum credit nine hours. Content will be agreed upon by the departments in cooperation with women's studies.

**3233 Women Creating Social Change.** Prerequisite: junior standing or permission of instructor. This course will provide an overview of how women's organizations developed as part of the feminist movement in the 1960's. It will examine how women have organized at the local, national, and regional levels, both within and across differences of race, class, ethnicity, nationality, religion, geographic location, and sexuality. (Sp) [IV-WC]

**3563 Women and World Politics.** Prerequisite: junior standing or permission of instructor. This course looks at the contours of women's participation in formal political processes of elections, parliamentary and cabinet level representation, and political parties as well as informal processes. Cases will be examined from the U.S., Europe, Asia, the Middle East and Africa. (F, Sp) [III-SS]

**3810 Variable Topics in Women's Studies.** Prerequisite: 2003. May be repeated with change of content; maximum credit nine hours. Content will vary but will cover a particular aspect of women's studies, be it history, art, communication, literature, contemporary social problems, theory, or other appropriate area of study. Texts and supplementary readings will be assigned according to the topics chosen. (F, Sp)

**3933 History of the Great Witch-hunt in Early Modern Europe and America (Crosslisted with History 3933).** Prerequisite: junior standing. Covers an important era in the history of human rights and misogyny while offering a view of early modern Europe through social, legal, political, and religious lenses. (Irreg.) [IV-WC]

**3960 Honors Reading.** Prerequisite: 2003 and admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the Women's Studies faculty member. Topics will cover materials not usually presented in regular courses. (Irreg.)

**3980 Honors Research.** Prerequisite: 2003 and admission to Honors Program. Individualized research with a women's studies faculty member on a topic leading toward work for the honors thesis. In-depth research of specialized topic in women's studies. (Irreg.)

**4003 Method and Theory in Women's Studies.** Prerequisite: 2120. Designed to acquaint majors with the inter-relationship between theory and methodology in Women's Studies. The course will interweave the sciences, social sciences, humanities, and arts. Students are expected to write weekly critiques, develop a research proposal, and do an oral presentation. (F)

**4013 Women's Studies Internship (Slashlisted with 5013).** Prerequisite: junior standing, permission of adviser and instructor, and an approved women's studies course. May be repeated; maximum credit six hours. Students must relate their academic experience to women's issues by working with a non-profit organization or project. Academic credit is based on the site supervisor's report and a substantial paper relating to the internship experience. No student may earn credit for both 4013 and 5013. (F, Sp, Su)

**G4120 Interdisciplinary Course in Women's Studies.** 1 to 3 hours.

Prerequisite: appropriate standing. May be repeated in a given department, maximum credit nine hours, provided that the course title and content is different in each instance.

**4123 Contemporary Feminist Thought (slashlisted with 5123).** Prerequisite: senior standing and permission of instructor. This course offers a survey of the core concepts and texts of feminist theory. It is intended to expose students to the major works in feminist theory as well as critiques and scholarly analysis of them. The course includes a discussion of the roots of feminist theory, an analysis of alternatives to liberal feminist thought, and an examination of the impact of postmodernism on feminist thought and the rise of global feminism. No student may earn credit for both 4123 and 5123. (Irreg.) [V]

**4503 Women and Development in Latin America (slashlisted with 5503).**

Prerequisite: introductory social science course or 2003. Explores traditional theories of development, gender and women's approaches to development, and post-colonial criticisms of development discourse. It examines the participation of women in Latin American economies, social movements, and revolutions. It also addresses issues of Latin American women and empowerment. No student may earn credit for both 4503 and 5503. (F)

**4553 Women and the Law.** Prerequisite: junior standing. This course will examine the history of women's rights and gender discrimination in the United States. It will focus on topics such as the family, education, reproduction, sexual harassment, violence against women, pornography and discrimination in the workplace. Although the subject matter involves legal cases and discourse, it is not intended to be a law school course. (F) [IV-WC]

**4913 Women's Studies Senior Thesis.** Prerequisite: senior standing and permission of instructor. Research and presentation of written thesis on suitable topics in women's issues. Specific topic must be approved in advance by instructor. (F, Sp, Su)

**4990 Independent Study.** 1 to 6 hours. Prerequisite: junior standing, permission of instructor, and an approved women's studies course. May be repeated once with change of content; maximum credit six hours. Designed to accommodate students' interest in reading and research in a specialized area of women's studies. (F, Sp, Su)

**G5013 Women's Studies Internship (Slashlisted with 4013).** Prerequisite: graduate standing, permission of instructor, and an approved graduate women's studies course. May be repeated; maximum credit six hours. Students must relate their academic experience to women's issues by working with a non-profit organization or project. Academic credit is based on the site supervisor's report and a substantial paper relating to the internship experience. No student may earn credit for both 4013 and 5013. (F, Sp, Su)

**G5120 Interdisciplinary Course in Women's Studies.** 1 to 3 hours.

Prerequisite: appropriate standing. May be repeated in a given department, maximum credit nine hours, provided that the course title and content is different in each instance.

**G5123 Contemporary Feminist Thought (Slashlisted with 4123).**

Prerequisite: Graduate standing and permission of instructor. This course offers a survey of the core concepts and texts of feminist theory. It is intended to expose students to the major works in feminist theory as well as critiques and scholarly analysis of them. The course includes discussion of the roots of feminist thought, analysis of alternatives to liberal feminist

thought, and an examination of the impact of postmodernism on feminist thought and the rise of global feminism. Graduate students will have additional reading and writing requirements. No student may earn credit for both 4123 and 5123. (Irreg.)

**G5503 Women and Development in Latin America (Slashlisted with 4503).** Prerequisite: One Women's Studies graduate-level course. Explores traditional theories of development, gender and women's approaches to development, and post-colonial criticisms of development discourse. It examines the participation of women in Latin American economies, social movements, and revolutions. It also addresses issues of Latin American women and empowerment. Graduate students will be required to write an extensive research paper. (F)

**G5960 Directed Reading.** 1 to 6 hours. Prerequisite: six hours of women's studies courses at the graduate level. Graduate directed readings is designed for specialized research on a women's studies topic. (F, Sp, Su)

## Zoology (ZOO)

The department offers courses which are slashlisted so undergraduate students may take an undergraduate 4000-level course while graduate students may take a graduate 5000-level course. The lectures in a slashlisted course are the same. However, students in the 5000-level course have substantial additional requirements beyond those for students in the 4000-level course. These additional requirements are listed in the slashlisted course syllabus.

**1003 Contemporary Issues in Biology (crosslisted with Botany and Microbiology 1003).** An introduction to biology, focusing on the scientific background needed to understand selected issues related to cells, genetics and inheritance, evolution and ecology. Not open to students with credit for BOT/MBIO/ZOO 1005, BOT 1114 or ZOO 1114. Cannot be used for major credit in Zoology. (F, Sp) [II-NL]

**1005 Concepts in Biology (Crosslisted with Botany, Microbiology 1005).** Prerequisite: none, but high school or college chemistry is recommended. An introduction to the life sciences, focusing on the structure and function of organisms and their relationship to the environment. Fulfills general education laboratory science requirement. Not open to students with credit for Botany 1114 or Zoology 1114. **Laboratory** (F, Sp) [II-LAB]

**1114 Introductory Zoology.** Major biological principles and concepts as illustrated in the structure, function and evolution of animals. Emphasis is on self-regulatory mechanisms, especially in the vertebrates, and their adaptive significance. (F, Sp, Su) [II-NL]

**1121 Introductory Zoology Laboratory.** Prerequisite: previous completion or concurrent enrollment in 1114. Laboratory study of structure and development of organ systems. Experiments on physiological process of selected vertebrates and invertebrates. (F, Sp, Su) [II-LAB]

**1203 The Age of Dinosaurs (Crosslisted with Geology 1203).** Introduction to basic principles and theories in zoology (evolution, systematics, vertebrate morphology and relationships) and geology (geologic time, earth history, plate tectonics, sedimentation and stratigraphy), focusing on the evolutionary history of Dinosauria. May not be counted for major coursework in either department or for general education requirements. (F) [II-NL]

**2011 Critical Evaluation of Biological Research.** Prerequisite: 1114, 1121, and 2012 or concurrent enrollment. Emphasis will be placed on understanding the scientific method, how it applies to biological research, and implications for biomedical issues. The course will also introduce students to research in the four core areas of study in the Zoology department (physiology, ecology and systematics, animal behavior, and cellular, genetic, and developmental biology) while emphasizing three basic themes in biology (homeostasis, biological diversity, and evolution). (Sp)

**2012 Foundations in the Biomedical Sciences.** Prerequisite: 1114, 1121. An introduction to professional aspects of the biomedical sciences including basic biostatistics and data interpretation, critical evaluation of scientific literature, and discussion of case studies in biomedical ethics. Emphasis will be placed on the medical relevance of important generalizing themes in biology, including evolution, homeostasis, and biodiversity. Critical thinking and evaluation of current issues in medicine and medical research will be incorporated into class activities. (Sp)

**2094 Invertebrate Zoology.** Prerequisite: 1114 and 1121 or equivalent. A survey of the invertebrate animals featuring their classification, morphology, physiology, life history, ecology and evolution. **Laboratory** (Sp, Su)

**2102 Introduction to Pharmacology (Crosslisted with Pharmacology at the Health Sciences Center).** Prerequisite: 1114 or equivalent.

Introduction to basic principles of pharmacology including: mechanisms of drug action, absorption, distribution, metabolism, elimination and toxicology. Students will discover how principles of chemistry can be utilized with applied biology. (Sp)

**2124 Human Physiology.** Prerequisite: 1114 and 1121 with a grade of C or better; a course in chemistry or physics. May not be applied for zoology major credit. Open only to majors in nursing, physical therapy, physical education, and selected fields. Function of vertebrate organ systems in homeostasis. Circulation, digestion, endocrine and nervous control, metabolism, muscle action and respiration, with emphasis on humans.

**Laboratory** (F, Sp, Su)

**2204 Comparative Vertebrate Anatomy.** Prerequisite: 1114 and 1121, or equivalent. A study of the anatomy and evolutionary development of vertebrate organ systems. Representative vertebrates are studied in laboratory. **Laboratory** (F)

**2234 Introduction to Human Anatomy.** Prerequisite: 1114, 1121. An introduction to the human body using the systemic approach (integumentary, skeletal, muscular, cardiovascular, etc.). The course will use a lecture/lab format with extensive use of models, videos, and computer-assisted instruction as well as prospected cadavers. Not for zoology major credit. (F-Irreg.)

**2255 Human Anatomy.** Prerequisite: 1114 and 1121 with a grade of C or better, sophomore standing, permission. May not be applied for zoology major credit. Open only to majors in physical education, physical therapy, nursing and selected fields. The development and gross morphology of the human body and its systems. Laboratory dissection of human cadavers.

**Laboratory** (F, Sp)

**2404 Ecology and Environmental Quality (Crosslisted with Botany)**

**2404.** Prerequisite: sophomore standing. Study of ecological principles and their applications to human systems, study of population, air pollution, water pollution, energy issues, etc. Laboratory exercises focus on learning scientific methods of measurement of environmental quality factors.

**Laboratory** (Sp) [II-LAB]

**2913 Introduction to Quantitative Biology.** Prerequisite: 1114, 1121,

Mathematics 1523 or 1643 or higher, permission. The connections between basic mathematics and how biological data are organized, tested, and interpreted. Includes review of probability theory, introduction to parametric and non-parametric biostatistics, fundamentals of experimental design, and sketches of how optimality theory can be used to generate biological questions. (Sp)

**+G3013 Evolution.** Prerequisite: eight hours of zoology and/or botany, or five hours of zoology or botany and permission. Process of evolution.

Differentiation and natural selection in populations, the nature of species, the origins of species, and evolution above the species level. (F)

**3043 Sensory Functions (Crosslisted with Psychology 3043).**

Prerequisite: 1114 and 1121 or Psychology 1113. A comparative survey of the anatomy and physiology of visual, auditory and olfactory systems, as related to their biological significance. Topics covered include sensory functions in communication, predator avoidance and prey capture. (Irreg.)

**3073 Medical Entomology.** Prerequisite: 1114, 1121. Medical entomology investigates the relationship of insects and other arthropods to the health of humans, domestic animals, and wildlife. **Laboratory** (Sp)

**3083 Animal Behavior (Crosslisted with Psychology 3083).** Prerequisite: eight hours of zoology, including 1114 and 1121 or permission of instructor. History, philosophy and methods of ethology; causation, ontogeny, function, and evolution of behavior; orientation and navigation; sociobiology. (F)

**3092 Animal Behavior Laboratory (Crosslisted with Psychology 3092).**

Prerequisite: junior standing; concurrent or previous enrollment in 3083. Students will conduct both laboratory and field experiments on various aspects of animal behavior, including communication, foraging, parental care and aggression. **Laboratory** (F)

**+G3101 Principles of Physiology Lab.** Prerequisite: 3103 or concurrent enrollment. Provides students with an introduction to the methods and procedures used in physiological research. Topics covered include data acquisition, analysis and basic statistics, effects of temperature on living systems, nervous system functions, muscle mechanics and physiology, and studies of metabolic rates. In addition to hands-on laboratory experience, library projects and written research papers are used to introduce students to methods of scientific communication. **Laboratory** (F, Sp)

**+G3103 Principles of Physiology.** Prerequisite: eight hours of zoology, organic chemistry, Mathematics 1503 or equivalent, Physics 2424 or

permission. Introduction to basic concepts of physiology; relation of functions of organisms to physical and chemical principles, and to the environment; discussion of experimental design, constituents of tissues, energy, growth, homeostasis, cellular and organ functions. (F, Sp)

**3113 Cell Biology (Crosslisted with Botany, Microbiology 3113).**

Prerequisite: 1114 or Botany 1114 and Chemistry 3013 or 3053.

Introduction to the cell as a unit of life. A chemical and physical comparison of prokaryotic and eukaryotic cells to include a discussion of cell metabolism, types of metabolic regulation, and an analysis of ultrastructure. Emphasis will be placed on the dynamic changes in metabolism and ultrastructure which occur during the life of a cell. (F, Sp)

**+G3201 Animal Development Lab.** Prerequisite: 3203 or concurrent enrollment. Laboratory study of the development and embryology of a variety of animals. Developmental concepts and mechanisms will be illustrated through the use of prepared materials and hands-on experiments. **Laboratory** (F, Sp)

**+G3203 Animal Development.** Prerequisite: 11 hours zoology including 1114, 1121, and 3333 or permission. Study of animal development from gamete formation through organogenesis and postembryonic phases in different animal models. Concepts and mechanisms at the tissue, cellular and molecular levels will supplement descriptive analyses of development. (Sp)

**+G3333 Genetics (Crosslisted with Botany 3333).** Prerequisite: eight hours of zoology or eight hours of botany, or five hours of zoology or botany and permission. Principles of inheritance at gene, chromosome, and population levels; nature of the genetic material and its involvement in the determination of structure and function. No laboratory (F, Sp)

**+G3342 Genetics Laboratory (Crosslisted with Botany 3342).**

Prerequisite: 3333 or concurrent enrollment, or equivalent. The demonstrations, crosses and experiments are designed to illustrate various genetic phenomena, including Mendelian laws, recombination, mutation, natural and artificial selection, and interaction of genotype with environment. The primary organism studied is Drosophila, with some use of corn, Neurospora, and others. **Laboratory** (F)

**+G3403 Principles of Ecology.** Prerequisite: eight hours of zoology.

Patterns of environments and biological communities; the processes maintaining these patterns. **Laboratory** (F, Sp)

**3960 Honors Reading.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Will consist of topics designated by the instructor. The content will emphasize work not presented in other courses. (F, Sp, Su)

**3970 Honors Seminar.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Discussion of recent and current research trends and significant developments in zoology. (Irreg.)

**3980 Honors Research.** 1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Will provide an opportunity for the gifted honors candidate to work at a special project under the guidance of a professor in the student's field. **Laboratory** (F, Sp, Su)

**3990 Independent Study.** 1 to 3 hours. Prerequisite: one course in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**G4034 Mammalogy.** Prerequisite: eight hours of zoology, permission.

Classification, distribution and natural history of mammals with emphasis on Oklahoma species. Mammals are collected and prepared for scientific collections. Field trips. Some overnight camping. **Laboratory** (F even-numbered years)

**G4044 Ornithology.** Prerequisite: eight hours of zoology, permission.

Biology of birds. Identification of birds in North America with emphasis on Oklahoma; relationships, natural history and behavior of birds. Field trips. **Laboratory** (Sp even-numbered years)

**G4073 General Entomology.** Prerequisite: eight hours of zoology, 2094 recommended. Introduction to the world of insects. Morphological and physiological adaptations; taxonomy, life histories, and methods of collection. Field trips. **Laboratory** (F)

**G4083 Herpetology.** Prerequisite: eight hours of zoology, permission. An introduction to the study of amphibians and reptiles. Taxonomy, ecology, behavior and life histories of amphibians and reptiles, with emphasis on local forms. Field trips. **Laboratory** (F)

**G4093 Behavioral Ecology.** Prerequisite: 3083 or permission.

Interrelationship of an animal's ecology and its behavior. Optimal foraging theory, habitat selection, predator-prey adaptations, ecological constraints on sexual selection and mating systems.

**4113 Cellular Pathology (Slashlisted with 5113).** Prerequisite: 3113 or permission of instructor. The course focus is on the molecular and cellular bases of disease and alterations in cellular processes that lead to the development of various pathological conditions. Topics include symptoms of cellular disease, pathology of organelles, cell injury, cell death, immunopathology, neoplasia and genetic disorders. No student may earn credit for both 4113 and 5113. (F)

**G4123 Vertebrate Physiology.** Prerequisite: 3103 or equivalent.

Physiological function of vertebrate organ systems with emphasis on the processes of adaptation and homeostasis. Topics covered are neurosensory and motor functions, neuroendocrine function, digestion, metabolism and thermoregulation, respiration, circulation, excretion and osmoregulation. (F)

**4153 Endocrinology (Slashlisted with 5153).** Prerequisite: 3103; 3113 strongly recommended. The major emphasis of the course is how hormones work at the molecular, cellular, and physiological levels. The course examines the molecular biology of hormonal mechanisms and the integration of those mechanisms to maintain crucial homeostatic control systems. Hormones and their receptors are considered in terms of chemistry, biosynthesis, and mechanisms of action. The course focuses primarily on vertebrate hormones. No student may earn credit for both 4153 and 5153. (Sp)

**G4203 Mechanisms of Development (Slashlisted with 5203).** Prerequisite: 3203, 3201, 3113, or permission. Advanced, laboratory-based course which provides an in-depth analysis of selected topics in developmental biology. Hands-on laboratory exercises, molecular biology techniques, and use of the primary literature are emphasized. No student may earn credit for both 4203 and 5203. **Laboratory** (F)

**†G4213 Neurobehavioral Development.** Prerequisite: 12 hours of biology including 1114 and 1121. Specific developmental issues will be discussed from both the behavioral and biological levels of analysis. Cannot be taken for credit if 6213 has been previously taken. (Irreg.)

**4223 Cellular and Molecular Neurobiology (Slashlisted with 5223).**

Prerequisites: 3103, 3113, 3203, or 3333, or permission of instructor. Introduction to cellular and molecular neurobiology through reading and discussion of landmark research papers in five current areas of research. Emphasis will be on understanding modern cellular and molecular research methods and on critical interpretation of scientific data. No student may earn credit for both 4223 and 5223. (Sp)

**G4244 Animal Histology.** Prerequisite: 3103, 3113 or 3203 or permission. Structure and function of animal tissues with emphasis on the cellular basis of tissue and organ function. Laboratory emphasizes the identification of cells and tissues with the use of the light microscope. **Laboratory** (Sp)

**G4413 Tropical Ecology.** Prerequisite: 3013 or 3083 or 3403. Focuses on unique features of tropical ecosystems. Topics include: abiotic features that give rise to tropical forests, gap dynamics, tropical biodiversity, plant-animal interactions, value of tropical forests, causes and consequences of tropical deforestation. (Irreg.)

**G4462 Limnology.** Prerequisite: 12 hours of biological sciences, eight hours of chemistry, four hours of physics, or permission. An introduction to the biology, chemistry, physics and geology of freshwater environments, with emphasis on ecology. (F odd-numbered years)

**G4472 Limnology Laboratory.** Prerequisite: 4462 or concurrent enrollment, or equivalent. Experience in the use of the basic limnological methods and application of these methods to a variety of freshwater environments. Field trips. **Laboratory** (F odd-numbered years)

**G4493 Ichthyology.** Prerequisite: eight hours of zoology. Taxonomy, morphology, ecology and distribution of fishes, with emphasis on those of the region. **Laboratory** (Sp every third year, some Su)

**4713 Introduction to Nematology (Crosslisted with Botany, Microbiology 4713; Slashlisted with 5713).** Prerequisite: 12 hours of biology. Introduction to field of nematology including nematodes of importance to human and veterinary medicine, agriculture and the environment. No student may earn credit for both 4713 and 5713. (Irreg.)

**G4823 Physiological Basis of Animal Behavior.** Prerequisite: 3103. Covers the physiological and neurobiological processes underlying behavioral activities such as vision, hearing, olfaction, learning, communication, and reproduction. (Irreg.)

**4833 Introduction to Neurobiology (Slashlisted with 5833).** Prerequisite: 3103 or permission of instructor. Introduction to cellular and behavioral neurobiology. Topics covered will include cellular neurobiology, neurophysiology, neuroanatomy, sensory processing, movement, and neurobiology of behavior. No student may earn credit for both 4833 and 5833. (F)

**4843 Introduction to Molecular Biology (Crosslisted with Botany, Microbiology; Slashlisted with 5843).** Prerequisite: 1114 or Microbiology 3813 and 3812, or Zoology 1114 and one course in organic chemistry. Introduction to the characteristics and biological functions of nucleic acids and proteins in living cells with emphasis on nucleic acid replication, transcription, translation and regulation; also emphasis on the molecular aspects of microbial genetics—transformation, transduction and conjugation; and emphasis on molecular immunology and genetic engineering/recombinant DNA technology. No student may earn credit for both 4843 and 5843. (F)

**G4853 Neurobiology of Memory (Crosslisted with Psychology 4853).**

Prerequisite: 3103 or Psychology 3073. Advanced seminar dealing with current research on how the nervous system responds to, and is changed by, experience. Experience is broadly defined and may include learning, maturation and/or pathology.

**4863 Neural Control of Movement (Slashlisted with 5863).** Prerequisite: eight hours of zoology including, 1114, 1121, or permission of instructor. Introduction to neural control of movement through reading and discussion of key original research articles from the 19th century to the present. Topics include localization of function, sensory vs. central contributions, roles of single neurons, effects of neuromodulators, and motor learning. No student may earn credit for both 4863 and 5863. (F)

**4871 Current Topics in Neurobiology (Slashlisted with 5871).** Prerequisite: Permission of the instructor. May be repeated; Maximum credit three hours. A seminar course designed to develop a student's abilities to interpret and critically evaluate research in cellular and behavioral neurobiology. Involves both public seminars and journal club style discussions of contemporary literature. No student may earn credit for both 4871 and 5871. (F, Sp)

**G4903 Computers and Programming in Biology.** Prerequisite: twenty-four hours of biology or permission. An introduction to the use of the zoology department computer facilities: using statistics packages to analyze data, text editors and formatters to write papers and reports, graphics terminal for plotting, and beginning Fortran and Basic for programming on the IBM 3081 and the Apple II microcomputer. (Sp)

**G4913 Quantitative Biology.** Prerequisite: 12 hours of biological sciences; a course in statistics recommended. Examination of problems in deductive probability and inductive statistics. No laboratory (F)

**4961 Undergraduate Seminar.** Prerequisite: 18 hours of zoology or permission of instructor. May be repeated; maximum credit two hours. Survey of current research programs in environmental biology, cell biology, physiology, animal behavior and other fields presented in weekly public seminars by visiting scholars and local experts in animal biology. (F, Sp)

**4970 Special Topics in Zoology.** 1 to 3 hours. Prerequisite: three courses in general area to be studied; permission of instructor, department. May be repeated with change of topic; maximum credit nine hours. Seminar or special topic course; may include laboratory or field work. (F, Sp, Su)

**4983 Senior Seminar.** Prerequisite: 12 hours of zoology, senior standing. An interdisciplinary approach will be used to synthesize ideas from the major fields of zoology. Readings and discussion will focus on contemporary social, ethical and economic issues. (F, Sp) [V]

**4990 Independent Study.** 1 to 3 hours. Prerequisite: three courses in general area to be studied; permission of instructor and department. May be repeated; maximum credit six hours. Contracted independent study for topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (F, Sp, Su)

**G5003 Zoogeography.** Prerequisite: 12 hours of zoology or permission. The determinants of animal distributions over the earth. Topics include continental drift, dispersal, vicariance biogeography, biogeographical provinces, mass extinctions, island biogeography, distribution and abundance. No laboratory. (F odd-numbered years)

**G5093 Evolutionary Ecology.** Prerequisite: 12 hours of biology, including 3013, or permission. Study of ecological forces important in evolutionary change in plants and animals. Evolution of sex, breeding systems, life history, speciation, coevolution of animal/plant interactions. (F even-numbered years)

**G5113 Cellular Pathology (Slashlisted with 4113).** Prerequisite: 3113 or permission of instructor. The course focus is on the molecular and cellular bases of disease and alterations in cellular process that lead to the development of various pathological conditions. Topics include symptoms of cellular disease, pathology of organelles, cell injury, cell death, immunopathology, neoplasia and genetic disorders. No student may earn credit for both 4113 and 5113. (F)

**G5153 Endocrinology (Slashlisted with 4153).** Prerequisite: 3103; 3113 strongly recommended. The major emphasis of the course is how hormones work at the molecular, cellular, and physiological levels. The course examines the molecular biology of hormonal mechanisms and the integration of those mechanisms to maintain crucial homeostatic control systems. Hormones and their receptors are considered in terms of chemistry, biosynthesis, and mechanisms of action. The course focuses primarily on vertebrate hormones. No student may earn credit for both 4153 and 5153. (Sp)

**G5203 Mechanisms of Development (Slashlisted with 4203).**

Prerequisite: 3203, 3201, 3113, or permission. Advanced, laboratory-based course which provides an in-depth analysis of selected topics in developmental biology. Hands-on laboratory exercises, molecular biology techniques, and use of the primary literature are emphasized. No student may earn credit for both 4203 and 5203. **Laboratory** (F)

**G5204 Vertebrate Paleobiology (Crosslisted with Geology 5204; Slashlisted with 4204).** Prerequisite: Zoology 1114, 1121, 2204; or permission. Systematics, relationships, zoogeography and evolutionary morphology of the major groups of vertebrates. Field trips. No student may earn credit for both 4204 and 5204. **Laboratory** (Sp)

**G5223 Cellular and Molecular Neurobiology (Slashlisted with 4223).**

Prerequisites: ZOO 3103, ZOO 3113, ZOO 3203, or ZOO 3333, or permission of instructor. Introduction to cellular and molecular neurobiology through reading and discussion of landmark research papers in five current areas of research. Emphasis will be on understanding modern cellular and molecular research methods and on critical interpretation of scientific data. No student may earn credit for both 4223 and 5223. (Sp)

**G5293 Cytology Ultrastructure (Crosslisted with Botany, Microbiology 5293).** Prerequisite: 12 hours of biology. A descriptive survey of bacterial, plant and animal cells. Emphasis will be given to the ultrastructural morphology of cellular organelles and their functional significance. (F)

**G5333 Ecological Genetics.** Prerequisite: 3333 required; 3013 recommended. History of population and ecological genetics; genetic systems; emphasis on experimental aspects of population genetics and measurement of selection and levels of genetic variation in different ecological situations; development of quantitative characters; genetic load; drift; enzyme variation; chromosome variation. (Irreg.)

**G5343 Developmental Genetics.** Prerequisite: 3333. Covers the regulatory control of development in simple viral and bacterial operons, but emphasizes eukaryotic development and genetic organization. Topics will include DNA and chromosome structure, intron processing, nuclear-cytoplasmic interaction, pattern formation and aging. (Sp)

**G5364 Transmission Electron Microscopy (Crosslisted with Botany, Microbiology 5364).** Prerequisite: permission. Introduction to the theory of transmission electron microscopy and practical instruction in specimen preparation, ultramicrotomy, instrument operation, photography and quantitative methods. **Laboratory** (F)

**G5374 Scanning Electron Microscopy (Crosslisted with Botany, Chemical Engineering, Microbiology 5374).** Prerequisite: basic chemistry; basic physics; demonstrated need; permission of instructor. Principles of scanning electron microscopy combined with training in the operation of the SEM and ancillary equipment. Students will be certified in the operation of all equipment. Sample preparation on a variety of samples and darkroom procedures will be performed. Independent project with oral report and poster required. **Laboratory**

**G5403 Population Ecology.** Prerequisite: 3403, 4913 or equivalent. History, demography, environmental factors, density-dependent factors, genetics and population ecology, theories of population and community organization (ideas of Elton, Williams, Preston, MacArthur, Smith, Hairston, and Slodsbodkin). No laboratory. (Sp even-numbered years)

**G5413 Community Ecology.** Prerequisite: 3403 and Mathematics 1743 or 1823, or permission. Theoretical and empirical study of the structure and organization of natural communities. Topics include competition, predation, disturbance, abiotic gradients, species equilibria.

**G5443 Physiological Ecology.** Prerequisite: 12 hours of biology, including a course in physiology and in ecology, or permission. A study of the physiological adjustments made by animals to changes in their external environment. (Sp)

**G5453 Advanced Ecology and Evolutionary Biology (Crosslisted with Botany and Microbiology).** Prerequisite: general ecology. Required for students in the ecology and evolutionary biology doctoral program. An introduction to current research opportunities and research programs in ecology and evolutionary biology at the University of Oklahoma. Specific topics and lecturers will vary from week to week to give students a broad overview of ongoing research projects. (F)

**G5471 Seminar in Ecology and Evolutionary Biology (Crosslisted with Botany and Microbiology).** Prerequisite: graduate standing. Two semesters of enrollment are required for students in the ecology and evolutionary biology doctoral program. An intensive, student-based seminar in which students present both proposals and ongoing progress reports on doctoral level research projects in ecology and evolutionary biology. (F, Sp)

**G5483 Fish Ecology.** Prerequisite: 12 hours of zoology, including 3403, or permission. Emphasizes fundamental ecology of freshwater and marine fishes worldwide. Focus will be on the historical literature and development of fish ecology, as well as modern comparative and experimental approaches in distributional ecology, fish community structure/function, abiotic and biotic interactions affecting fishes, and direct and indirect effects of fishes in ecosystems. (Sp each third year, Norman; Su on demand, Biological Station)

**G5494 Biology of Fishes.** Prerequisite: 12 hours of zoology, permission; 4462 recommended. Natural history and ecology of freshwater fishes. Field trips. **Laboratory** (F odd-numbered years)

**G5503 An Introduction to Fish Culture.** Prerequisite: 12 hours of biology, permission. Principles of warm water fish culture, practical culture and field trips. **Laboratory** (F even-numbered years)

**G5693 Fishery Management.** Prerequisite: 4462, 5494 or permission of instructor. Relationship of ecological principals to the management of fisheries. Influence of physico-chemical factors in the environment will be emphasized. A combination of field and laboratory exercises will relate basic fishery biology techniques to applications in management. (F, odd years)

**G5703 Numerical Systematics.** Prerequisite: permission of instructor. A consideration of the philosophical basis of systematic procedures in biology and the numerical methods developed to deal with systematic and taxonomic problems. Phenetic, cladistic and phyletic techniques and philosophies will be explored and class members will conduct projects designed to give them practical experience in analyzing numerically, data from groups of organisms of special interest to them. (Sp odd-numbered years)

**G5713 Introduction to Nematology (Crosslisted with Botany, Microbiology 5713; Slashlisted with 4713).** Prerequisite: 12 hours of biology. Introduction to field of nematology including nematodes of importance to human and veterinary medicine, agriculture and the environment. No student may earn credit for both 4713 and 5713. (Irreg.)

**G5833 Introduction to the Neurobiology (Slashlisted with 4833).** Prerequisite: 3103 or permission of instructor. Introduction to cellular and behavioral neurobiology. Topics covered will include cellular neurobiology, neurophysiology, neuroanatomy, sensory processing, movement, and neurobiology of behavior. No student may earn credit for both 4833 and 5833. (F)

**G5843 Introduction to Molecular Biology (Crosslisted with Botany, Microbiology; Slashlisted with 4843).** Prerequisite: 1114 or Microbiology 3813 and 3812, or Zoology 1114 and one course in organic chemistry. Introduction to the characteristics and biological functions of nucleic acids and proteins in living cells with emphasis on nucleic acid replication, transcription, translation and regulation; also emphasis on the molecular aspects of microbial genetics—transformation, transduction and conjugation; and emphasis on molecular immunology and genetic engineering/recombinant DNA technology. No student may earn credit for both 4843 and 5843. (F)

**G5863 Neural Control of Movement (Slashlisted with 4863).** Prerequisite: eight hours of zoology including, 1114, 1121, or permission of instructor. Introduction to neural control of movement through reading and discussion of key original research articles from the 19th century to the present. Topics include localization of function, sensory vs. central contributions, roles of single neurons, effects of neuromodulators, and motor learning. No student may earn credit for both 4863 and 5863. (F)

**G5871 Current Topics in Neurobiology (Slashlisted with 4871).**

Prerequisite: Permission of the instructor. May be repeated; maximum credit three hours. A seminar course designed to develop a student's abilities to interpret and critically evaluate research in cellular and behavioral neurobiology. Involves both public seminars and journal club style discussions of contemporary literature. No student may earn credit for both 4871 and 5871 concurrently. (F, Sp)

**G5880 Graduate Project.** 2 to 4 hours. Prerequisite: graduate standing in zoology. For students in the nonthesis M.S. program in fisheries biology. Students will undertake development, under the project committee's direction, of a research project. (F, Sp, Su)

**G5903 Bioinformatics: Applications.** Prerequisites: Botany/Zoology 3333 or 3113, or Botany/Microbiology/Zoology 4843/5843, or Microbiology 3813, or Chemistry 3653 or 5853, or equivalent and basic statistics (Psychology 2003 or 2113, or Zoology 2913, or Biostatistics and Epidemiology 5163, or equivalent) and permission of instructor. This course is designed to provide an understanding of theory and application of computational methods for molecular biology research. The course will cover the following topics: Linux basics, genome sequencing and databases, sequence alignment, database searching for similar sequences, gene analysis, protein analysis, genome analysis, phylogenetic prediction, and a brief introduction to PERL programming. (F)

**G5910 Problems in Natural Science (Crosslisted with Botany, Microbiology, Physics 5910).** 1 to 2 hours. Prerequisite: admission to candidacy for the degree of Master of Natural Science. (F, Sp, Su)

**5913 Bioinformatics: Programming.** Prerequisites: 5903, C or C<sup>++</sup>. Programming ability (CS 2413, or equivalent), and permission of instructor. This course is designed to provide programming skills needed to perform large-scale genomic analysis in research and professional settings. The Perl programming language will be taught by introducing features of the Perl programming language in the context of and with applications to bioinformatics. (Sp)

**G5970 Special Topics in Zoology.** 1 to 3 hours. Prerequisite: three courses in general area to be studied or permission of instructor. May be repeated with change of topic; maximum credit 12 hours. Special topic course; may include laboratory or field work. (Sp, Su)

**G5980 Research for Master's Thesis.** Variable enrollment, two to nine hours; maximum credit applicable toward degree, six hours. **Laboratory** (F, Sp, Su)

**G5990 Independent Study.** 1 to 6 hours. Prerequisite: permission. May be repeated in different fields; maximum credit 12 hours. Directed readings. Written report required. No laboratory (F, Sp, Su)

**G6003 Ecological Modeling (Crosslisted with Botany and Microbiology 6003).** Prerequisite: one computer course, one course in ecology, or permission of instructor. Trains students to use modeling tools in their research and to gain greater ability to understand, appreciate, and criticize modeling work. Students will learn general procedure and principles with case studies of successful models in ecology and participate in course projects to gain hands-on experience in model development. (Irreg.)

**G6012 Professional Aspects of Biology.** Prerequisite: graduate standing in biological sciences. Scientific writing, the process of publication, literature retrieval and bibliographical procedures, research grant proposals, professional job placement, scientific organization, university and college organization and government, scientific photography and illustrations, social responsibilities and professional ethics for the biologist. (F)

**G6083 Evolution of Social Behavior.** Prerequisite: 3083 and permission of instructor. History of sociobiological concepts; relationships of ecology, ethology, and evolution. (F even-numbered years)

**G6152 Methods in Endocrinology.** Prerequisite: 5153 or concurrent enrollment in 5153, permission. Experiments are designed to illustrate the modern as well as classical techniques and instrumentations used in endocrinology. Students are responsible for post-operative care and treatment of animals. An individual problem is chosen by each student.

**Laboratory** (Sp)

**G6213 Developmental Behavioral Neuroscience.** Prerequisite: graduate standing or permission of instructor. Discussion of specific developmental issues from both the behavioral and neurobiological perspectives of analysis. Can not be taken for credit if 4213 has been previously taken. (Irreg.)

**G6970 Seminar.** 1 to 4 hours. Prerequisite: 15 hours of zoology, permission. May be repeated; maximum credit 12 hours; no more than six hours may be in any one field. No laboratory (F, Sp, Su)

**G6980 Research for Doctor's Dissertation.** (F, Sp, Su)

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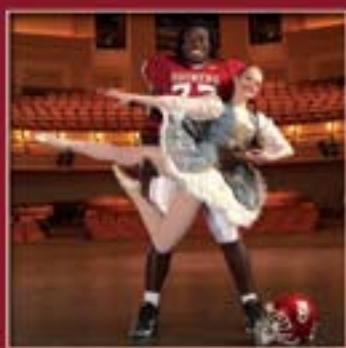
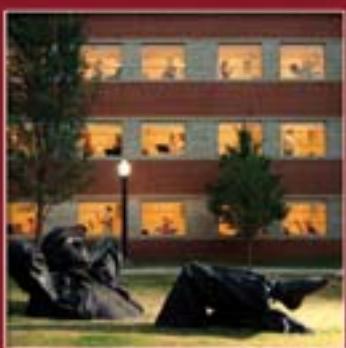
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