

Fairmount College of Liberal Arts and Sciences

Offices: 200 LAS
William Bischoff, dean
Sharon Iorio, associate dean
Keith Pickus, interim associate dean
Gerald Lichti, assistant dean

Departments and Programs

Anthropology, (316) 978-3195—Peer Moore-Jansen, *chairperson*; Clay A. Robarchek, *graduate coordinator*
Biological Sciences, (316) 978-3111—David McDonald, *chairperson*; William Hendry III, *graduate coordinator*
Chemistry, (316) 978-3120—D. Paul Rillema, *chairperson*; Kandatege Wimalasena, *graduate coordinator*
Communication, Elliott School of, (316) 978-3185—Shirley Staples Carter, *director*; Katherine Hawkins, *graduate coordinator*
Community Affairs, School of, (316) 978-7200—Paul Cromwell, *director*
Criminal Justice, (316) 978-5896—Andra Bannister, *graduate coordinator*
Ethnic Studies, (316) 978-6546—Anna Chandler, *program director*
Gerontology, (316) 978-6684—William Hays, *graduate coordinator*
Computer Science, (316) 978-3156—Prakash Ramanan, *chairperson*; Rodney Bates, *graduate coordinator*
English, (316) 978-3130—Margaret Dawe, *chairperson*; Diane Quantic, *graduate coordinator*
Environmental Science, (316) 978-6548—Karen Brown, *graduate coordinator*
Geology, (316) 978-3140—Collette Burke, *chairperson*; Salvatore J. Mazzullo, *graduate coordinator*
History, (316) 978-3150—Craig Miner, *chairperson*; John Dreifort, *graduate coordinator*
Liberal Studies, (316) 978-3358—Ramona Liera-Schwichtenberg, *graduate coordinator*
Mathematics, (316) 978-3160—Buma L. Fridman, *chairperson*; Kenneth Miller, *graduate coordinator*
Modern and Classical Languages and Literatures, (316) 978-3180—Dieter Saalman, *chairperson*; Eunice Myers, *graduate coordinator*
Philosophy, (316) 978-3125—David Soles, *chairperson*
Physics, (316) 978-3190—Pawan Kahol, *chairperson*; Hussein Hamdeh, *graduate coordinator*
Political Science, (316) 978-3165—James Sheffield, *chairperson*
Psychology, (316) 978-3170—Charles Burdsal, *chairperson*; Gary Greenberg, *graduate coordinator*
Religion, (316) 978-3108—Stuart Lasine, *director*
Social Work, School of (316) 978-7250—Cathleen Lewandowski, *director and graduate coordinator*

Sociology, (316) 978-3280—Ron Matson, *chairperson*; David Wright, *graduate coordinator*
Urban and Public Affairs, Hugo Wall School of, (316) 978-7240—Ed Flentje, *director*
Public Administration, (316) 978-6693—Samuel Yeager, *graduate coordinator*
Urban Studies, Center for, (316) 978-7240—Ed Flentje, *director*
Women's Studies, (316) 978-3358—Dorothy Miller, *chairperson*

Graduate Certificates

Applied Communication, (316) 978-6059—Katherine Hawkins, *graduate coordinator*
Great Plains Studies, (316) 978-6764—Diane Quantic, *program coordinator*
Public Finance, (316) 978-6332—Bart Hildreth, *program coordinator*

Anthropology (ANTHR)

Graduate Faculty
Professors: Donald Blakeslee, Robert Lawless, Clayton A. Robarchek (graduate coordinator)
Associate Professors: Dorothy Billings, David Hughes, Peer Moore-Jansen (chairperson)

The anthropology department offers a course of study leading to the Master of Arts (MA) degree.

Admission Requirements

Admission to the MA program in anthropology requires the completion of a minimum of 15 semester hours in anthropology to include a course in history and theory of anthropology and a foundation in the main subdivisions of the discipline, a grade point average of 2.750 (on a 4.000 scale) in the last 60 hours of credit, and a 3.000 grade point average in anthropology.

Degree Requirements

The MA degree in anthropology has three tracks.

Track 1 requires the completion of 30 semester hours, including the presentation of a thesis and comprehensive exams. At least 60 percent (18) of these hours must be in courses numbered 700 or above. The 30 hours must include a core course in archaeological anthropology (ANTHR 736), cultural anthropology (ANTHR 746), biological anthropology (ANTHR 756), and two seminars.

Track 2 requires the completion of 33 semester hours, including the three core courses (ANTHR 736, 746, and 756), two seminars, and the presentation of a thesis or approved project.

Track 3 requires the completion of 36 semester hours, at least 21 in anthropology including ANTHR 736, 746, and 756, and two seminars. At least 12 from/in (an) other discipline(s) are also required.

Either an examination or an internship is also required.

A total of 4 hours of thesis, project, or internship, to complete the 30, 33, or 36 semester hours requirements for each track shall include either 2 hours each of ANTHR 871 and 872 (internship), ANTHR 873 and 874 (project), or ANTHR 875 and 876 (thesis). theses, Students in all tracks are required to form a thesis/project/internship committee of at least two full-time graduate teaching faculty from within the anthropology department and at least one graduate faculty from another department. The committee approves proposals for and an oral defense of all theses, projects, and internships. Comprehensive exams are graded by all full-time teaching faculty in the department.

Examinations

All students in Track 1 and those students in Track 3 who so elect must pass a written proficiency examination in the fundamentals of anthropology. Students must complete a minimum of 15 hours of graduate work in anthropology before taking the examination. All students who present a thesis, project, or internship must pass an oral defense of their effort. A foreign language examination is contingent upon the nature of the thesis topic.

Courses for Graduate/Undergraduate Credit

ANTHR 502. Introduction to Archaeological Laboratory Techniques (1-3). Maximum of 3 hours. An introduction to the laboratory processing of archaeology materials. Direct experience in all phases of preparing excavated materials for analysis, including cleaning, restoring, preserving, numbering, and cataloging of ceramic and lithic artifacts and other remains. Prerequisite: ANTHR 305Q.

>ANTHR 506. Peoples of the Pacific (3). *General education further study course.* A survey of the races, languages, and cultures of nonliterate peoples of Polynesia, Micronesia, and Indonesia.

>ANTHR 508Q. Ancient Civilizations of the Americas (3). *General education further study course.* A cultural survey of the Aztec, Maya, and Inca. Prerequisite: instructor's consent.

>ANTHR 511. The Indians of North America (3). *General education further study course.* A survey of tribal societies and native confederations north of Mexico from the protohistoric through the historic period. Prerequisite: ANTHR 102Q.

>ANTHR 514. Anthropology of Aging (3). *General education further study course.* Cross-listed as GERON 514. An anthropological analysis of the latter stages of the life cycle with historical and cross-cultural perspectives.

>ANTHR 515Q. China (3). *General education further study course.* An introduction to the people of China and aspects of their culture: economy, government, society, religion, and the

arts. Historical attention on the many adjustments the Chinese made during the 20th century following political revolutions, industrialization, and expanding trade relations.

>ANTHR 516Q. Japan: People and Culture (3). *General education further study course.* An introduction to the culture of Japan including its history and prehistory, aspects of traditional culture and 20th century Japan, its economy, politics and social organization.

>ANTHR 519. Applying Anthropology (3). *General education further study course.* The application of anthropological knowledge in the solution of social problems in industry, public health, and public administration. Prerequisite: ANTHR 102Q.

>ANTHR 522Q. Art and Culture (3). *General education further study course.* A survey of the visual and performing arts of nonwestern peoples with special attention to their relationships in the cultural setting. Prerequisite: ANTHR 102Q.

ANTHR 526. Social Organization (3). A survey of the varieties of social organization among nonindustrialized peoples throughout the world. Deals with family systems; kinship; residence patterns; and lineage, clan, and tribal organizations. Prerequisite: 6 hours of anthropology.

>ANTHR 528. Medical Anthropology (3). *General education further study course.* Studies the health and behaviors of various human societies, especially in, but not limited to, those outside the western, scientific tradition. Covers attitudes toward the etiology of disease, the techniques of healing, the use of curative drugs and other agents, the roles of healers and therapists, and the attitudes of the community toward the ill. A library or field research project is required. Prerequisite: 3 hours of nursing or 3 hours of anthropology or instructor's consent.

ANTHR 538. Early Man in the New World (3). A critical examination of facts and theories concerning early man in the New World from the peopling of the continent to the beginning of the Archaic Tradition, and of the role of cultural contacts between eastern Asia and North America. Prerequisite: ANTHR 305Q.

ANTHR 540. The Indians of the United States: Conquest and Survival (3). An anthropological inquiry into four centuries of cultural contact, conflict, resistance, and renaissance. Prerequisite: ANTHR 102Q or instructor's consent.

>ANTHR 542. Women in Other Cultures (3). *General education further study course.* Cross-listed as WOM S 542. Deals with the place of women in primitive and other non-Western societies, in various aspects of culture: political, economic, social, religious, domestic, intellectual, psychological, and aesthetic. Compares and contrasts societies in order to see how different kinds of roles for women are related to different kinds of societies.

ANTHR 555. Paleoanthropology and Human Paleontology (3). A detailed examination of human evolutionary history as evidenced by fossil remains and a survey of various interpretive explanations of the fossil record. Prerequisite: ANTHR 101Q or BIOL203Q or equivalent.

ANTHR 557. Human Osteology (3). Deals with human skeletal and dental materials with applications to both physical anthropology and archaeology. Lecture and extensive laboratory sessions; includes bone and tooth identifications, measurement and analysis, and skeletal preservation and reconstruction. Individual projects are undertaken. Prerequisite: ANTHR 101Q or equivalent.

ANTHR 597. Topics in Anthropology (3). Detailed study of topics in anthropology. Content varies with interest of instructor. Consult *Schedule of Courses* for current topic.

ANTHR 600. Forensic Anthropology (3). Cross-listed as CJ 600. Encompasses the area of criminal investigation involving biological evidence: blood, hair, fingerprint, dentition, and skeletal system. Covers procedures of collection, preservation, marking, transportation, referral, laboratory analysis, classification, and identification emphasizing anthropological interpretation. Prerequisite: ANTHR 101Q or equivalent.

ANTHR 602. Archaeological Laboratory Analysis (1-3). Students analyze archaeological materials, including ceramic, lithic, faunal, and vegetal remains according to accepted methods. Students learn to apply standard methods of identification and modes of interpretation to the materials to produce an acceptable archaeological report. Prerequisites: ANTHR 502 and instructor's consent.

ANTHR 606. Museum Methods (3). An introduction to museum techniques relating to the acquisition of collections and related procedures, such as accessioning, cataloging, documentation, presentation, and storage. Emphasizes current trends in museological philosophy concerning purpose, function, and relevance of museums, as well as career opportunities. Prerequisite: instructor's consent.

ANTHR 607. Museum Exhibition (3). Contemporary philosophy of exhibition design and the application of recent concepts to the planning and installation of an exhibit. Prerequisite: ANTHR 606 or instructor's consent.

ANTHR 609. Biological Anthropology Laboratory Analysis (1-3). Analyzes biological anthropology materials including human and nonhuman skeletal material of both forensic contemporary or prehistoric origin according to standardized methods for recording and collecting data in biological anthropology. Learn methods of identification, analysis, and interpretation and prepare a standard technical report. Prerequisites: Anthropology 101Q, 106, 356, or 557.

>ANTHR 611. Southwestern Archaeology (3). *General education further study course.* A comprehensive survey of the prehistoric, historic, and living cultures of the American Southwest particularly emphasizing the cultural continuities and changes covering 11,000 years. Prerequisite: one introductory course in anthropology or departmental consent.

ANTHR 612. Indians of the Great Plains (3). An investigation of the cultural dynamics of the Great Plains area from the protohistoric period to the present. Prerequisites: 6 hours of anthropology and departmental consent.

>ANTHR 613. Archaeology of the Great Plains (3). *General education further study course.* The archaeology of the Great Plains area from earliest evidence to the historic period. Prerequisite: one introductory course in anthropology or departmental consent.

ANTHR 647. Theories of Culture (3). A survey of the main theoretical movements in cultural anthropology, including both historical and contemporary schools of thought. Prerequisite: 6 hours of anthropology.

ANTHR 651. Language and Culture (3). Cross-listed as LING 651 and MCLL 651. An introduction to the major themes in the interactions of language and society and language and culture, including ethnography of communication, linguistic relativity, and determinism; types of language contact; the linguistic repertoire; and cross-cultural discourse analysis. Content may vary with instructor. Prerequisite: 3 hours of linguistics or MCLL351 or 6 hours of anthropology.

ANTHR 667. English Syntax (3). Cross-listed as ENGL 667 and LING 667. Examination of aspects of the structure of English and their relation to linguistic theory. Prerequisite: ENGL 315 or LING 577 or ANTHR 577 or instructor's consent.

ANTHR 690. Field Methods in Anthropology (3-6). A maximum of 6 hours can be counted as anthropology hours toward either degree. Instructs the student in archaeological and ethnological field methods through actual participation in a field research program. The project depends upon the specific Summer Session and varies from year to year. Prerequisite: instructor's consent.

ANTHR 736. Advanced Studies in Archaeology and Ethnohistory (3). Special area and theory problems in a historical approach to culture. Prerequisites: graduate standing and 6 hours of anthropology.

ANTHR 746. Advanced Studies in Cultural Anthropology (3). Entails an in-depth coverage of selected topics in cultural anthropology, including social structure, economic and political organization, religion, personality, arts and knowledge systems, and current research methods. Prerequisites: graduate standing and 6 hours of anthropology.

ANTHR 750. Workshop (1-4). Short-term courses focusing on anthropological problems. Prerequisite: instructor's consent.

ANTHR 756. Advanced Studies in Biological Anthropology (3). In-depth coverage of selected topics in biological anthropology, including the history of evolutionary thought, human variation, growth and development, population dynamics, paleoanthropology, and primatology. Focuses on current issues, method, and theory in biological anthropology. Prerequisites: graduate standing and 6 hours of anthropology (must include ANTHR 101Q or instructor's consent).

ANTHR 781. Cooperative Education (1-4). Provides practical experience that complements the student's academic program. Requires consultation with and approval by an appropriate faculty sponsor. Offered Cr/Ncr only. Prerequisite: graduate status.

ANTHR 798. Introduction to Research (3). Bibliography, methodology, and the philosophy of research. Repeatable for a total of 6 hours of credit. Prerequisites: 6 hours of American studies course work or equivalent and instructor's consent.

Courses for Graduate Students Only

ANTHR 801. Seminar in Archaeology (3). Comprehensive analysis of archaeological data emphasizing theoretical problems of interpretation and reconstruction. Repeatable up to 6 hours. Prerequisite: ANTHR 501 or departmental consent.

ANTHR 802. Methods in Anthropology (2-3). Develops abilities in the conception and investigation of anthropological problems and interview and observation techniques, as well as more specialized methods such as photography, mapping, and tape recording. Repeatable up to 6 hours. Prerequisite: departmental consent.

ANTHR 820. Seminar in Biological Anthropology (3). Analysis and discussion of ancient fossil, prehistoric, historic, and recent/modern biological variation in an anthropological perspective. Can include advanced studies of human variation and skeletal biology, demography and population genetics in anthropology, advanced studies in paleoanthropology and issues in the debate over micro and macro levels of evolution, and quantitative applications to the study of human variation in anthropological contexts. Repeatable up to 6 hours. Prerequisite: departmental consent.

ANTHR 837. Seminar in Cultural Anthropology (3). Intensive study of advanced theoretical questions in cultural anthropology. Repeatable up to 6 hours. Prerequisite: 5 hours of anthropology.

ANTHR 847. Colloquium in Anthropology (1-2). *S/U* grade only. Repeatable for a maximum of 3 hours. Seminar-style experience in recent research in all of the subfields of anthropology. Allows those students preparing their first papers for presentation at professional conferences to present them before a critical but friendly audience. Students presenting colloquium papers receive 2 credits. Prerequisite: graduate standing in anthropology.

ANTHR 848. Recent Developments in Anthropology (3). A review of the latest discoveries and interpretations in the science of human beings. Repeatable up to 6 hours. Prerequisite: 5 hours of anthropology.

ANTHR 870. Independent Reading (2-3). Repeatable up to 6 hours. Prerequisite: departmental consent.

ANTHR 871-872. Internship in Anthropology (2-2). Students following applied or multidisciplinary tracks, such as museology, international business education, or health professions receive professional work experience in their field through an internship at a designated work place approved by departmental committee. Course need not require a tangible end product (e.g., paper). May be repeated, but limited to a total of 4 credit hours. Prerequisite: committee consent.

ANTHR 873-874. Advanced Project in Anthropology (2-2). In consultation with their major advisor and committee,

students design a project (e.g., a museum exhibit, a written plan for an international business venture, a lesson plan for an anthropology unit in schools) that applies anthropological method and theory to the specific needs of an institution, group, or population. Requires a tangible end product (e.g., paper, thesaurus, and/or visual production or exhibit). May be repeated, but limited to a total of 4 credit hours. Prerequisite: committee consent.

ANTHR 875-876. Thesis (2-2).

Biological Sciences (BIOL)

Graduate Faculty

Professors: L. Raymond Fox, William J. Hendry III (graduate coordinator), Wendell W. Leavitt

Associate Professors: George R. Bousfield, Donald A. Distler, Jeffrey V. May (adjunct), J. David McDonald (chairperson), Karen L. Brown Sullivan

Assistant Professors: Christopher M. Rogers, Mark A. Schneegurt, Arthur L. Youngman

Master of Science and Areas of Specialization

The Master of Science (MS) program offered by the Department of Biological Sciences provides an advanced education under either the research thesis option or nonthesis option. A variety of specializations in the broad areas of cell, molecular, endocrine, reproductive, and environmental biology are available. All incoming students are assigned to a temporary graduate advisor after which they choose a permanent graduate advisor and committee. The advisors work with the students to develop a program of studies that meets the student's educational goals.

Admission Requirements

Completed application forms and two official transcripts of all previous academic work must be submitted to the Graduate School at least four weeks before registration. Admission as a full standing student requires: (1) the completion of 24 semester hours in biological sciences and 15 semester hours in chemistry; (2) an overall grade point average of at least 2.750 (4.000 scale) for the most recent 60 semester hours completed; (3) a grade point average of at least 3.000 (4.000 scale) for all undergraduate biological sciences courses; (4) three letters of reference from science faculty; (5) receipt of GRE general aptitude and advanced test in biology scores; and (6) TOEFL scores if English is not the student's first language. Students who do not meet these requirements but who wish to begin graduate course work may qualify for conditional acceptance into a nondegree category.

Degree Requirements

All students are required to attend the departmental seminar course (BIOL 797) each semester and must give at least two oral presentations.

Candidates selecting the *research thesis option* must complete 30 credit hours of graduate work, including the presentation and oral defense of a thesis based on original research. In addition, all students in the

research thesis option must demonstrate proficiency in at least one research tool, such as knowledge of a modern foreign language or completion of acceptable course work in statistics or computer applications. Graduates who select this option often move on to advanced research degrees or careers in research science.

Candidates selecting the *nonthesis option* must complete 36 credit hours of graduate work and successfully pass comprehensive exams in two areas of biology. The nonthesis option is designed for, but not limited to, students employed in professional areas such as the medical community and secondary education who wish to expand or update their knowledge of biology.

Nonmajor Courses

(May not be used to satisfy the requirements for the major)

Courses for Graduate/Undergraduate Credit

>BIOL 509G. Foundations of Human Heredity (3). *General education further study course.* Introduction to the mechanisms and societal significances of developmental, transmission, and population genetics of humans. Attention to inborn errors of metabolism and development and the roles of genetic counseling and genetic engineering in their management. For students majoring outside of the natural sciences. Does not carry credit toward a biological sciences major or minor. Students earning graduate credit produce a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisite: junior standing.

BIOL 518Q. Biology of Aging (3). Cross-listed as GERON 518Q. An introduction to the phenomenon of aging, including a survey of age-related processes and mechanisms of senescence emphasizing humans. Students earning graduate credit produce a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisite: a basic course in biological sciences that satisfies general education requirements.

Major Courses

(Used to satisfy the requirements for the major)

Courses for Graduate/Undergraduate Credit

BIOL 502. Vascular Plants (4). 2R; 4L. An introduction to the structure, reproduction, and evolution of the major groups of living and extinct vascular plants. Includes an introduction to flowering plant systematics. Students earning graduate credit perform a primary literature survey on a topic selected in consultation with the instructor and deliver a 30-minute oral presentation to the class. Prerequisite: BIOL204.

BIOL 503. Taxonomy and Geography of Flowering Plants (4). An introduction to the principles and methods of plant taxonomy and to the study of the patterns of plant distribution and the origin of these patterns. Class time is divided among lectures, laboratories, and field work. Field trips throughout Sedgwick County and to the Flint and Chau-

taqua Hills provide an opportunity to collect specimens and to observe ecology and distribution of native species of flowering plants. Prerequisite: BIOL204 or instructor's consent.

BIOL 523. Freshwater Invertebrates (4). 2R; 4L. Emphasizes the ecology, taxonomy, and form and function of free-living, freshwater invertebrates. Half of the course deals with arthropods. Includes methods of collecting, culturing, and preserving specimens. Part of the course grade is based on a collection of invertebrates correctly prepared and identified. For graduate credit, students submit a term paper or a more extensive collection within a given taxon. Prerequisites: BIOL 211 and CHEM 112Q.

BIOL 524. Vertebrate Zoology (4). 2R; 4L. Evolution, distribution, systematics, natural history, and special characters of vertebrate animals. Students earning graduate credit produce a term paper based on the technical literature on a topic chosen in consultation with instructor. Prerequisite: BIOL204; BIOL 527 is also recommended.

BIOL 525. Introduction to Ecotoxicology (4). 2R; 2L. An overview of concepts and methodology for conducting tests in the field of ecotoxicology. Examines tests at the molecular, individual, and population level. Covers basic ecological assessments, such as Index of Biological Integrity, Index of Biological Well-Being, and Rapid Bioassessment Protocols; and toxicological protocols like acute and chronic bioassays, biomarkers, and modeling techniques using Quantitative Structure Activity Relationships. Recommended for students interested in learning about the applied methodology used in the rapidly evolving field of ecotoxicology. Prerequisites: BIOL 418 or equivalent and CHEM 531 or equivalent, or instructor's permission.

BIOL 526. Endocrinology (4). 3R; 3L. Considers the hormonal regulation of bodily functions in representative vertebrate systems, including humans. Students enroll in both lecture and laboratory portions of class. Students earning graduate credit submit a term paper on a topic chosen in consultation with the instructor. Prerequisite: BIOL204.

BIOL 527. Comparative Anatomy (5). 3R; 4L. An intensive study of representative chordates emphasizing vertebrate anatomy. Students earning graduate credit complete additional assignments chosen in consultation with the instructor, such as a term paper based on technical literature, dissection of additional animals, etc. Prerequisite: BIOL204.

BIOL 528. Parasitology (4). 2R; 4L. The parasites of man and other vertebrate hosts. Students earning graduate credit produce a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisite: BIOL 204.

BIOL 532. Entomology (5). 3R; 4L. An introduction to the morphology, physiology, life cycles, behavior, ecology, and economic significance of insects. Students earning graduate credit produce a term paper based on the technical literature on a topic chosen in consultation with the instructor or develop proficiency in a specific taxon by performing an individual systematics project. Prerequisite: BIOL204.

BIOL 534. Mammalian Physiology (3). An organ systems approach to mammalian—primarily human—physiology. Emphasizes nervous and endocrine control systems and the coordination of body functions. Students earning graduate credit submit a term paper based upon library research on a topic in mammalian physiology chosen in consultation with the instructor. Prerequisites: BIOL 204 and CHEM 531 or instructor's consent.

BIOL 535. Mammalian Physiology Laboratory (2). 4L. An empirical approach to mammalian physiology. Students seeking graduate credit submit an additional laboratory report relating the results of a laboratory experiment to those found in the current technical literature. Prerequisite or corequisite: BIOL534.

BIOL 540. Developmental Biology (4). 2R; 4L. Developmental processes in animals emphasizing vertebrates. Centered on the cell interactions controlling differentiation and morphogenesis. Students earning graduate credit complete additional assignments chosen in consultation with the instructor. Prerequisite: BIOL204. BIOL420 recommended.

BIOL 553. Ecological Risk Assessment (4). Risk assessment is the process of assigning magnitudes and probabilities to the adverse effects of human activities or natural catastrophes. It involves global climate change, habitat loss, acid rain deposition, reduced biological diversity, and the ecological impacts of pesticides and toxic chemicals. It uses measurements, testing, and mathematical models to quantify the relationship between the initiating event and the effects. Course is an overview of the basic framework for conducting an Ecological Risk Assessment, and a discussion of individual case studies involving several important environmental issues. An introductory class for students interested in assessing the effects of various stressors on environmental health. Prerequisites: BIOL418 or equivalent and CHEM 531 or equivalent, or instructor's consent.

BIOL 560. Plant Ecology (4). 2R; 6L. Principles and patterns of plant distribution and of adaptation of plants to particular habitats. Emphasizes the experimental approach to plant ecology. Field trips are an integral part of the laboratory. Prerequisite: BIOL418 or instructor's consent.

BIOL 572. Computer Methods in Biology (3). Includes mathematical modeling of biological systems, tools for recording and retrieving experimental results, computer-aided instruction, internet and online science resources, software for scientific publication including digital photo-documentation and reference managers for bibliographies. Students select a biology topic of interest, study non-statistical and computer approaches previously used, and develop their own approach. Half the course is lectures and demonstrations and half is individual student projects. Graduate students are expected to have had prior experience with the primary literature and be prepared to execute a more sophisticated library research project. Prerequisite: one of the following: BIOL418, 419, 420, or instructor's consent.

BIOL 573. Statistical Applications in Biology (3). Supplements STAT 370 by providing experience with practical appli-

cations of statistical theory to biological data. Includes computations on data derived from both the primary literature and independently designed research projects. Emphasizes the design of experiments to answer specific hypotheses, the treatment of non-normally distributed data sets and nonhomogeneous experimental test units, and the use of packaged computer programs for certain statistical tests. Access to calculators with at least two memory banks is strongly encouraged. Students earning graduate credit complete an additional statistical analysis assignment involving the use of the computing facilities. Prerequisite: STAT 370.

BIOL 575. Field Ecology (3). 9L. Techniques for analysis of systems consisting of living organisms and their environments. Field trips are required. Students earning graduate credit perform an individual project on comparative community structure and report the results as a technical paper. Prerequisite: BIOL418 or instructor's consent.

BIOL 578. Aquatic Ecology (5). 2R; 6L. Introduction to the biological and physical processes that operate in lakes, streams, and estuaries. Requires assigned readings, individual projects, and field trips. Students earning graduate credit investigate and compare the characteristics and properties of two freshwater ecosystems or investigate a specific taxon or trophic level in a freshwater ecosystem. The results of this investigation are reported as a technical paper. Prerequisite: BIOL 418 or instructor's consent.

BIOL 590. Immunobiology (3). The nature of antigens and antibodies and their interactions. Includes cellular and humoral aspects of immunologic phenomena. Students earning graduate credit prepare a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisites: BIOL204 and CHEM 531.

BIOL 610. Topics in Botany (3-4). Selected offerings in botany. Consult the *Schedule of Courses* for current offering(s). Students wishing to enroll in courses not listed in the current *Schedule* must complete a Directed Independent Study Abstract form and obtain approval prior to enrollment. Students earning graduate credit produce a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisites: BIOL204 and instructor's consent.

BIOL 626. Reproductive Biology (3). Covers the basic organization and function of vertebrate reproductive systems. Includes current concepts and contemporary research from the molecular to the population level. Students earning graduate credit prepare a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisite: BIOL420. Biol 526 is strongly recommended.

BIOL 630. Behavioral Ecology (3). A study of the biological basis of social behavior, stressing the underlying evolutionary and ecological mechanisms. Lectures examine altruism and kin selection, kin recognition mechanisms, sexual behavior, sexual selection and mate choice, mating systems, and reproductive strategies from the perspective of natural selection. Students earning graduate credit write a term paper based on the technical literature and present this in a class seminar. Prerequisite: BIOL 418.

BIOL 640. Topics in Zoology (3-4). See BIOL610. Prerequisites: BIOL204 and instructor's consent.

BIOL 654. Pathogenic Microbiology (4). 2R; 4L. An introduction to the important pathogenic micro-organisms and their relationships to health and disease in humans. Students earning graduate credit prepare a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisite: BIOL330.

BIOL 660. Topics in Microbiology (2-4). See BIOL610. Prerequisites: BIOL330 and instructor's consent.

BIOL 666. Special Topics in Biochemistry (3). Primarily for students who choose the biochemistry field major. Discusses a small number of current problems in biochemistry in depth. Requires reading published research papers in the field. Students earning graduate credit produce a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisites: BIOL204, CHEM 662 and 663.

BIOL 669. Research in Biochemistry (2). Cross-listed as CHEM 669. *S/U* grade only. Primarily for students who choose the biochemistry field major. Requires participation in a biochemistry research project under the direction of a faculty member and a written report summarizing the results. May be repeated once for credit. Prerequisites: BIOL 420 or 500, CHEM 662 or 663, CHEM 664, and instructor's consent.

BIOL 702. Environmental Science I (4) 2R; 3L. Cross-listed as GEOL702 and CHEM 702. Advanced theoretical and applied principles of the interdisciplinary study of environmental science. Includes chemical cycling, atmospheric chemistry, aquatic chemistry, and phase interactions. The laboratory portion addresses local environmental problems from a risk assessment perspective. BIOL702 and 703 (or equivalent) are required for all graduate students in the master's program in environmental science. Prerequisite: acceptance into the master's program in environmental science or instructor's consent.

BIOL 703. Environmental Science II (4) 2R; 3L. Cross-listed as GEOL 703 and CHEM 703. Advanced theoretical and applied principles of the interdisciplinary study of environmental science. Includes environmental chemical analysis, environmental toxicology, aquatic microbial biochemistry, environmental biochemistry, water treatment, photochemical smog, and hazardous waste chemistry. The laboratory portion addresses local environmental problems from a risk assessment perspective. BIOL 702 and 703 (or equivalent) are required for all graduate students in the master's program in environmental science. Prerequisite: acceptance in the master's program in environmental science or instructor's consent.

BIOL 704. Environmental Science Colloquium (1). Cross-listed as GEOL704 and CHEM 704. Students in the master's program in environmental science are required to enroll each semester (maximum 4 credit hours). Includes presentations by guest speakers and required readings for class discussion.

May also include student involvement in environmentally related community groups and projects. Graded *S/U* only.

BIOL 706. Environmental Science Internship (3-6). Cross-listed as GEOL 706 and CHEM 706. Students in the master's program in environmental science may gain interdisciplinary skills in environmental science by participating in applied and/or basic research internship projects with local business, industry, or government agencies. Internship option is an alternative to thesis research for degree requirements. Enrollment in internship projects requires an approved proposal. Completion of an internship for graduation requires a formal oral presentation of the internship activity and a written report. Prerequisites: BIOL702 and 703 or equivalent.

BIOL 710. Glycobiology (3). Introduction to glycoprotein biosynthesis, structure, and function. Covers the various roles of carbohydrates in modifying protein structure and function. Students earning graduate credit prepare a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisite: Biol 420.

BIOL 720. Neurobiology (3). Basic course in contemporary neurobiology emphasizing learning and memory. Exploration of the current research literature covering all levels of organization from complex behavior to brain information processing pathways, neuronal cell biology, and molecular biology. Each student chooses a topic, completes a written report, and gives an oral presentation to the class. Graduate students do more reading in the primary neurobiology literature. Prerequisites: Biol 420 and 534 or equivalents and instructor's consent.

BIOL 737. Aquatic Toxicology (4). 2R; 2L. The qualitative and quantitative study of the fate and effects of toxic agents in the aquatic environment. Class examines the concentrations or quantities of chemicals that occur in the aquatic environment and includes a detailed study of the transport, distribution, transformation, and ultimate fate of various environmentally important chemicals. Class is for undergraduate or graduate students interested in advanced training in toxicology. Prerequisites: BIOL525 or equivalent and CHEM 531 or equivalent, or instructor's consent.

BIOL 750. Biology Workshop (1-3).

BIOL 760. Experimental Molecular Biology (4). 2R; 6L. Introduces upper-level undergraduate and graduate students to molecular biology techniques. The methodology primarily involves the manipulation of DNA and the expression of genetic material in prokaryotic and eukaryotic systems. Prerequisite: Biol 419 or 420.

BIOL 767. Mechanisms of Hormone Action (3). The mechanism of action of several hormones is described and used to illustrate the major intracellular signal transduction pathways. Includes gonadotropin-releasing hormone, the glycoprotein hormones, luteinizing hormone, follicle-stimulating hormone, chorionic gonadotropin, thyroid-stimulating hormone, steroid hormones, thyroid hormone, activin/inhibin, prostaglandins, insulin, and growth hormone. Mostly lectures covering signal transduction pathways. Students write

brief summaries of recent research papers related to the current week's lecture topics. Each student makes an oral presentation of a research paper in journal club format. Students earning graduate credit write a term paper describing in detail a hormone not described in class and its mechanism of action. Prerequisites: Biol 420 and CHEM 662 or their equivalents, plus either BIOL 534 or 526 or their equivalents, and instructor's consent.

BIOL 771. Evolutionary Ecology (4). 3R; 2L. Presents a synthesis of basic principles in population genetics and ecology as a framework for the study of topics in evolutionary ecology. Emphasizes (1) the maintenance and structure of population level genetic variation; (2) mating structure and the evolutionary advantages of sex; (3) individual, kin, group selection; (4) population demographic structure; (5) population regulation and dispersal; (6) life history strategies in heterogeneous environments; and (7) demographic and genetic covariance. Teaches basic techniques in population ecology on several short field trips throughout the semester. Prerequisite: BIOL418, 419, or instructor's consent.

BIOL 780. Molecular Genetics (3). Studies the physicochemical nature of genetic material and the mechanisms of genetic regulation of metabolism. Students earning graduate credit produce a term paper and deliver a class seminar based on the technical literature on a topic chosen in consultation with the instructor. Prerequisite: BIOL419 or 584.

BIOL 790. Advanced Immunology (3). Contemporary problems in immunologic research. Includes lectures, assigned readings, and reports. Students earning graduate credit produce a term paper based on the technical literature on a topic chosen in consultation with instructor. Prerequisites: BIOL590 and instructor's consent.

BIOL 797. Departmental Seminar (1). Forum for the weekly presentation and discussion of the ongoing research projects performed by departmental faculty, graduate students, and guest scientists from outside departments and institutions. All MS degree-bound graduate students are required to attend the seminar each semester and must enroll for credit during the two semesters in which they give presentations that are the basis for their grade. One of these presentations may be their thesis defense. Prerequisite: acceptance into MS program.

BIOL 798. Biology Seminar (2). Reviews of current research in biological sciences. Repeatable once for credit.

Courses for Graduate Students Only

BIOL 890. Research (2-5). *S/U* grade only. Students performing research on their thesis projects should enroll for an appropriate number of hours. An oral presentation of the research results must be presented to the student's thesis committee before a grade is assigned.

BIOL 891. Thesis (2). *S/U* grade only. Students must be enrolled in this course during the semester in which the thesis is defended.

Chemistry (CHEM)

Graduate Faculty

Professors: Dennis H. Burns, William R. Carper, William C. Groutas, B. Jack McCormick, D. Paul Rillema (chairperson), Ram P. Singhal, William T.K. Stevenson, Erach R. Talaty, Kandatege Wimalasena (graduate coordinator), Melvin E. Zandler

Associate Professor: Francis D'Souza, David Eichhorn

Assistant Professors: Michael J. Van Stipdonk

The Department of Chemistry at Wichita State offers courses of study leading to the Master of Science (MS) and the Doctor of Philosophy (PhD) degrees in the areas of biochemistry and analytical, inorganic, organic, physical, and polymer chemistry.

Admission Requirements

To enroll in the graduate program in chemistry, students must follow the admission procedures required by the Graduate School. The chemistry department requires a baccalaureate degree in chemistry, a grade point average of at least 3.000/4.000 (both overall and in chemistry), two letters of recommendation from individuals familiar with the applicant's academic background, a one page typed statement of goals and research interests, and submission of test scores from the general GRE exam. The department strongly recommends test scores from the chemistry subject GRE as well. International students must have a minimum TOEFL score of 570 (230 on computer). Students deficient in any of the requirements may be admitted conditionally provided they follow the specified procedures required to remove any deficiencies.

Applications are reviewed as completed throughout the year.

Assessment Exam Requirements for the MS and PhD Degrees

All entering Master of Science and Doctor of Philosophy students are required to take analytical, inorganic, organic, and physical chemistry and biochemistry assessment exams in their first semester in the program. Both MS and PhD students must receive a pass or remove deficiencies in four of the subject areas listed above within the first year in the program. Students may enroll in an appropriate course designated by the Graduate Affairs Committee and pass it with a B or better grade or retake and pass the assessment exam in the area of the deficiency. Assessment exams are given three times a year—fall, winter, and spring.

Master of Science Requirements

The MS degree in chemistry requires the completion of 30 credit hours, including the presentation of a thesis. The program requires at least 6 credit hours in research, CHEM 890. Also, at least 15 credit hours in chemistry courses numbered above 701 must be taken, including at least one 700-level course from four of the following six areas: analytical chemistry, inorganic chemistry, organic chemistry, physical

chemistry, biochemistry, and spatial chemistry. Students must successfully complete CHEM 700 once, and full-time students must register each semester in CHEM 701. Additional courses, which may be outside the major field, are selected by students in consultation with their advisor and the department's advising committee.

Thesis. The thesis is reviewed by a committee from the department, and an oral examination given by a faculty committee appointed by the Graduate School must be passed.

Students must select a faculty member to be their research advisor by the beginning of their second semester in the graduate program.

Doctor of Philosophy Requirements

All PhD students are required to take 24 course hours, 12 of which must be in the area of major interest, and 9 of the remaining 12 must be from two of the other five areas. The courses must be numbered 710 or higher. Students are required to begin cumulative examinations at the beginning of their second year. Students must pass six cumulative examinations out of 16 attempts to remain in the program. After completion of the cumulative examinations, students are expected to develop and orally defend an original research proposal. Two enrollments in departmental seminar and continuous enrollment in departmental colloquia are required. The final requirement for the degree is the defense of a thesis based on original research. Well-prepared entering students should be able to complete the requirements within four years.

Dissertation. The dissertation is reviewed by a committee from the department, and an oral examination given by a faculty committee appointed by the Graduate School must be passed.

Students must select a faculty member to be their research advisor by the beginning of their second semester in the graduate program.

Students in the PhD program in good standing, who have completed all required courses, have satisfactorily presented their Departmental Research Seminar, have defended their Creative Research Proposal, and have satisfied all other requirements for admittance to candidacy for the PhD degree, will upon request and approval by the student's committee be awarded the MS degree.

Courses for Graduate/Undergraduate Credit

CHEM 505. Chemical Literature (1). A survey of chemical publications and the publication process. Gives the student the ability to conduct a proper search of the literature for chemical information. Also covers aspects of technical writing. Prerequisite: CHEM 531.

>CHEM 514. Inorganic Chemistry (3). *General education further study course.* Basic inorganic chemistry emphasizing molecular symmetry and structure, fundamental bonding concepts, ionic interactions, periodicity of the elements, systematics of the chemistry of the elements, acid-base chemistry and non-aqueous solvents, classical coordination chemistry,

and introductory bioinorganic chemistry. Prerequisite: CHEM 112Q with a C or better.

>CHEM 523. Analytical Chemistry (4). 2R; 6L. Lab fee. *General education further study course.* Evaluation of data, theory and application of gravimetric analysis and precipitation, neutralization, and oxidation-reduction volumetric analysis. Prerequisite: CHEM 112Q with a C or better.

CHEM 524. Instrumental Methods of Chemical Analysis (4). 2R; 6L. Lab fee. Introduction to electroanalytical chemistry and optical method of analysis and separation of complex mixtures, both inorganic and organic. Also discusses basic computer programming as it applies to analytical chemistry. Prerequisite: CHEM 523.

>CHEM 531. Organic Chemistry (5). 3R; 6L. Lab fee. *General education further study course.* An introduction to the study of carbon compounds emphasizing reaction mechanisms, stereochemistry, and spectrographic analysis. Prerequisite: CHEM 112Q with a C or better.

CHEM 532. Organic Chemistry (5). 3R; 6L. Lab fee. A continuation of CHEM 531 emphasizing the structure and reactions of principal functional groups and compounds of biological interest. Prerequisite: CHEM 531.

>CHEM 533. Elementary Organic Chemistry (3). *General education further study course.* Basic organic chemistry emphasizing topics of importance to health professions and education majors. Special emphasis to carbohydrates, proteins, drugs, pesticides, and energy production. Students should enroll in CHEM 534 simultaneously. Credit is not allowed for both CHEM 533-534 and 531. This course does not meet the needs of chemistry majors or premed students. Prerequisite: CHEM 112Q or equivalent.

CHEM 534. Elementary Organic Chemistry Laboratory (2). Lab fee. A basic laboratory course to provide pertinent experiences in the laboratory to fortify the survey lecture course CHEM 533. Prerequisite or corequisite: CHEM 533.

>CHEM 545. Physical Chemistry (3). *General education further study course.* Thermodynamics. Studies gases, first law, thermochemistry, second and third laws, phase equilibria, solutions, chemical equilibria, electrochemistry, and surface chemistry. Prerequisites: CHEM 112Q, MATH 344 or its equivalent, and one semester of college physics.

CHEM 546. Physical Chemistry (3). Kinetic theory, kinetics, transport phenomena, quantum mechanics, spectroscopy, and statistical thermodynamics. Prerequisites: one year of college physics and MATH 344 or its equivalent.

CHEM 547. Physical Chemistry Laboratory (2). 6L. Lab fee. Physical chemistry experiments that illustrate principles learned in CHEM 545 and 546. Prerequisite: CHEM 545 or 546.

CHEM 602. Numerical Methods (2). Application of numerical methods to problems in chemistry and physics. Roots of equations; curve fitting; interpolation, extrapolation,

and smoothing of experimental data; numerical differentiation and integration; and computer programming. Prerequisite: instructor's consent.

CHEM 603. Industrial and Polymer Chemistry (3). Bridges the industrial-academic gap. Includes petroleum refining processes and distillation technology. Inorganic topics include glass technology, electro-refining and electroplating, and battery chemistry. Discusses cellulose(biomass)-based products such as gelling polysaccharides and natural fibers along with industrial adsorbents (clays, zeolites, ion exchange resins, carbon blacks), and emulsion technology. Topics in polymer chemistry include ways of making polymers, resins, elastomers, and synthetic fibers; methods of polymer analysis, structure-property correlations (how structure influences physical properties) plastics recycling, and methods of plastics and composites processing. Prerequisite or corequisite: CHEM 532.

CHEM 605. Medicinal Chemistry (3). For students interested in chemistry related to the design, development, and mode of action of drugs. Course describes those organic substances used as medicinal agents and explains the mode of action and chemical reactions of drugs in the body; illustrates the importance and relevance of chemical reactions as a basis of pharmacological activity, drug toxicity, allergic reactions, carcinogenicity, etc; and brings about a better understanding of drugs. Includes transport, basic receptor theory, metabolic transformation of drugs, discussion of physical and chemical properties in relation to biological activity, drug design, structure-activity relationships, and discussion of a select number of organic medicinal agents. Prerequisites: CHEM 532 or 533 or equivalent; a semester of biochemistry (CHEM 661 or 662) and a year of biology are strongly recommended.

CHEM 613. Inorganic Chemistry Laboratory (2). 6L. Lab fee. Experimental methods of inorganic chemistry. Prerequisite or corequisite: CHEM 514.

CHEM 615. Advanced Inorganic Chemistry (3). Includes modern bonding theories, structure and spectra of inorganic compounds, coordination and organometallic chemistry, boranes, inorganic ring systems and polymers, inorganic environmental chemistry, mechanisms of inorganic reactions, and solid state chemistry. Prerequisites: CHEM 514 and 546.

CHEM 641. Advanced Physical Chemistry (3). Introduction to quantum chemistry, atomic and molecular spectra, statistical thermodynamics, and reaction rate theory. Prerequisite: CHEM 546.

CHEM 642. Chemical Physics (3). Topics in areas of overlapping interest for students of chemistry and physics, such as thermodynamics, kinetics, quantum mechanics, solids, and various types of spectroscopy. A team of chemists and physicists discusses standard experimental and theoretical techniques used in research in chemical physics. Prerequisite: CHEM 641 or instructor's consent.

>CHEM 661. Introductory Biochemistry (3). *General education further study course.* An introductory course for chemistry majors including chemistry/business majors and students in

life sciences. Not recommended for the BS in chemistry for health sciences or biochemistry field majors for whom CHEM 662 and 663 are required. Introduces thermodynamics and biological oxidation-reduction reactions; structure, metabolism, and synthesis of proteins, carbohydrates, lipids, and nucleic acids; enzyme kinetics, photosynthesis, and transfer of genetic information. Prerequisite: CHEM 532.

CHEM 662. Biochemistry of Cell Constituents, Catalysis, Oxidation, Photosynthesis (3). Study of major constituents of the cell: protein, carbohydrate, glycoprotein, lipid, nucleic acid, nucleoprotein; enzyme catalysis; biological oxidations; photosynthesis; and introduction to intermediary metabolism. A fundamental background of biology or microbiology is recommended but not essential. Prerequisites: CHEM 523 and 532 or equivalents.

CHEM 663. Biochemistry of Cell Metabolism, Biosyntheses, Structure, Function, and Regulation of Proteins and Nucleic Acids (3). Study of metabolism and control of carbohydrates, lipids, phosphoglycerides, spingolipids, sterols, amino acids and proteins; synthesis of porphyrins, amides and polyamines; synthesis and metabolism of purines, pyrimidines, and nucleotides; synthesis and structure of DNAs, RNAs and proteins; organization and functioning of genes; evolution of proteins and nucleic acids; hereditary disorders of metabolism; biochemistry of endocrine glands; major nutrients and vitamins; body fluids and generalized tissues. A fundamental background of biology or microbiology is recommended but not essential. Prerequisite: CHEM 662.

CHEM 664. Biochemistry Laboratory (3) 1R; 6L. Lab fee. Practical training in biochemical procedures and literature searching; experiments include isolation, characterization and assay of biomolecules and use of centrifugation, chromatography, electrophoresis, spectrophotometry, enzyme kinetics, and radioactive labeling techniques. Should be taken concurrently with CHEM 662 or CHEM 663. Prerequisite: CHEM 532 or equivalent.

CHEM 666. Special Topics in Biochemistry (3). (*Offered spring semester in odd-numbered years.*) Discusses a small number of current problems in biochemistry in depth. Requires reading of published research in the field. Prerequisites: BIOL 204 and CHEM 662 and 663.

CHEM 669. Research in Biochemistry (2). Cross-listed as BIOL 669. *S/U* grade only. Students in the biochemistry field major participate in a biochemistry research project under the direction of a faculty member. Requires a written report summarizing the results. May be repeated once for credit. Prerequisites: BIOL420 and CHEM 662 or 663 and 664.

CHEM 690. Independent Study and Research (2-3). Studies performed must be directed by a faculty member in the Department of Chemistry. Repeatable for credit. A maximum of 3 credit hours may be counted toward graduation. Prerequisite: departmental consent.

CHEM 700. Chemistry Seminar (1). *S/U* grade only. Students give seminars on either papers recently published in the literature or on their own research. Repeatable for credit.

CHEM 701. Chemistry Colloquium (1). *S/U* grade only. Speakers for the colloquium consist of outstanding chemists from other institutions and faculty. Repeatable for credit.

CHEM 702. Environmental Science I (4) 2R; 3L. Cross-listed as BIOL702 and GEOL702. Advanced theoretical and applied principles of the interdisciplinary study of environmental science. Includes chemical cycling, atmospheric chemistry, aquatic chemistry, and phase interactions. Prerequisite: acceptance into the master's program in environmental science or instructor's consent.

CHEM 703. Environmental Science II (4). 2R; 3L. Cross-listed as BIOL703 and GEOL703. Advanced theoretical and applied principles of the interdisciplinary study of environmental science. Includes environmental chemical analysis, environmental toxicology, aquatic microbial biochemistry, environmental biochemistry, water treatment, photochemical smog, and hazardous waste chemistry. Prerequisite: acceptance in the master's program in environmental science or instructor's consent.

CHEM 704. Environmental Science Colloquium (1). Cross-listed as BIOL704 and GEOL704. Students in the master's program in environmental science are required to enroll each semester (maximum 4 credit hours). Includes presentations by guest speakers and required readings for class discussion. May also include student involvement in environmentally related community groups and projects.

CHEM 705. Molecular Symmetry (1). A study of the chemically relevant aspects of group theory. Includes symmetry elements, character tables, symmetry classification of molecules, and representations of groups.

CHEM 706. Environmental Science Internship (3-6). Cross-listed as BIOL706 and GEOL706. Students in the master's program in environmental science may gain interdisciplinary skills in environmental science by participating in applied and/or basic research internship projects with local business, industry, or government agencies. Internship option is an alternative to thesis research for degree requirements. Enrollment in internship projects requires an approved proposal. Completion of an internship for graduation requires a formal oral presentation of the internship activity and a written report. Prerequisites: CHEM 702 and 703.

CHEM 709. Special Topics in Chemistry (2-3). A discussion of topics of a special significance and interest to faculty and students. Offerings announced in advance. Repeatable for credit.

CHEM 712. Coordination Chemistry (3). The study of the synthesis, characterization, and properties of coordination compounds. Includes nomenclature, fundamental bonding concepts, principles of synthesis, mechanisms of substitution and electron transfer reactions, catalysis, and solid-state phenomena. Prerequisite: CHEM 615 or equivalent.

CHEM 713. Physical Methods in Inorganic Chemistry (3). An introduction to electronic and vibrational spectroscopy, magnetic susceptibility, EPR, NMR, Mossbauer

spectroscopy, and X-ray crystallography as applied to inorganic systems. Emphasis on interpretation of results for understanding the electronic and molecular structure of compounds. Prerequisite: CHEM 705 or equivalent.

CHEM 731. Physical Organic Chemistry (3). Discussion of advanced topics in stereochemistry and conformational analysis and organic reaction mechanisms. Prerequisite: CHEM 532.

CHEM 732. Advanced Organic Synthesis (3). Discussion of modern synthetic methods in organic chemistry, including carbon-carbon forming reactions, oxidation and reduction reactions, protective groups, and organometallic chemistry. Prerequisite: CHEM 532.

CHEM 738. Structure Determination and Spectral Analysis of Organic Compounds (3). Discusses chiroptical techniques, infrared, ultraviolet, nuclear magnetic and electron spin resonance and mass spectroscopy, and their practical utilization in structure determination. Prerequisite: CHEM 532.

CHEM 741. Quantum Chemistry (3). Theoretical basis of atomic and molecular structure. Includes the postulates of quantum mechanics, exact solutions for the particle-in-a-box and the hydrogen atom, variation and perturbation techniques, electron spin, Hartree-Fock and configuration-interaction methods, molecular-orbital and valence-bond wave functions, and virial and Hellmann-Feynman theorems. Prerequisites: CHEM 546, MATH 344 or equivalent. Corequisite: CHEM 705 or equivalent.

CHEM 744. Computational Quantum Chemistry (3). An introduction to molecular orbital procedures and methods for calculating a wide range of physical, chemical, and electronic properties of systems large enough to be of interest to inorganic, organic, and biochemists. Using commercial molecular orbital software programs such as MOPAC, SPARTAN, and GAUSSIAN, students learn to select appropriate "model" computational procedures to predict properties of molecules and reactions. By comparison with experiment, students learn to assess the range of applicability and accuracy of the "model" methods as applied to various categories of chemical systems. Properties considered include energies and structures of molecules, ions, and transition states; vibrational frequencies, IR and RAMAN spectra; thermochemical properties, heat of formation, bond and reaction energies, isomerization energy barriers; reaction pathways; molecular orbitals, atomic charges, dipole and multipole moments, ionization potentials, bond orders; orbital energies and photoelectron spectroscopy; excited state properties, singlet and triplet surfaces. Prerequisite: CHEM 546 or equivalent (MATH 344 is necessary.)

CHEM 751. Chain Growth Polymerization (3). Mechanisms, kinetic, and thermodynamic aspects of polymerization processes which proceed by a chain growth mechanism, free radical, anionic, cationic, and Ziegler Natta and group transfer polymerization. Prerequisites: CHEM 531 and 545.

CHEM 752. Step Growth Polymerization (3). Polymerization process which proceed by a step growth or ring-open-

ing mechanism. Preparation of thermoplastics, including relationships between molecular weight and reaction condition. Preparation of thermosets including relationships between structure, conversion, and gelation. Discusses individual systems such as nylon, epoxy resin, and polyimides in detail. Prerequisites: CHEM 531 and 545.

Courses for Graduate Students Only

CHEM 809. Special Studies in Chemistry (2-3). Systematic study in selected areas of chemistry. Repeatable for credit. Course content differs from one offering to the next.

CHEM 814. Organometallic Chemistry (3). A study of the synthesis, structure, bonding, reactivity, and industrial applications of organotransition and nontransition metal compounds. Prerequisite: CHEM 615 or equivalent.

CHEM 815. Bioinorganic Chemistry (3). The study of the role of inorganic chemistry in biological systems. Includes electron transport, biological catalysis mediated by metal ions, metal storage and transport, ion transport, and the role of transition metals in metabolism. Prerequisites: CHEM 615 and 663 or equivalents.

CHEM 821. Equilibrium and Statistics in Analytical Chemistry (3). Covers homogeneous and heterogeneous solution equilibrium calculations and statistical methods used in experiment design and data analysis. Prerequisite: CHEM 524 or equivalent.

CHEM 822. Analytical Separations (3). The theory and practice of analytical separation methods including gas and liquid chromatography, ion exchange, and electrophoresis. Prerequisite: CHEM 524 or equivalent.

CHEM 823. Analytical Spectroscopy (3). Absorption (UV visible, IR, and atomic); emission: flame emission and atomic absorption spectrometry, molecular fluorescence, and phosphorescence methods; Raman, nuclear magnetic resonance, and electron spin resonance spectroscopy; X-ray methods. Lectures and discussions on theory and practice. Particular emphasis on instrumentation and the acquisition of artifact-free data. Prerequisite: CHEM 524 or equivalent.

CHEM 824. Electroanalytical Chemistry (3). Includes voltammetry, polarography, chronoamperometry, and coulometry; reversible and irreversible diffusion controlled processes; CE (chemical reaction before electrical reaction), EC (electrical reaction before chemical reaction), and catalytic reaction; and organic polarography and voltammetry. Prerequisite: CHEM 524 or equivalent.

CHEM 831. Advanced Physical Organic Chemistry (3). Includes molecular orbital theory, sigma tropic rearrangements, electrocyclic reactions, cycloadditions, reactive intermediates, and photochemistry. Prerequisite: CHEM 731.

CHEM 832. Modern Synthetic Methods (3). Discussion of retrosynthetic analysis, applications, asymmetric syntheses, and stereochemistry. Prerequisite: CHEM 732.

CHEM 833. Natural Products Chemistry (3). Discussion of the structure, chemistry, and biosynthesis of the alkaloids, steroids, terpenoids, carbohydrates, and aromatic and aliphatic natural products. Prerequisite: CHEM 732.

CHEM 834. Heterocyclic Chemistry (3). An account of the physical and chemical properties of the main classes of heterocyclic compounds. Prerequisite: CHEM 732.

CHEM 835. Bioorganic Chemistry (3). Includes the chemistry of amino acids and peptides, enzyme structure and function, and inhibitor design. Prerequisites: CHEM 662, 663, and 732, or 662 and concurrent enrollment in 663 and 732.

CHEM 841. Advanced Quantum Chemistry (3). Considers advanced applications of quantum mechanics to atomic and molecular problems. Includes determinant wave-functions, angular momentum coupling, time-dependent perturbation theory, relativity considerations, tensor operators, and molecular orbital calculations. Prerequisites: CHEM 705 and 741 or equivalents.

CHEM 842. Chemical Kinetics (3). A description of reacting systems, including the mathematical and experimental characteristics of simple and complex kinetic systems. Discusses the theories of chemical kinetics, as well as the kinetics of homogeneous reactions in the gas phase, the kinetic aspects of solution reactions, heterogeneous reactions, and selected topics of current interest. Prerequisite: CHEM 546 or equivalent.

CHEM 843. Statistical Thermodynamics (3). Develops Boltzmann, Fermi-Dirac, and Bose-Einstein statistical mechanics with applications to gaseous-state and solid-state chemical problems. Emphasizes the relationship of statistical mechanics and thermodynamics. Considers applications of statistical thermodynamics to polymers. Prerequisites: CHEM 546, 845, or equivalents.

CHEM 845. Chemical Thermodynamics (3). A presentation of the basic three laws of thermodynamics in a classical framework to increase understanding of real physical systems. Emphasizes theory and its application to chemical systems. Prerequisites: CHEM 545, 546, and MATH 344 or equivalents.

CHEM 846. Molecular Spectroscopy (3). The theoretical basis for spectroscopy and spectroscopic determinations of molecular structure. Includes polyelectronic atoms, time-dependent perturbation theory, vibration and rotation of diatomic molecules, vibration and rotation of polyatomic molecules, electronic spectra, and magnetic resonance spectroscopy. Prerequisites: CHEM 741 or its equivalent and CHEM 705 or its equivalent.

CHEM 847. Chemistry of Condensed Matter (3). Includes thermodynamics, statistical mechanics, quantum chemistry, and structural determinations of condensed phase matters. Emphasizes metals, alloys, intermetallic compounds, composite materials, and advanced materials. Prerequisite: CHEM 741 or equivalent.

CHEM 852. Techniques of Polymer Characterization (3). A study of physical, spectroscopic, and diffraction techniques to determine the size, structure, and morphology of polymers.

CHEM 853. Polymer Properties (3). Kinetics and thermodynamics of the crystallization process and the influence of sample history on the gross morphology of the crystallites. Structural features which preclude the development of polymer crystals and encourage amorphous character, relationships between structure, T_m and T_g , theoretical strengths of materials, the time dependent mechanical behavior of polymers, and the Maxwell and Voigt models of viscoelasticity. The Boltzman superposition principle and how it can be used to predict creep behavior, mechanisms of deformation, yielding and fracture in polymers. Prerequisite: degree in chemistry or related subject.

CHEM 861. Enzyme Mechanisms (3). An introduction to the study of enzyme mechanisms. Modern approaches include steady-state, relaxation, and chemical modification methods. Prerequisite: CHEM 662 or 663 or equivalent.

CHEM 862. Biotechnology: Principles and Applications (3). Presents a broad informed view of contemporary biotechnology including its role in the production of premium products from biological raw materials. Biotechnology involvement for the production of products include energy, food, drink, flavors, chemicals, biopolymers, medicines, and agricultural materials. Prerequisites: BIOL 203Q and 204 and CHEM 662 or 663 or equivalents.

CHEM 863. Analytical Biochemistry (3). A review of modern analytical methods used in biochemistry and molecular biology including absorbance and fluorescence spectroscopy chromatography (affinity, gel-filtration, HPLC, ion-exchange, ion-pair), gel electrophoresis, radioactive tracer methods; cloning, sequencing, and recombinant DNA procedures. Prerequisites: BIOL 203Q and 204 and CHEM 662 or 663 or equivalents.

CHEM 864. Nucleic Acids: Structure, Chemistry, and Function (3). A comprehensive examination of the structure and conformation of DNA, RNA, and their components. Studies reactivity and modification of nucleotides and polynucleotides for different chemicals and mutagens. Reviews chemical synthesis of polynucleotides and sequence analysis of nucleic acids, including site-specific mutagenesis. Studies nucleic acid functions and information transfer in biochemical systems. Also studies major nucleases and discusses DNA-protein interactions.

CHEM 890. Research in Chemistry (2-12). *S/U* grade only. Research for the student planning to receive an MS. Research is directed by a faculty member. Repeatable for credit.

CHEM 990. Research in Chemistry (2-16). *S/U* grade only. Research for the student planning to receive the PhD. Research is directed by a faculty member. Repeatable for credit.

Communication, Elliott School of (COMM)

Graduate Faculty

Professors: Shirley Staples Carter (director, Elliott School), Philip Gaunt (director, Interdisciplinary Communication Research Institute), Katherine Hawkins (graduate coordinator), Vernon Keel

Associate Professors: Les Anderson, Richard Armstrong (associate director, Elliott School), Dan Close, Patricia Dooley, Susan S. Huxman, Sharon H. Iorio (associate dean, Fairmount College of Liberal Arts and Sciences), Keith Williamson

Assistant Professors: Cliff Bieberly, Kevin Hager, Jeff Jarman, Michael Wood

Master of Arts in Communication, Areas of Emphasis and Graduate Certificate

The Master of Arts in Communication degree program at Wichita State is designed to provide students with a multidisciplinary foundation in human communication that will serve a broad spectrum of interests and needs in many fields of endeavor. The program is based upon integration and synthesis of academic resources in communication. The degree includes two areas of interest: Communication and Theatre/Drama. Also available is a Graduate (Post-Baccalaureate) Certificate awarded for completing a group of related, upper-level skills courses in applied communication.

Admission Requirements

In addition to the general Graduate School admission requirements, applicants for full standing status must have a 3.000 GPA over their last 60 hours of course work, must submit results of the Graduate Record Exam, and must write a statement of purpose for pursuing the Master of Arts in Communication. International students must score at least 600 on the TOEFL and, if applying for a Graduate Teaching Assistantship, must score at least 55 on the TSE.

Degree Requirements

The Master of Arts in Communication requires 36 hours of course work—15 hours of core courses and 21 hours of electives. Students selecting the thesis option may count up to 6 hours of thesis credit toward the required 36-hour total.

Program Core (Required) Courses

Students emphasizing the *Communication* area must complete the following courses:

Hrs.

COMM 801, Introduction to Communication Research.....	3
COMM 802, Historical and Qualitative Methodologies in Communication Research	3
COMM 803, Empirical/Quantitative Research Methodology in Communication.....	3
COMM 812, Contemporary Theories of Communication.....	3
COMM 865, Organizational Communication.....	3

Students emphasizing the *Theatre/Drama* area must complete the following courses:

Hrs.

COMM 801, Introduction to Communication Research.....	3
COMM 802, Historical and Qualitative Methodologies in Communication Research.....	3
*THEA623Q, Development of the Theatre I.....	3
*THEA624Q, Development of the Theatre II.....	3
<i>and either</i>	
THEA823, History of Dramatic Criticism.....	3
<i>or</i>	
THEA 824, Development of Modern Theatre Styles..	3

* Students who have taken Thea. 623Q and 624Q as undergraduates will substitute appropriate graduate-level courses.

Other Courses. In addition to the required courses, students in each area of interest, with the advice and consent of their faculty advisor, must select courses to complete the Plan of Study, as discussed in the Graduate School section of the *Graduate Bulletin*. The Plan of Study will be individually designed to accommodate a student's background, interests, and needs and must include a minimum of 60 percent of their graduate hours at the 700-899 level (i.e., 18 hours for the thesis program of 30 hours or 21 hours for the nonthesis program of 36 hours).

Examinations

Written comprehensive examinations will be administered to all candidates during the final semester of their degree program. In addition, students writing a thesis will present an oral defense of the thesis.

Graduate Certificate in Applied Communication

Designed for students who want concentrated study in communication skills, the Graduate Certificate in Applied Communication is awarded for the successful completion of a program totaling 14 credit hours of graduate course work selected from a prescribed subset of courses. The curriculum is integrated by a 2-hour foundation course and a more advanced course in organizational communication. The remaining 9 credit hours of course work are chosen from a group of elective courses in speaking, writing, and visual communication. An applicant for the program must meet WSU Graduate School Category A requirements. In addition, students whose first language is not English must achieve a TOEFL score of at least 600.

Communication Core Courses

>COMM 535. Communication Analysis and Criticism (3). *General education further study course.* Introduces the methods used for the analysis and critique of various linguistic, pictorial, and aural elements of communication to become more discerning consumers of the various forms of public and mass-mediated messages. Analysis includes print adver-

tisements, radio and television messages, newspaper features, and public speeches. Prerequisites: junior standing and COMM 301 with a C or better or instructor's consent.

COMM 630. Communication Law and Responsibility (3). Emphasizes both oral and written aspects of communication law and responsibility. Addresses general functions of the law including the right to communicate, broadcast law, and law of the press. Includes discussion of the First Amendment rights, libel, privacy, copyright, advertising, obscenity, pornography, and corporate communication concerns. Prerequisite: COMM 301 with a C or better or instructor's consent.

>**COMM 631. Historical and Theoretical Issues in Communication (3).** *General education further study course.* Examines the development of various issues in communication in historical context. Emphasizes different humanistic and scientific theories of communication and the historical development of mediated communication. Uses selected theories to generate critiques of specific communication events. Prerequisites: junior standing and COMM 130Q or instructor's consent.

Courses for Graduate/Undergraduate Credit

COMM 500. Advanced Reporting (3). 1R; 4L. For juniors and seniors; the techniques of reporting and writing the more complex and important types of news stories. Covers police beat stories, sports, and economic reporting; includes the study and practice of journalistic interviewing. Prerequisites: junior standing, COMM 301 with a C or better, and either 401 or 422.

COMM 502. Public Information Writing (3). Uses basic journalistic skills of clear, precise writing to communicate effectively with various audiences. Students write press releases, speeches, and popularizations of complex documents. Techniques learned are valuable in writing grant proposals, committee reports, pamphlets, and journal articles. Prerequisites: COMM 301 with a C or better, junior standing, or departmental consent.

COMM 510. Editing for Print (3). Selection, evaluation, and preparation of copy and pictures for publication. Covers copy editing, rewriting, headline and caption writing, and page layout. Prerequisites: junior standing and COMM 301 with a C or better.

COMM 522. Advanced Broadcast News (3). 3R; 3L. Advanced techniques of preparing news for radio and television presentation emphasizing actual work in radio and television newsrooms. Lab periods arranged with instructor. Prerequisite: COMM 422.

COMM 525. Advertising Copywriting (3). Detailed practice at writing various kinds of advertising copy, including print and broadcast forms. Emphasizes terse, precise writing that evokes response sought by advertiser. Prerequisites: COMM 324 and COMM 301 with a C or better or departmental consent.

COMM 526. Media Buying and Selling (3). Principles, methods, and strategies of buying and selling media for advertising, including study of reach and frequency of the various mass media and specialized media, budgeting, research, rates, market share, and other tools of current buying and selling strategies. Prerequisite: COMM 324 or instructor's consent.

COMM 550. Opinion Writing (3). Studies editorial judgment, including practice in the writing of print, broadcast, and electronic opinion pieces, and the examination of traditional and new technology research materials available to opinion writers. Prerequisites: COMM 301 with a C or better and junior standing.

COMM 570. Magazine Production (3). Magazine production, including the choosing of subjects, approaches and illustrations; the shooting and editing of photographic stories; layout; the handling of production and management concerns. Prerequisites: COMM 301 and 510 or departmental consent.

COMM 571. Feature Writing (3). Writing features for newspapers and magazines. Nonfiction topics may include personal experience essays, consumer pieces, travel articles, and personality profiles. Prerequisites: COMM 301 with a C or better and junior standing.

COMM 581. Communication Practicum (1-3). Application of theory, principles, and practices to professional settings where students work under instructor supervision to continue their professional preparation in various areas of media and communication. Prerequisites: COMM 301 and instructor's consent.

COMM 604. Field Video Production (3). Application of video equipment and techniques for field productions. Execution of visual and audio expression in relation to effective video productions in a field setting. Prerequisite: COMM 304 or instructor's consent.

COMM 609. Interactive Media Production (3). Investigation and application of production techniques for educational and instructional broadcasting, emphasizing television. Prerequisite: COMM 304.

COMM 611. Media Management (3). A study of the business and management operations of the mass media to give journalism students an understanding of the interrelationships in mass media enterprises. Prerequisite: junior standing or departmental consent.

COMM 612. School Publications Advising (3). Assists those who are preparing to advise and teachers who currently supervise a student newspaper or yearbook. Emphasizes techniques for teaching various forms of writing and design, duties relating to production and finance of school publications, and methods to help students become better communicators. Prerequisite: COMM 301 with a C or better or instructor's consent.

COMM 622. Studio B: Practicum in Broadcast Journalism (3). Reporting and writing about events in the Universi-

ty and community. Story assignment and preparation under the instructor's guidance; story broadcast over WSU Cable Channel 13. May be repeated for credit with advisor's consent. Prerequisite: COMM 422 or instructor's consent.

COMM 626. Integrated Marketing Communications Campaigns (3). Instruction and practice in planning and developing integrated advertising and public relations campaigns. Teaches students to perform a situation analysis, identify objectives, develop strategies and tactics, and write a plans book, as well as produce advertising and public relations campaign materials. Prerequisite: COMM 324 or instructor's consent.

>**COMM 632. American Public Address (3).** *General education further study course.* A detailed study of notable American speakers and their public utterances. Assesses their impact on the political, economic, and social history of this nation from colonial time to the present.

COMM 635. Leadership Techniques for Women (3). Cross-listed as WOM S 635. Provides the female student experience in decision making and improves skills in leadership through role playing and exercise in group dynamics.

COMM 636. Advanced Presentations (3). Skills development in a variety of advanced presentational methods, including speaking from a TelePrompTer, using PowerPoint technology, spokesperson/press conference speaking, conducting a training session, formal manuscript speaking, after dinner speaking, and writing a speech for another person. Prerequisite: COMM. 325.

COMM 640. Issues in Corporate Communication (3). Examines how corporations craft messages that are persuasive to their various publics. Special attention to how companies use communication strategies to cope with situations that threaten their reputations.

COMM 650. Communication Training and Development (3). An examination of communication concepts, processes, technologies, and strategies related to training and development. Includes the application of these elements to formal instruction across disciplines and at various educational levels as well as in most professional training settings.

COMM 660. Seminar in Communication (1-3). Special seminars dealing with current problems, issues, or interests in various areas of communication. Repeatable for credit in different topics only.

COMM 661. Directing the Forensics Program (3). A study of the methods and procedures in coaching and directing the high school and collegiate forensic programs (debate and individual events). The future teacher is made aware of the literature and professional organizations in the field.

COMM 675. Directed Study (2-4). Cross-listed as Thea. 675. Individual study or projects. Repeatable for credit with departmental consent. Prerequisite: departmental consent.

COMM 690. Communication Internship (1-2). Credit for professional experience that integrates theory with a planned

and supervised professional experience designed to complement and enhance academic program. Individualized programs must be formulated in consultation with and approved by appropriate faculty sponsors. May be repeated, but limited to a total of 4 credits in COMM 690 and COMM 481. Graded *Cr/Ncr*. Prerequisite: departmental consent.

COMM 712. Advanced Interpersonal Communication (3). Advanced exploration of concepts and variables in interpersonal communication through the study of different theories as well as practical experiences in dyadic and small-group communication. Prerequisite: COMM 302 or instructor's consent.

COMM 715. International Communication Systems (3). A comparative study of communication systems around the world, including print media, broadcasting, and new technologies. Examines the relationship between communication systems and the different social, cultural, and political contexts in which they exist, and explores some of the international conflicts that have arisen from these differences. Prerequisite: senior standing.

COMM 720Q. Dimensions of Mass Communication (3). A detailed study of mass media, their role as social institutions; their control, support, content, and audience; and their effects.

COMM 722. The Art of Conversation (3). Conversation is the form of communication people engage in most naturally and frequently, but about which they seldom think seriously. Helps participants enhance their understanding and appreciation of, as well as their skill in, the art of conversation. Includes the nature of conversation, principles of conversational communication, types of conversation, conversation in the media, and conversation analysis. Prerequisites: COMM 302 and junior standing or departmental consent.

COMM 750. Workshops in Communication (1-4).

COMM 770. The Audience (3). Application of research techniques to the measurement of audience behavior emphasizing mass media audiences. Includes focus group interviews, survey research, and radio and television ratings.

Courses for Graduate Students Only

COMM 801. Introduction to Communication Research (3). An integrative approach to an understanding of the nature and scope of communication research and graduate studies in communication and theatre/drama. Provides an overview of current research in the discipline. Instruction in the basic steps of research; availability of library and other sources; bibliographic search; computer accessing of source materials; organization, style, and format of a research report and citation of sources in accordance with standard style guides. Should be taken at the beginning of the graduate program.

COMM 802. Historical and Qualitative Methodologies in Communication Research (3). An introduction to historical, critical, and observational methodologies in communica-

tion research. Emphasizes historical, critical, and observational research, particularly those forms of research common to communication studies. Prerequisite: COMM 801.

COMM 803. Empirical/Quantitative Research Methodology in Communication (3). An introduction to empirical research methods in communication. Emphasizes both experimental and nonexperimental research, particularly those forms of research common to communication studies. Studies research design, methods, and reporting techniques. Prerequisite: COMM 801.

COMM 812. Contemporary Theories of Communication (3). Studies selected conceptual models useful in the academic study of human communication, including theories involving such contexts as interpersonal communication, public communication, and mass communication.

COMM 820. Investigation and Conference (2-3). Cross-listed as Thea. 820. Directed research and experimentation for graduate students in some phase of (a) speech communication, (b) electronic media, or (c) speech education. Repeatable for credit up to a total of 6 hours.

COMM 825. Group Communication (3). Examines communication processes that operate in groups in various contexts. Provides an overview of relevant theory, as well as methodologies through which group communication may be critically analyzed in applied settings.

COMM 830. Theories of Rhetoric: Classical (3). Cross-listed as ENGL825. An intensive study of the rhetorical theories of classical writers from 466 B.C. to the decline of Roman oratory. Principal emphasis on Isocrates, Plato, Aristotle, Quintilian, Cicero, and Longinus.

COMM 831. Theories of Rhetoric: Renaissance to Early Modern (3). Cross-listed as ENGL826. A study of the emerging patterns of rhetoric from the Second Sophistic to modern times. Analyzes the rhetorical systems associated with such figures as Augustine, Felenon, Bulwer, Sheridan, Steale, Rush, John Quincy Adams, Blair, Campbell, and Whately.

COMM 860. Seminar in Communication (1-3). Special seminars dealing with current problems, issues, or interests in various areas of communication. Repeatable for credit in different topics only.

COMM 865. Organizational Communication (3). Cross-listed as MGMT 865. An analysis of communication models emphasizing their applications to communication problems in organizations. Explores social psychological processes underlying persuasion in interpersonal relations and through the mass media. Critically analyzes communication systems and techniques within formal organizations.

COMM 870. Directed Study (1-3). Individual study or projects. Repeatable for credit with departmental consent. Prerequisite: departmental consent.

COMM 875-876. Thesis (1-3-1-3). Prerequisite: departmental consent.

Community Affairs, School of

The School of Community Affairs, created in 1999, brings together the programs of criminal justice, ethnic studies, and gerontology to form a unique and diverse curriculum to better serve the needs of students to work in an ever-changing urban and global community. Additionally, the Midwest Criminal Justice Institute (MCJI) and the Regional Community Policing Training Institute (RCPTI) provide opportunities to blend teaching, research, and service. As a result, the School of Community Affairs not only serves as a quality educational unit for students, but also functions as a research and service unit that assists with a broader range of needs identified in the community.

Criminal Justice (CJ)

Graduate Faculty

Professors: Paul Cromwell (director, School of Community Affairs), Michael Palmiotto, Derek Cornish (visiting professor)

Associate Professors: Andra Bannister (director, RCPTI, and graduate coordinator), Ronald G. Iacovetta, Delores Craig-Moreland (director, JJRI), Martha Smith

Assistant Professors: Alison McKenney Brown (internship coordinator), Brian Withrow (director, MCJI)

Master of Arts in Criminal Justice

Admission Requirements

The Master of Arts in Criminal Justice at Wichita State University is housed in the School of Community Affairs. It is one of the nation's oldest criminal justice graduate degree programs. Intended to advance learning beyond the more general undergraduate educational curriculum, the program expands the knowledge base of both graduating seniors and the administrative capacity of working professionals to optimally perform in their chosen careers in criminal justice.

Applications are accepted for fall semester admission only.

In addition to the Graduate School admission requirements, applicants must submit (1) three letters of reference from people acquainted with the applicant's background and potential; (2) a brief autobiographical statement describing particular interests, experiences, and goals related to academic and professional work in criminal justice; and (3) verbal and quantitative scores on the Graduate Record Exam (GRE).

Applicants are evaluated with respect to (1) undergraduate grade point average (a minimum GPA of 3.000 based on the last 60 hours required for consideration of admission to degree status); (2) amount, type, and scope of undergraduate preparation; (3) reference letters; and (4) GRE scores. Final recommendation on a candidate's admission to the program is made to the Graduate School by the graduate coordinator of the criminal justice program.

Degree Requirements

The degree requires a minimum of 36 hours, including 21 hours taken in courses numbered 800 or above.

Core Curriculum. All degree candidates are required to complete CJ 802, 892, 893, 894, and an approved graduate-level research methods course. *CJ 802 and 894 must be completed in the first semester of study with a B or better.* Candidates during their final semester may choose to complete an applied research paper for 3 hours of credit, complete a thesis for 6 hours of credit, or pass an oral or written comprehensive examination.

It is recommended that students complete the core requirements prior to enrollment in elective classes. Each core requirement course will be offered once each academic year. Elective courses will be selected in consultation with the student's graduate advisor.

Examinations

All students are required to take the qualifying exam, which includes a writing requirement and a comprehensive exam, after the completion of no fewer than 12 credit hours and no more than 18 credit hours. Students must pass both portions of the qualifying exam before continuing in the criminal justice program.

Thesis candidates and candidates who choose an applied research paper are required to defend orally both their prospectus and their final project. Students electing the 36-hour straight course work track are required to pass a written comprehensive examination.

Courses for Graduate/Undergraduate Credit

CJ 501. Integrity in Public Service (3). Cross-listed as ETH S 501, GERON 502, PADM 501. Exposes the student to basic principles of personal and professional integrity and how those principles apply to their daily life as a member of the community and as an employee of a government or social service agency. Employs a case study method, using cases and examples from a wide range of government and non-profit agency experiences. Students become aware of the moral and ethical issues which may arise in their professional and personal lives; begin to develop critical thinking and analytical skills regarding ethical behavior; and become more personally and professionally responsible. Prerequisite: junior- or senior-level or instructor's permission.

CJ 541. Medical and Legal Aspects of Death Investigation (3). Emphasizes the manner, cause, and mechanism of death; physiological effects of trauma; postmortem changes; identification techniques; investigation of child deaths; and the components of a complete death investigation. Considers and analyzes the history, function, and responsibilities of the coroner/medical examiner. Prerequisite: CJ 191Q.

CJ 551. Workshop (1-6). Specialized instruction using variable format in relevant criminal justice subjects. Repeatable for credit up to 6 hours.

>CJ 593. Crime Causation and Criminal Justice Policy (3). *General education further study course.* Introduction to theo-

retical issues in criminal justice. Primary emphasis is the etiology of criminal and delinquent activity and the response of the criminal justice system to such behavior. Discusses the significant contributions of outstanding criminologists, as well as elaborating the application of these perspectives to criminal justice agencies. Prerequisite: CJ 191Q.

CJ 597. Applied Research Methods (3). Cross-listed as ETH S 597, GERON 597, PADM 597. Studies research methods including questionnaire construction, survey methods, experimental design, and report preparation. Emphasizes completion of an applied research project. Prerequisite: either CJ 407, ETH S 407, GERON 407, or PADM 407.

CJ 600. Forensic Anthropology (3). Cross-listed as ANTHR 600. Encompasses the area of criminal investigation involving biological evidence: blood, hair, fingerprint, dentition, and skeletal system. Covers procedures of collection, preservation, marking, transportation, referral, laboratory analysis, classification, and identification emphasizing anthropological interpretation. Prerequisite: CJ 191Q.

CJ 610. Correctional Counseling (3). Analysis of the role of a correctional counselor. Emphasizes current practices in community-based and institutional correctional counseling. Discusses application of theories of counseling which are widely used in correctional settings, rehabilitative programs, and special needs of offenders. Prerequisite: CJ 191Q.

CJ 621. Environmental Law (3). Cross-listed as ETH S 621 and PADM 621. An in-depth analysis of emerging federal, state, and local legislation; judicial decisions, and administrative policies in environmental protection. Explores the roles of a variety of governmental agencies and nongovernmental organizations as related to prevention and enforcement processes of environmental protection. Includes issues in the development and implementation of environmental policy. Prerequisite: an approved methods class.

CJ 625. Computer Applications for Public Policy (3). Cross-listed as ETH S 625, GERON 625, PADM 625. Familiarizes students with major types of software applications for microcomputers and their use in public policy analysis.

CJ 641. Forensic Psychiatry (3). Analysis of the role of psychiatry in the criminal justice process. Introduces the student to concepts and procedures of forensic psychiatry. Prerequisite: CJ 191Q.

CJ 643. Forensic Science (3). An overview of the various sciences used in the forensic investigation of crime, including toxicology, drug identification, questionable documents, firearm and toolmark identification, trace evidence analysis, fingerprint identification, forensic pathology, forensic serology, forensic odontology, and forensic anthropology. Prerequisite: CJ 191Q.

CJ 651. Dispute Resolution (3). Cross-listed as ETH S 651, GERON 651, PADM 651. Examines a range of topics including causation, typologies, communications, mediation, arbitration, and other dispute resolution techniques. Includes criminal and victim mediation and both inter-group and

inter-organization relations and dispute resolution techniques. Analyzes case studies.

>CJ 652. Juvenile Justice and Social Policy (3). *General education further study course.* Analyzes decision-making processes in juvenile justice and the content of juvenile law and Supreme Court decisions affecting juvenile justice, and selected problems in juvenile justice. Reviews the juvenile justice reform movement. Covers delinquency prevention and control and ethical issues associated with juvenile justice. Prerequisite: CJ 191Q.

CJ 692. Community Policing (3). Reviews the various models and strategies of community policing. Examines key concepts, such as problem oriented policing, crime prevention, community relations, and empowering the community, and the integration of these concepts into community policing. Prerequisites: CJ 191Q.

CJ 702. Research Methods (3). Cross-listed as ETH S 702, GERON 702, PADM 702. Acquaints students with applied public policy research methods. Emphasizes locating, collecting, appraising, and utilizing both primary and secondary sources of data of the type used in policy, planning, and administrative research. Students must complete several short research projects.

CJ 781. Cooperative Education (1-6). Provides a paid field placement that integrates theory with a planned and supervised professional experience designed to complement and enhance the student's academic program. Students work with a faculty member in the formulation and completion of an academic project related to the field experience. The cooperative education experience must be an integral part of the student's graduate program. Individualized programs must be formulated in consultation with, and approved by, the cooperative education coordinator. Open only to CJ graduate students. Offered Cr/NCr only.

CJ 782. Workshop in Criminal Justice (1-6). Prerequisite: CJ 191Q and instructor's consent.

CJ 783. Advanced Special Topics in Criminal Justice (1-3). Detailed study of topics in criminal justice with particular emphasis established according to the expertise of the various instructors. Prerequisites: CJ 191Q and junior-, senior-, or graduate-level standing.

CJ 797. Policy Analysis and Program Evaluation (3). Cross-listed as P ADM 845. An overview of approaches to public policy analysis and program evaluation. Examines the roles of participants in public policy development, implementation, and evaluation. Explores policy and program functions and their intended and unintended impacts. Focuses on methodologies for collection of data and their use in the assessment of programs and program impacts. Prerequisites: an approved statistics class and an approved methods class.

Courses for Graduate Students Only

CJ 802. Quantitative Methods for Public Sector Professionals (3). Cross-listed as GERON 802 and PADM 802. Uses

standard microcomputer statistical software and analysis to introduce statistics and quantitative analysis for organizational and policy decision making. Emphasizes the application of statistics and writing with quantitative evidence to real public sector policy questions. Assumes little or no background in statistics and software applications. Prerequisite: either CJ 702, GERON 702, or PADM 702.

CJ 816. Correctional Administration (3). Analyzes basic methods utilized in the organization and accomplishment of objectives in correctional institutions. Reviews methods utilized in traditional correctional institutions, diagnostic centers, halfway houses, and other treatment models.

CJ 817. Crime in Popular Culture (3). Analyzes film as an expression of popular culture; focuses on films dealing with subject of crime. Particular attention to portrayal of violence and the images of women. Discusses the images of police, correctional officers, and other criminal justice professionals.

CJ 820. Terrorism and Modern Societies (3). A broad overview of the many theoretical approaches to the study of terrorism and studies recurring issues regarding the interpretation of various types of terrorism. Focuses not only on theoretical concerns, but also on policy debates and the substantive ramifications of current events. Exposes students to the range and complexity of both domestic and international terrorism and also to different approaches to the study of terrorism.

CJ 821. Hostage Negotiation (3). A comprehensive examination of theory, research, and practice in hostage negotiation from the perspectives of both law enforcement and the behavioral sciences. Exposes students to the range and complexity of both domestic and international hostage negotiations with the focus not only on theoretical concerns, but also on policy debates and the substantive ramifications of current events. Explores the need for more rigorous application of behavioral science to the practice of crisis negotiation.

CJ 850. Workshop (1-6). Specialized instruction using variable format in relevant criminal justice subjects. Repeatable for credit up to 6 hours. Restricted to graduate students.

CJ 853. Crime Prevention through Environmental Design (3). Examines the premises and concepts of Crime Prevention through Environmental Design (CPTED), including access control, natural surveillance, territorial reinforcement, and activity support. Emphasizes case studies and field research.

CJ 861. Police Administration (3). A comparative survey and analysis of administrative philosophy, problems, procedures, organizations, and functions of effective agency organization. Considers administrative skills related to operations and personnel.

CJ 881. Internship (3-6). Supervised field placement in a criminal justice agency. For 3 credits, the student works 192 hours and completes an academic project under the direction of a faculty member. Prerequisites: 15 hours of graduate-level criminal justice courses and consent of criminal justice agency and internship coordinator.

CJ 882. Individual Directed Study in Criminal Justice (3-6). Faculty directed readings and/or research in special areas of interest in the field of criminal justice. Prerequisite: consent of graduate coordinator and instructor.

CJ 891. Seminar in the Judicial Process (3). Reviews and analyzes the functional and legal theories impacting the administration and operation of the judicial system. Examines actual practice as well as statutory and case law.

CJ 892. Criminal Justice and Community Action (3). An overview of the literature on community organizations and its assessment. Discusses consequences of varying degrees of community disorganization, particularly in terms of the various theories about crime and community organization. Reviews crime prevention strategies which focus on community organization. Students gain knowledge and practical skills related to community organization as it relates to crime. Students perform community organization assessments and relate the outcome to related crime rates.

CJ 893. Seminar on the Application of Criminological Theory (3). An in-depth analysis of the major theories of criminology and of their importance to the criminal justice process. Emphasizes the student's development of a consistent and valid frame of reference.

CJ 894. Proseminar in Criminal Justice (3). Familiarizes students with critical issues facing the criminal justice system. Reviews issues which face law enforcement, the courts, corrections, and the juvenile justice system, considering the integrity of the entire criminal justice system.

CJ 895. Seminar in Policing (3). Familiarizes students on such law enforcement topics as the historical development of policing, the police role, occupational socialization, and problems of police work.

CJ 896. Seminar in Corrections (3). Focuses on the major issues and dilemmas facing modern corrections in America. Includes both institutional programs such as prisons and jails, as well as alternatives in community settings, such as diversion, probation, parole, halfway houses, work release centers, and community corrections.

CJ 897. Advanced Research Methods (3). Cross-listed as GERON 897 and P ADM 897. Advanced research course; studies the selection and formulation of research problems, research design, hypothesis generation, scale construction, sampling procedures, and data analysis and interpretation. Prerequisite: either CJ 597, ETH S 597, GERON 597, P ADM 597, or equivalent.

CJ 898. Applied Research Paper (1-3). Original research project under a faculty member's direction. Project requires a written report and defense of that report before a faculty committee. Must be an individual effort, not a group project. Intended to be a major project or capstone activity completed at the end of a student's program of study. Prerequisite: graduate-level research methods class.

CJ 899. Thesis (3-6). Prerequisite: consent of graduate advisor.

Ethnic Studies (ETH S)

Graduate Faculty

Assistant Professor: Anna M. Chandler

Instructors: Martha Sanchez, Jerry Shaw

Although a graduate program is not currently available in ethnic studies, the Department of Ethnic Studies participates extensively with other departments in the multidisciplinary Master of Arts in Communications program. See requirements for that program in the Fairmount College of Liberal Arts and Sciences, Elliott School of Communications section of the *Graduate Bulletin*.

Courses for Graduate/Undergraduate Credit

ETH S 501. Integrity in Public Service (3). Cross-listed as CJ 501, GERON 502, PADM 501. Exposes the student to basic principles of personal and professional integrity and how those principles apply to their daily life as a member of the community and as an employee of a government or social service agency. Employs a case study method, using cases and examples from a wide range of government and non-profit agency experiences. Students become aware of the moral and ethical issues which may arise in their professional and personal lives; begin to develop critical thinking and analytical skills regarding ethical behavior; and become more personally and professionally responsible. Prerequisite: junior- or senior-level or instructor's permission.

>ETH S 512. Aging and Ethnicity (3). Cross-listed as GERON 512. *General education further study course.* Addresses the needs of students interested in (1) providing services to; (2) exploring the "issues" of; (3) becoming familiar with the rights of; (4) learning the legal procedures for resolving specific problems of; and (5) offering practical solutions for the difficulties encountered by ethnic older persons. Prerequisites: ETH S 100Q, GERON 100Q, SOC 111Q, or instructor's consent.

> ETH S 532. Women in Ethnic America (3). *General education further study course.* Cross-listed as HIST 532 and WOM S 532. An in-depth, thematic understanding of the historical experiences of women of color across space and time in U.S. history. Employing a female-centered framework of analysis, course probes the intersections of race, class, gender, and sexuality in women's lives.

ETH S 540. Advanced Cross-Cultural Communications (3). Special topics in human relations. Prerequisite: ETH S 210Q.

ETH S 545. Cross-Cultural Communications Theory (3). An examination of current cross-cultural communication theory and its impact on contemporary cross-cultural issues.

ETH S 550. Working with Minority Families (3). Examines the unique dynamics, forms, and interaction patterns of

U.S. minority families within the larger cultural framework. Highlights strengths exhibited by these families and the challenges they face. Discusses intervention strategies to address such challenges. Focuses primarily on four minority groups: African Americans, Asian Americans, Hispanic Americans, and Native Americans. Also discusses families from other cultures, domestic and international. Through research and service projects, students have a hands-on experience in working with minority families.

ETH S 551. Workshop (3). Specialized instruction using variable format in relevant ethnic studies subjects. Repeatable for credit up to 6 hours.

ETH S 580. Individual Projects (3). Student conducts independent research related to a specific ethnic group. Prerequisite: 50 hours of Wichita State credit or program consent. Repeatable for a total of 6 hours.

ETH S 597. Applied Research Methods (3). Cross-listed as CJ 597, GERON 597, PADM 597. Studies research methods including questionnaire construction, survey methods, experimental design, and report preparation. Emphasizes completion of an applied research project. Prerequisite: either CJ 407, ETH S 407, GERON 407, or PADM 407.

ETH S 621. Environmental Law (3). Cross-listed as CJ 621 and PADM 621. An in-depth analysis of emerging federal, state, and local legislation; judicial decisions; and administrative policies in environmental protection. Explores the roles of a variety of governmental agencies and nongovernmental organizations as related to prevention and enforcement processes of environmental protection. Includes issues in the development and implementation of environmental policy. Prerequisite: an approved methods class.

ETH S 625. Computer Applications for Public Policy (3). Cross-listed as CJ 625, GERON 625, PADM 625. Familiarizes students with major types of software applications for microcomputers and their use in public policy analysis.

ETH S 651. Dispute Resolution (3). Cross-listed as CJ 651, GERON 651, PADM 651. Examines a range of topics including causation, typologies, communications, mediation, arbitration, and other dispute resolution techniques. Includes criminal and victim mediation and both inter-group and inter-organization relations and dispute resolution techniques. Analyzes case studies.

ETH S 702. Research Methods (3). Cross-listed as CJ 702, GERON 702, PADM 702. Acquaints students with applied public policy research methods. Emphasizes locating, collecting, appraising, and utilizing both primary and secondary sources of data of the type used in policy, planning, and administrative research. Students must complete several short research projects.

ETH S 725. Concepts of Cross-Cultural Communications (3). A critical survey of the concepts of cross-cultural communications. An in-depth examination of the rationale used to evaluate different ethnic groups' language and behavior. Course provides a conceptual understanding of special

implications and necessary adaptations of communications to, between, and among diverse ethnic groups in our society.

ETH S 750. Workshop (1-4). Focuses on the nature and scope of ethnic studies. Emphasizes the unique experiences of ethnic groups in this country.

Gerontology (GERON)

Graduate Faculty

Professors: Raymond H. Hull, Communicative Disorders and Sciences; Samuel J. Yeager, HWS Public Administration

Associate Professors: Linda Bakken, Administration, Counseling, Educational, and School Psychology; Delores Craig-Mooreland, CMA Criminal Justice; William C. Hays, CMA Gerontology (graduate coordinator, gerontology); Alicia A. Huckstadt, Nursing; Nancy McCarthy Snyder, HWS Public Administration; James H. Swan, Public Health Science; Marilyn L. Turner, Psychology

Assistant Professors: Elwin Barrett, SSW Social Work; Anna M. Chandler, CMA Ethnic Studies; Ruth B. Pickard, Public Health Science

Instructor: Mary Corrigan, CMAGerontology

The gerontology program offers courses of study leading to the Master of Arts (MA) degree in gerontology. Because gerontology is concerned with gaining and applying knowledge about all aspects of aging in a wide range of professional settings, it is by nature, multidisciplinary. The graduate degree program in gerontology at Wichita State draws upon the faculty and resources of the Hugo Wall School of Urban and Public Affairs and faculty and courses in the colleges of liberal arts and sciences, education, and health professions.

Master of Arts in Gerontology

The gerontology program requires a minimum of 39 hours leading to the MA degree.

The program is designed for students with minimal previous training in gerontology, among them professionals in such areas as communicative disorders, recreation, physical or occupational therapy, allied health, business, ministry, counseling, social work, adult education, mental health, and any field where older people make up a significant and increasing proportion of the client population and where professionals with gerontological training are presently scarce.

Since employment in the area of aging often demands a knowledge of gerontology combined with knowledge and skills found in a particular discipline, students may use elective courses to pursue an emphasis in such areas as administration, health, long-term care, programs and services, research, and policy.

Admission Requirements

In addition to the Graduate School admission requirements, applicants must have a grade point average in their last 60 hours of their bachelor's

degree of 3.000 (on a 4.000 scale) and must submit names of three references. Students without an undergraduate statistics course are required to take a graduate-level statistics course approved by their advisor. International students must have a score higher than 575 on the TOEFL exam.

Degree Requirements

Students must take certain required core courses with a minimum total of 39 hours including a terminal research project.

<i>Core Curriculum</i>	<i>Hrs.</i>
GERON 518Q, Biology of Aging <i>or</i> NURS 789, Chronic Illness and Aging.....	3
GERON 663, Economic Insecurity.....	3
GERON 702, Research Methods.....	3
GERON 715, Adult Development and Aging.....	3
GERON 798, Multidisciplinary Perspectives on Aging.....	6
GERON 802, Aging Programs and Policies.....	3
GERON 810, Advanced Gerontology Internship*.....	3
GERON 850, Selected Topics in Gerontology	3
<i>Electives**</i>	12
<i>Terminal Research Project**</i> (one of the following).....	3
GERON 898, Applied Research Paper <i>or</i> GERON 899, Thesis	
<i>Total</i>	39

*GERON 810, Internship, may be waived for those with extensive approved practical experience.

**With the approval of their advisor, students may use their elective hours and terminal research project to pursue an emphasis.

Relevant courses in other departments or programs which students may consider include PADM 702, 710, 725, 745, 775, 802, 845, 865; NURS 789; ACCT 800; MKT 800; PHS 804, 812, 818, 822, 826, 834, 858; and PSY813. With the consent of their graduate program advisor and program approval, students may take other courses not listed as elective hours.

Students should consult the *Gerontology Program Handbook* for additional guidance on the program.

Graduate Minor in Gerontology

The minor is a 12-15-hour concentration in gerontology taken as part of a graduate degree program in another department. Students who wish to pursue the gerontology emphasis must fulfill the requirements in both departments.

Courses for Graduate/Undergraduate Credit

GERON 501. Field Experience (3-6). A supervised field experience in an agency or organization planning or providing services to older people, individually designed to enhance each student's skills and knowledge of the aging service net-

work. Repeatable for 6 hours credit. Prerequisite: 12 hours of gerontology credit and instructor's consent.

GERON 502. Integrity in Public Service (3). Cross-listed as CJ 501, ETH S 501, PADM 501. Exposes the student to basic principles of personal and professional integrity and how those principles apply to their daily life as a member of the community and as an employee of a government or social service agency. Employs a case study method, using cases and examples from a wide range of government and non-profit agency experiences. Students become aware of the moral and ethical issues which may arise in their professional and personal lives; begin to develop critical thinking and analytical skills regarding ethical behavior; and become more personally and professionally responsible. Prerequisite: junior- or senior-level or instructor's permission.

>GERON 512. Aging and Ethnicity (3). Cross-listed as ETH S 512. *General education further study course.* Addresses the needs of students interested in (1) providing services to; (2) exploring the "issues" of; (3) becoming familiar with the rights of; (4) learning the legal procedures for resolving specific problems of; and (5) offering practical solutions for the difficulties encountered by ethnic older persons. Prerequisites: ETH S 100Q, GERON 100Q, SOC 111Q or instructor's consent.

GERON 513. Sociology of Aging (3). Cross-listed as SOC 513. Analysis of the social dimensions of old age, including changing demographic structure and role changes and their impact on society. Prerequisite: SOC 111Q.

GERON 514. Anthropology of Aging (3). Cross-listed as ANTHR 514. An anthropological analysis of the latter stages of the life cycle with historical and cross-cultural perspectives.

GERON 515. Women and Aging (3). Introduces students to issues in aging that are unique to women, to women's diverse developmental patterns, and to research methods appropriate for studying aging women and their life experiences. Topics include physical change, role transitions, and adaptation from a lifespan perspective.

GERON 518Q. Biology of Aging (3). Cross-listed as BIOL 518Q. An introduction to the phenomenon of aging, including a survey of age-related processes and mechanisms of senescence, emphasizing humans. Students earning graduate credit produce a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisite: a basic course in biology that satisfies the general education requirements.

GERON 520. Family and Aging (3). Cross-listed as SOC 520. An analysis of the families and family systems of older people. Emphasizes demographic and historical changes, widowhood, caregiving, and intergenerational relationships as these relate to the family life of older people. Prerequisites: GERON 100, SOC 111Q, or junior standing.

GERON 537. The Social Consequences of Disability (3). Cross-listed as SOC 537. An eclectic survey of the social aspects of disability, showing the impact of social values,

institutions, and policies upon adults with disabilities. Appropriate for both students of sociology and the service professions. Prerequisite: SOC 111Q.

GERON 550. Selected Topics in Gerontology (1-6). Study in a specialized area of gerontology with the focus upon pre-professional programs and current issues in the field of aging. Emphasizing knowledge and skills in applied areas of gerontology as they relate to an emerging area of research and application. Repeatable up to 6 hours. Prerequisite: instructor's consent.

GERON 551. Workshop (3). Specialized instruction using a variable format in relevant gerontology subjects. Repeatable for credit up to 6 hours.

GERON 560. The Aging Network (3). An overview of federal, state, and local programs concerned with planning, managing, or direct delivery of services to the older population. Prerequisite: 9 hours of gerontology credit or instructor's consent.

GERON 597. Applied Research Methods (3). Cross-listed as CJ 597, ETH S 597, PADM 597. Studies research methods including questionnaire construction, survey methods, experimental design, and report preparation. Emphasizes completion of an applied research project. Prerequisite: either CJ 407, ETH S 407, GERON 407, or PADM 407.

GERON 625. Computer Applications for Public Policy (3). Cross-listed as CJ 625, ETH S 625, PADM 625. Familiarizes students with major types of software applications for microcomputers and their use in public policy analysis.

GERON 651. Dispute Resolution (3). Cross-listed as CJ 651, ETH S 651, and PADM 651. Examines a range of topics including causation, typologies, communications, mediation, arbitration, and other dispute resolution techniques. Includes criminal and victim mediation and both inter-group and inter-organization relations and dispute resolution techniques. Analyzes case studies.

GERON 663. Economic Insecurity (3). Cross-listed as ECON 663. Personal economic insecurity, such as unemployment, old age, health care, disablement, and erratic economic fluctuations. Includes costs and benefits of government action to aid in meeting such insecurities. Prerequisites: ECON 202Q or instructor's consent, and junior standing.

GERON 700. Grant Proposal Preparation (3). Concerned with the process of research and project proposal development, including response to published guidelines, project planning, and proposal development and submission. Examines grant funding, including types of funding sources and their purposes and methods and processes of proposal evaluation. Students write and evaluate proposals.

GERON 702. Research Methods (3). Cross-listed as CJ 702, ETH S 702, PADM 702. Acquaints students with applied public policy research methods. Emphasizes locating, collecting, appraising, and utilizing both primary and secondary sources of data of the type used in policy, planning, and administra-

tive research. Students must complete several short research projects.

GERON 715. Adult Development and Aging (3). Explores theory and research related to the development of adults and to the aging process. Utilizing an interactive, interdisciplinary perspective, the course examines the process of change, transition, growth, and development across the adult lifespan. Prerequisites: GERON 798 or 6 hours of gerontology.

GERON 720. Independent Readings in Gerontology (1-3). Directed study in a specialized topic in gerontology. Repeatable up to 6 hours. Prerequisite: 12 hours of gerontology credit and departmental consent.

GERON 750. Workshop in Gerontology (1-3). Provides specialized instruction, using a variable format in a gerontologically relevant subject. Repeatable for credit.

GERON 781. Cooperative Education (3-6). Provides practical field experience, under academic supervision, that is suitable for graduate credit and complements and enhances the student's academic program. Repeatable up to 6 hours. Prerequisites: 12 hours of gerontology and instructor's consent.

GERON 798. Multidisciplinary Perspectives on Aging (3). Introduction to the advanced study of the process of aging from a multidisciplinary point of view. Not open to students with an undergraduate major or minor in gerontology. Prerequisite: admission to Graduate School.

Courses for Graduate Students Only

GERON 801. Field Research in Gerontology (3). An examination of the methods of participant observation and interview as approaches to understanding aging and the aged. Students gain practical experience in these methods through individual fieldwork projects. Prerequisite: GERON 798, 12 hours of gerontology credit, or instructor's consent.

GERON 803. Program Planning and Evaluation in Aging Services (3). Examines the process of developing service programs in response to a defined community need in aging services. Includes assessment of need; identification and development of community resources; and development and evaluation of program goals, objectives, and methods of implementation. Prerequisite: 12 hours of gerontology or instructor's consent.

GERON 802. Quantitative Methods for Public Sector Professionals (3). Cross-listed as CJ 802, PADM 802. Uses standard microcomputer statistical software and analysis to introduce statistics and quantitative analysis for organizational and policy decision making. Emphasizes the application of statistics and writing with quantitative evidence to real public sector policy questions. Assumes little or no background in statistics and software applications. Prerequisite: either CJ 702, GERON 702, or PADM 702.

GERON 804. Aging Programs and Policies (3). Analyzes and evaluates policies and programs related to aging and old

age. Emphasizes the importance of social values and historical context for understanding current policies, programs, and practices. Prerequisite: GERON 798, 12 hours of gerontology, or instructor's consent.

GERON 810. Advanced Gerontology Internship (3-6). Integrates academic gerontology and practical experience through supervised placement of students in an agency or organization engaging in planning, administering, or providing direct services to older people. Internship requires 200 contact hours for each 3 hours of credit. An internship paper also is required. Prerequisites: 12 hours of gerontology credit and instructor's consent prior to registration.

GERON 850. Selected Topics in Gerontology (1-6). Advanced study in a specialized area of gerontology focusing upon professional programs and current issues in the field of aging. Emphasizes knowledge and skills in applied areas of gerontology as they relate to an emerging area of research and application. Repeatable up to 6 hours. Prerequisite: instructor's consent.

GERON 897. Advanced Research Methods (3). Cross-listed as CJ 897, PADM 897. Advanced research course; studies the selection and formulation of research problems, research design, hypothesis generation, scale construction, sampling procedures, and data analysis and interpretation. Prerequisite: either CJ 597, ETH 5 597, GERON 597, PADM 597, or equivalent.

GERON 898. Applied Research Paper (1-3). Original research project under a faculty member's direction. Project requires a written report and defense of that report before a faculty committee. Must be an individual effort, not a group project. Intended to be a major project or capstone activity completed at the end of a student's program of study. Prerequisite: graduate-level research methods class. Repeatable.

GERON 899. Thesis (1-3). Repeatable, but total credit hours counted toward degree shall not exceed 4 hours.

Computer Science (CS)

Graduate Faculty

Professor: Shang-Ching Chou

Associate Professors: Rajiv Bagai, Prakash Ramanan (chairperson)

Assistant Professors: Rodney Bates (graduate coordinator), Chin-Chih Chang

Master of Science

The Department of Computer Science offers the Master of Science (MS) degree program. Through a combination of advanced courses and electives, the MS program seeks to provide a level of concentration suitable for advanced professional work and/or further graduate study in computer science.

Admission Requirements

All candidates for graduate study must have a bachelor's degree (in any field) from an accredited institution. In addition, for MS degree status for Nondegree A status, a candidate's GPA in the last 60 hours

of course work should be at least 2.750. (A probationary admission can be granted to candidates with a GPA in the last 60 hours of course work between 2.600 and 2.750.) All international applicants must have a score of at least 550 on the TOEFL exam.

The MS degree and Nondegree A students are expected to have at least a B average in the following background courses:

1. Math 242Q and 243, Calculus I and II.
2. CS 300 and 560, Data Structures and Algorithms I and II
3. CS 320, Discrete Structures in Computer Science
4. CS 440, Computer Organization and Architecture
5. CS 510, Programming Language Concepts
6. CS 540, Operating Systems

However, if the candidate has not taken, or satisfactorily performed in, any or all of the above courses, admission can be granted on the condition that the required courses be satisfactorily completed within one year of admission.

Degree Requirements

The MS degree requires 30-33 credit hours of graduate-level work, as follows:

1. Computer theory (3 credit hours)—CS 720, Theoretical Foundations of Computer Science.
2. Advanced courses (12 credit hours)—Four computer science courses numbered 800-889 or CS 898.
4. Electives (9 credit hours)—A coherent block of graduate-level courses from computer science or closely related technical fields, as approved by the candidate's graduate advisor. All computer science electives must be at the 600-level or above.
5. Thesis/Project (6-9 credit hours)—One of the following two options:

A. Thesis (6 credit hours)—The thesis option is usually exercised by students planning to pursue a PhD degree in computer science. This option requires 6 credit hours of Thesis research (CS 892) in a specialized area of computer science under the supervision of a computer science graduate faculty advisor. This should culminate in the writing of a thesis. The student should pass an oral final examination by an ad hoc faculty committee headed by the thesis advisor. This examination will pertain to, but is not limited to, the subject matter of the thesis. (30 total hours)

B. Project (9 credit hours)—The project option is usually exercised by students planning to work in industry. This option requires 3 credit hours of Project (CS 891), one computer science course numbered 800-889 or CS 898, and one computer science course at the 600-level or above. The project will be supervised by a computer science graduate faculty advisor and can be job-related. The student should write a report on the project and pass an oral final examination by an ad hoc faculty committee headed by the project advisor. This examina-

tion will pertain to, but is not limited to, the subject matter of the project. (33 total hours)

Courses for Graduate/Undergraduate Credit

CS 501. Numerical Programming Techniques (3). 2R; 2L. A study of the programming techniques used to solve nonlinear equations, interpolate, integrate, and solve systems of linear equations. Discusses the implications of finite precision floating point arithmetic. Also covers techniques for initial and boundary value problems in ordinary differential equations. Selected algorithms are implemented on the computer. Prerequisites: MATH 243 and CS 300 with grades of C or better.

CS 510. Programming Language Concepts (3). Theoretical concepts in the design and use of programming languages, including scope of declarations, storage allocation, subroutines, modules, formal methods for the description of syntax, and semantics. Introduction to the concepts of different styles of languages—imperative languages, functional languages, logic languages, object-oriented languages, etc. Prerequisite: CS 410 with a C or better.

CS 540. Operating Systems (3). 3R; 1L. Covers the fundamental principles of operating systems: process synchronization, scheduling, resource allocation, deadlocks, memory management, file systems. Studies a specific operating system in depth. Programming assignments consist of modifications and enhancements to the operating system studied. Prerequisite: CS 440 with a C or better.

CS 560. Data Structures and Algorithms II (3). 3R; 1L. Design and analysis of algorithms and proof of correctness. Analysis of space and time complexities of various algorithms including several sorting algorithms. Hashing, binary search trees, and height balanced trees. Algorithm design techniques including divide and conquer, greedy strategies, and dynamic programming. Elementary graph algorithms. Prerequisites: CS 300, CS 320; and Math 243 and STAT 460 with a C or better in each.

CS 612. Systems Programming (3). 2R; 2L. A study of system software including assemblers, disassemblers, macro-processors, link editors, loaders, language translators, and debuggers. Practical experience in building system software through programming laboratory exercises. Prerequisites: CS 300 and 312 with a C or better.

CS 615. Compiler Construction (3). 2R; 2L. First compiler course for students with a good background in programming languages and sufficient programming experience. Covers over-all design and organization of compilers and interpreters, lexical and syntax analysis, construction of symbol tables, scope analysis, type checking, error recovery, run-time organization, intermediate code and its interpretation, code generation, and optimization. Project-oriented course. Emphasizes practical experience gained through the design and implementation of a simplified but non-trivial compiler for a strongly typed, procedural language. The implementation is carried out in a modern systems programming environment. Prerequisite: CS 510 or equivalent with a C or better.

CS 632. Symbolic Computation with LISP (3). An in-depth study of LISP as a functional programming language with its application to artificial intelligence, polynomial computation, and theorem proving. Complete substantial programming projects in LISP. Prerequisites: Math 243 with a C or better; and CS 300 and CS 320 with a B or better in each; or CS 410 or CS 560 with a C or better; or departmental consent.

CS 644. Advanced Unix Programming (3). Improves skills in C programming under the Unix environment. Covers file I/O, both buffered and unbuffered, working with the Unix file system, concurrent programming with multiple processes, and process control. Also includes the use of signals and concepts of interprocess communication with pipes and FIFOs. Students must have prior knowledge of C language and its use of structures and pointers. Prerequisite: CS 300 with a C or better or instructor's consent.

CS 655. Information Delivery on the Internet (3). Explores the capabilities of providing information on the World Wide Web. Information is typically provided through some sort of Web site that incorporates static text and the dynamic capabilities of the Web. Learn how to create an interactive Web site through the use of CGI and Java programming and how to interconnect a Web site to databases and generate images on the fly. Java portion covers a wide range of Java language and the Applet interface and utilities. Prerequisite: CS 300 with a C or better or instructor's consent.

CS 665. Introduction to Database Systems (3). Fundamental aspects of database systems, including conceptual database design, entity-relationship modeling, and object-oriented modeling; the relational data model and its foundations, relational languages, and SQL (Structured Query Language); logical database design, dependency theory, and normal forms; physical database design, file structures, indices, and decomposition; integrity, security, concurrency control, recovery techniques, and optimization of relational queries. Prerequisite: CS 300 and 320 with a C or better.

CS 680. Introduction to Software Engineering (3). 2R; 2L. An introduction to the body of knowledge, presently available tools and current theories and conjectures regarding the process of program development. Studies these topics from several different viewpoints, ranging from the individual program statement to a large programming project. Prerequisites: CS 300 and 410, each with a C or better.

CS 684. Applications Systems Analysis (3). A study of the methods for analyzing business systems problems and other large-scale applications of the computer. At the crossroads of computer technology, management science and human relations, systems analysis is the keystone in the education of the well-trained computer applications analyst. Includes systems design, cost benefit analysis, data base design, distributed processing, project management, and documentation. Prerequisite: CS 300 with a C or better.

CS 690. Information Systems Engineering (3). Study of information systems design techniques, issues of systems evolution, project management, engineering design, various views of information systems and software, and formal

design approaches. Covers structured analysis and design approach, object-oriented approach, software design, database design, rule modeling, user interface design, performance evaluation issues relative to software design, systems evolution aspects from a software maintenance perspective, project management techniques, and information systems engineering. Prerequisite: CS 300 with a C or better.

CS 697. Selected Topics (1-3). Selected topics of current interest. Repeatable for credit with departmental consent. Prerequisite: departmental consent.

CS 720. Theoretical Foundations of Computer Science (3). Provides an advanced level introduction to the theoretical bases of computer science. Computer science theory includes the various models of finite state machines, both deterministic and nondeterministic, and concepts of decidability, computability, and formal language theory. Prerequisite: CS 320 or equivalent with a C or better.

CS 742. Computer Communication Networks (3). 2R; 2L. Introduction to network programming for the internet environment including the basic concepts of TCP/IP, client-server paradigm, programming of clients, and various types of servers, remote procedure calls, concurrency management, and interconnection techniques. Emphasizes the design principles that underlie implementation of practical applications. Prerequisite: CS 300 with a C or better or departmental consent.

CS 750. Workshop in Computer Science (1-5). Short-term courses with special focus on introducing computer science concepts. Repeatable for credit. Prerequisite: departmental consent.

CS 771. Artificial Intelligence (3). Heuristic versus algorithmic methods, principles of heuristic approach, and cognitive processes. Also covers objectives and methods of artificial intelligence research and simulation of cognitive behavior. Includes a survey of appropriate examples from various areas of artificial intelligence research. Prerequisite: CS 300.

CS 776. Expert Systems (3). Planning, construction, and application of expert systems. Discusses major aspects of expert systems; illustrates with various examples, including data representation, knowledge bases, inference engines, user interfaces, explanatory facilities, metarules, and dealing with uncertainty. Introduces basics of a production system language. Prerequisite: CS 410 with a C or better or instructor's consent.

CS 781. Cooperative Education in Computer Science (1-3). Practical experience in a professional environment to complement and enhance the student's academic program. For master's level CS students. Repeatable, but may not be used to satisfy degree requirements. Offered Cr/NCr only. Prerequisites: departmental consent and graduate GPA of 3.000 or above.

CS 798. Individual Projects (1-3). Allows beginning graduate students and mature undergraduate students to pursue individual projects of current interest in computer science. Graded S/U only. Prerequisite: departmental consent.

Courses for Graduate Students Only

CS 805. Compiler Theory (3). Theory of compilation of programming languages. Finite state machines and lexical analysis. Context-free languages and recognizers. Theory of parsing, including recursive-descent, top-down, and bottom-up parsers. Formal description of semantics and code generation. Code optimization. Compiler-compilers. Not open for credit to those with previous credit for CS 811. Prerequisites: CS 510 and 720.

CS 810. Programming Languages: Advanced Concepts (3). An advanced study of programming language structures and design. Data and control structures and their abstraction. Concurrent programming structures. Formal specifications of syntax and semantics, including models for establishing program correctness. Criteria for language design. Prerequisites: CS 510 and 720.

CS 817. Advanced Java Technology (3). Covers advanced features of the Java language, the underlying implementation technology (Java Virtual Machine), and extensions of the Java technology. Includes concurrent object-oriented programming and Java core reflection, and extensions of the Java technology providing parametric polymorphism and persistence. Includes challenging programming projects. Time also devoted to recent Java research and development results. Prerequisites: CS 510 with a B or better.

CS 821. Analysis of Algorithms (3). Deals with advanced topics in the design and analysis of algorithms, including sorting networks, algorithms for parallel computers, Strassen's algorithm for matrix multiplication, polynomial multiplication and the FFT, number theoretic algorithms (gcd computation), and hard problems and intractability. Prerequisites: CS 560 with a B or better; CS 720 is recommended.

CS 822. Parallel Algorithms (3). Deals with the design and analysis of parallel algorithms for various combinatorial problems in the Parallel Random Access Machine (PRAM) model. Covers models of parallel computation, the PRAM model, basic techniques for designing parallel algorithms, algorithms on lists and trees, and algorithms for selection, merging, sorting, searching, as well as algorithms for graph problems. Prerequisite: CS 560 with a B or better.

CS 841. Advanced Computer Architecture (3). A study of advanced topics in computer architecture like parallel processing, stack architectures, computer performance evaluation, and reliability of computing systems. Studies architectures of typical systems belonging to the IBM, CDC, and Burroughs families of computers. Prerequisite: CS 540.

CS 842. Operating Systems Concepts (3). A comprehensive treatment of the design of executive software for systems ranging from simple multiprogramming to multiprocessor and network environments. Addresses concepts of concurrent and parallel processes, related problems of intra- and inter-system communication, and synchronization, and integrity. Presents general principles of resource management as related single-processor and multiprocess environments. Prerequisite: CS 540.

CS 843. Distributed Computing Systems (3). Astudy of hardware and software features of on-line multiple computer systems emphasizing network design and telecommunications. Includes distributed data bases, interprocessor communication, and centralization versus distribution. Also includes study of the use of microcomputers in representative configurations. Prerequisite: CS 540.

CS 862. Advanced Database Systems (3). Covers recent developments and advances in database technology. For students who have had a first database course and have a good background in the related computer science disciplines. Possible topics include extended relational database management systems, object-oriented database management systems, deductive databases, database type systems and database programming language, persistent languages and systems, distributed databases. Prerequisite: CS 560.

CS 867. Object-Oriented Databases (3). Covers object-oriented technology as it applies to databases and persistent object systems. Focuses on the advantages of the object-oriented database technology in complex application areas. Java database and persistent technologies and the associated tools have an important role here, along with the related industrial standards, such as ODMG. Provides design and implementation experience using a challenging application. Devoted to recent research and development results. Prerequisites: CS 665 and an object-oriented programming language course such as CS 217 or 350Lor instructor's consent.

CS 872. Machine Learning and Discovery (3). An advanced study of computer programs that learn, improve performance, and make discoveries. Includes objectives, methods, and research paradigms for such systems, a survey of existing methods and applications, including the most recent developments; theoretical principles for learning and discovery systems; computational theories of learning processes and cognitive models of human learning; concept and theory formation; and use of analogy in learning. Includes participation in a group project such as developing a computer learning system. Prerequisites: CS 771 or 776.

CS 873. Computer Vision (3). An introduction to computer vision, a rapidly growing subfield of artificial intelligence. The basic topic is the understanding or description of images by a computer or robot. Covers two-dimensional Fourier analysis, scene matching and understanding, texture, motion, shape recognition, relational image structure, and human perception. Prerequisite: CS 771 or instructor's consent.

CS 874. Simulation and Modeling (3). An up-to-date treatment of important aspects of simulation modeling, including data collection, input and output data analysis, modeling principles, simulation with general-purpose programming languages, and special-purpose simulation languages. Emphasizes theory, design, and implementation of modeling languages. Prerequisites: CS 300 and STAT 460 with a C or better in each; or instructor's consent.

CS 881. Software Specification and Design (3). A detailed presentation of the techniques and tools available for the specification of software requirements and their translation into a

design. Includes formal specification and design methods such as structured analysis, object-oriented design, and JSD. Prerequisite: CS 680.

CS 886. Software Project Management (3). Presents the knowledge, techniques, and tools necessary to manage the development of software products. Includes the phases and activities involved in building a project, the skills and tools required for estimating and scheduling, and the responsibilities of the individuals involved. Prerequisite: CS 680.

CS 890. Graduate Seminar (2). A series of seminars on topics of current research interest in computer science. Participants are required to present one or two seminars on topic(s) to be selected with the approval of their graduate advisors. Repeatable up to 4 credit hours. Graded *S/U* only. Prerequisite: departmental consent.

CS 891. Project (3). An intensive project involving the analysis and solution of a significant practical problem which must be supervised by a CS graduate faculty advisor; it can be job-related. Students must write a report on the project and pass an oral final examination by an *ad hoc* faculty committee headed by the project advisor. Graded *S/U* only. Prerequisite: departmental consent.

CS 892. Thesis (1-6). May be repeated for up to 6 hours of credit. Graded *S/U* only. Prerequisite: departmental consent.

CS 893. Individual Reading (1-5). Graded *S/U* only. Prerequisite: departmental consent.

CS 898. Special Topics (2-3). Topics of current interest to advanced students of computer science. Repeatable for credit with departmental consent. Prerequisite: departmental consent.

Criminal Justice

See Community Affairs, School of.

English (ENGL)

Graduate Faculty

Distinguished Professor: Albert Goldbarth (Adele B. Davis Distinguished Professor of Humanities)

Professors: Tina Bennett-Kastor, Sarah B. Daugherty (graduate coordinator), Lawrence M. Davis, Philip H. Schneider, William F. Woods

Associate Professors: Christopher K. Brooks, Margaret Dawe (chairperson), Jeanine M. Hathaway, W. Stephen Hathaway, Diane D. Quantic, Derek Soles, Richard S. Spilman, Donald R. Wineke, Peter T. Zoller

Assistant Professor: Anne Carroll

Both the Master of Arts (MA) degree in English and the Master of Fine Arts (MFA) degree in creative writing are offered by the English department at Wichita State University.

Master of Arts

The Master of Arts (MA) program in English is designed to equip graduate students with the knowl-

edge and skills necessary both to the outstanding teacher and to the well-prepared candidate for further graduate study. The graduate committee of the department accordingly requires its master's candidates to follow a course of advanced study that leads to a comprehensive knowledge of English and American literature rather than a course that develops specialization in one or two areas. Candidates also are given training in the principles of literary criticism and in the use of bibliographical tools so that they will have a general competence in criticism and research, although they may not be professional critics or research experts.

Admission Requirements

Applicants must meet the general requirements of the Graduate School, with the additional requirement that they have a 3.000 grade point average in their previous work in English courses. The coordinator of graduate studies in English will then evaluate the applicant's transcript, prescribing additional undergraduate hours for those who have fewer than 24 credit hours in English and American literature or in other work acceptable to the Department of English. Courses in freshman composition, grammar, teaching methods, journalism, speech, etc., may not be included in the required 24 hours. Exceptions may be made for outstanding students who have majored in related fields.

Applicants who earned their undergraduate degrees more than 10 years before the time of application for admission must be interviewed by the graduate coordinator before admission to the degree program.

Applicants who have earned degrees at institutions in countries in which English is not the native language must score at least 600 on the TOEFL (Test of English as a Foreign Language) Examination before being admitted to the MA degree program in English.

Counseling. All MA candidates in English are advised by the coordinator of graduate studies in English. The coordinator and the student establish a Plan of Study that takes into account the student's interests and future vocational plans.

Transfer of Credit. Students must complete 24 hours of credit at Wichita State within the English department. Students may transfer up to 9 hours of credit on the Plan A program and up to 6 hours of credit on plans B and C. If the credit to be transferred comes from a program in which the student took a graduate degree, the time limits imposed by the Graduate School on other transfers of credit will not apply.

Language Requirement. Master's degree candidates in English may fulfill the department's foreign language requirements in any one of the following ways:

1. By submitting a transcript showing the successful completion of at least 15 hours of undergraduate work in a single foreign language or the equivalent as defined by Fairmount College of Liberal Arts and Sciences

2. By completing the required 15 hours of undergraduate work in a single foreign language

3. By taking a test administered by the Department of Modern and Classical Languages and Literatures in the elected foreign language, with a successful score determined by the English department

4. By submitting a transcript showing successful completion of 6 hours of linguistics.

Master's candidates with a creative writing emphasis (Plan C) have the additional choice of successfully completing 6 semester hours of foreign literature in translation in courses approved by the department's graduate committee as a substitute for the language requirement.

Degree Requirements

ENGL 800, Introduction to Graduate Study in English, normally should be included in the student's first semester of graduate study.

All work to be counted toward the MA degree in English must be in courses numbered above 700—with the exception of 680, Theory and Practice in Composition—and the following courses in linguistics and in literature: ENGL 515, 521, 522, 524, 526, 527, 610, 615, 667, and 672. ENGL 515 and 615 may be taken to fulfill in part the major author and/or optional course requirements of the degree plans. ENGL 521, 522, 524, 526, and 527 may be taken to fulfill the period and/or optional course requirements of the degree plans. Candidates offering 500-, 600-, or 700-level English courses for graduate credit must satisfy a higher differential of performance relative to undergraduate students in the same courses, with the nature of this differential set by professors.

There are three programs leading to the degree. Plan A, which emphasizes literature, composition, and pedagogy, is especially designed for teachers. Plan B, which requires the student to submit a master's essay, places more emphasis on research, scholarly writing, and the independent study of literature. Plan C emphasizes creative writing. Students are assumed to be following Plan A unless they declare another plan.

Plan A requires the completion of 11 courses for a total of 33 semester hours distributed as follows: ENGL 800, Introduction to Graduate Study in English; two genre courses; three period courses in the ENGL 817-823 series and/or 521-527 series, with a minimum of two courses in English literature and one course in American literature; one course in composition theory and pedagogy (ENGL 680 or 780); and four elective courses in linguistics, literature, or methods of teaching English. With the approval of the Graduate Studies Committee, one of these electives may be taken in the College of Education. Regents' rules require that at least seven courses be at or above the 700 level. A master's essay is not required, but students must take a comprehensive examination on one period, one genre, and one area of composition, rhetoric, or linguistics. In consultation with the candidate, an advisor in each of the three examination fields will designate up to five

books, in addition to those covered in the candidate's course work, for which the student will be responsible. The book list will thus include a maximum of 15 works. This list must be approved by the graduate coordinator.

Plan B requires ten courses for a total of 30 semester hours distributed as follows: ENGL 800, Introduction to Graduate Study in English; two major author or special topics courses (ENGL 515, 615, 803, 840, 841, 845, or 860), one of which may serve as a context for the development of a thesis prospectus; one genre course consistent with the thesis topic; one period course consistent with the thesis topic; four elective courses; and ENGL 870, Master's Essay. Regents' rules require that at least six courses be at or above the 700 level. A candidate's Plan of Study, approved by the graduate coordinator, should include an appropriate range of courses in canonical and modern literature. Plan B also requires a comprehensive examination on one period (or linguistics), one genre, and one major author or special topic related to the master's essay, as arranged with the thesis advisor. The first two examination fields should also be consistent with the subject of the master's essay. In consultation with the candidate, an advisor in each of the three examination fields will designate up to five books, in addition to those covered in the candidate's course work, for which the student will be responsible. The book list will thus include a maximum of 15 works. This list must be approved by the graduate coordinator.

Plan C, a program with an emphasis on creative writing, requires the completion of 30 semester hours plus a comprehensive examination and a thesis, which must be original work in fiction, poetry, or some other suitable literary form. A student's program, individually designed in consultation with the director of creative writing, must include 9 semester hours in the graduate creative writing sequence. The final comprehensive examination will be based on a list of 30 book-length works that the student will be held accountable for; the works will be chosen from the creative writing program master list in consultation with the director of creative writing and with the approval of the graduate coordinator. The number of sections of the Plan C comprehensive examination and its length will be equivalent to that given under Plan B, although the content will be based on the list of book-length works described above.

Admission to the Plan C program will be made upon the recommendation of the director of creative writing upon approval of a manuscript or other written evidence of ability to complete the degree. Such recommendation is subject to the final approval of the graduate coordinator.

Master of Fine Arts in Creative Writing

The degree program for the Master of Fine Arts (MFA) in creative writing places emphasis on the development of skills and understanding in the practice of imaginative writing and upon related academic study. It is not exclusively a studio program; rather,

it encourages the development of writers who are able, as the result of additional course work in English, to demonstrate skills useful in teaching, editing, and other related areas. A core of workshops and tutorials leads to a final writing project: a collection of fiction or poetry, a novel, or some other appropriate work. Flexibility is provided in academic course work to allow for a variety of possible interests.

All MFA students are required to take ENGL 800, Introduction to Graduate Study in English. Teaching assistants must take ENGL 780, Advanced Theory and Practice in Composition, unless specifically exempted.

Admission Requirements

Applicants must meet the general requirements of the Graduate School, with the additional requirement of a 3.000 grade point average in their previous course work in English. The coordinator of graduate studies in English, in consultation with the director of creative writing, evaluates the applicant's transcript, prescribing additional undergraduate hours for those who have fewer than 24 credit hours of acceptable course work in English. Courses in freshman composition, grammar, teaching methods, journalism, speech, etc. may not be included in the required 24 hours. Exceptions may be made for outstanding students who have majored in related fields. With the permission of the director of creative writing, gifted writers may study in the program as special students with no specific degree intentions.

Applicants who earned their undergraduate degrees more than 10 years before their application for admission must be interviewed by the graduate coordinator before they are admitted into the program.

Applicants who have earned their degrees in countries where English is not the native language must score at least 600 on the TOEFL (Test of English as a Foreign Language) Examination before they may be admitted to the program.

Degree Program Status. Applicants who seek to be admitted with full standing in the degree program must submit a sample of original writing in fiction (approximately 20 pages), poetry (about six poems), or other appropriate form to the director of creative writing at the time they seek admission.

Counseling. All MFA candidates in English are advised by the coordinator of graduate studies in English and the director of creative writing. The graduate coordinator will help the student establish a Plan of Study which will take into account the student's interests and future vocational plans.

Transfer of Credit. A minimum of 24 of the total 48 semester hours required for the degree must be taken at Wichita State. No more than 24 hours of credit may be counted toward the degree from other graduate work taken at Wichita State or at another school. If the credit to be transferred comes from a program in which the student took a graduate degree, the time limits imposed by the Graduate School on transfer of credit will not apply.

Degree Requirements

Course Work. The 48 semester hours of course work are apportioned into two categories: required and elective courses.

A. Required Courses

1. A minimum of 3 hours per semester in ENGL 801, Creative Writing: Fiction, or 805, Creative Writing: Poetry, to a maximum of 12 semester hours.

2. Three hours in ENGL800, Introduction to Graduate Study in English, or the equivalent, required of all graduate students. ENGL800 normally should be included in the student's first semester of graduate study.

3. Three hours in ENGL 830, Graduate Studies in Drama; 832, Graduate Studies in Fiction; or 834, Graduate Studies in Poetry. With departmental consent, each course may be repeated for a maximum of 6 hours credit.

4. Three hours in ENGL 841, Graduate Studies in Contemporary Literature; 860, Graduate Seminar in Special Topics; or another suitable seminar in literature. With departmental consent, seminars may be repeated for a maximum of 12 hours credit.

5. Two to 6 hours in ENGL875, MFA Final Writing Project.

6. For purposes of enrichment, candidates must take at least 3 graduate hours in the humanities or fine arts outside English. The choice is contingent upon the student's having the proper prerequisites.

7. Graduate teaching assistants are required to take ENGL 780, Advanced Theory and Practice in Composition, unless specifically exempted.

B. Elective Courses

Elective courses may be taken to pursue historical, technical, or theoretical studies that the candidate finds useful, to strengthen areas of weakness, or simply to enrich their degree program appropriately. All candidates must successfully complete a minimum of 15 elective hours in English courses numbered 800 and above, with the exception of English courses numbered 515 through 527, which may be taken for graduate credit. Candidates may take up to 26 elective hours in English courses numbered 800 and above and in the approved 500-level courses. Other exceptions may be made as approved by the director of creative writing and with the consent of the graduate coordinator. Graduate students in 500-, 600- and 700-level courses are expected to meet higher standards of achievement than those imposed on undergraduates in the same courses. Within this unit, as many as 9 hours total of ENGL880, Writer's Tutorial: Fiction; ENGL 881, Writer's Tutorial: Poetry; and ENGL855, Directed Reading, may be taken.

Comprehensive Examination. All candidates are required to pass a written comprehensive examination in the final semester of their course work. This examination is based on a reading list of 30 books chosen from the creative writing program master list by the candidate's final writing project director and the director of creative writing in consultation with the candidate.

Final Writing Project. The MFA final writing project in creative writing consists of a body of original work of publishable quality. The manuscript must be of such length as is appropriate to published books in its genre and is to be written under the direction of a member of the program staff. Candidates may preface their final writing project with a short introduction if they choose to do so.

Final Writing Project Review. Once the candidate has submitted the final writing project, a committee, composed of project director, second reader, and another department faculty member, will examine the work and determine whether or not the project meets the standards of acceptance.

Composition

Courses for Graduate/Undergraduate Credit

ENGL 581. Composition Practicum (1). Required for all teaching assistants in English. Does not count for credit toward the MA or MFA degree. Focuses on techniques and strategies for teaching composition. Each participant enrolls in the syllabus group appropriate to the composition course he or she teaches. Graded *S/U* only. Repeatable for credit. Prerequisite: appointment as a graduate teaching assistant in the Department of English.

ENGL 680. Theory and Practice in Composition (3). Introduces theories of rhetoric, research in composition and writing programs, and practices in schools and colleges. Students investigate the process of writing, analyze varieties and samples of school writing, and develop their own writing skills by writing, revising, and evaluating their own and others' work. Especially for prospective and practicing teachers; may not be taken for credit by students with credit in ENGL 780.

ENGL 685Q. Advanced Composition (3). Explores the relationships among contemporary issues, problem-solving, and communication. First objective: engage students in interdisciplinary inquiry into some aspect of social policy, inquiry which asks students to apply the analytical approaches of their major fields to current issues of broad, general interest. Second objective: develop students' abilities to communicate their knowledge and assumptions about this issue to a variety of audiences and for a variety of purposes. Prerequisites: ENGL 101 and 102 and upper-division standing.

ENGL 780. Advanced Theory and Practice in Composition (3). For teaching assistants in English. Review of new theories of rhetoric, recent research in composition, and new promising developments in composition programs in schools and colleges. Students are given practice in advanced writing problems, situations, and techniques and may propose projects for further special study.

Creative Writing

Courses for Graduate/Undergraduate Credit

ENGL 517-518. Playwriting I and II (3; 3). Cross-listed as Thea. 516 and 517. The writing of scripts for performance.

Emphasizes both verbal and visual aspects of playwriting. If possible, the scripts are performed. Not repeatable for credit. Prerequisite: instructor's consent.

ENGL 585. Writer's Tutorial: Prose Fiction (3). Tutorial work in creative writing in prose fiction with visiting writer. Repeatable for credit. Prerequisite: consent of creative writing director.

ENGL 586. Writer's Tutorial: Poetry (3). Tutorial work in creative writing in poetry with visiting writer. Repeatable for credit. Prerequisite: consent of creative writing director.

Courses for Graduate Students Only

ENGL 801. Creative Writing: Fiction (3). Advanced work in creative writing. Repeatable for credit. Prerequisite: consent of creative writing director.

ENGL 803. Creative Writing: Nonfiction (3). Advanced work in creative nonfiction: forms of nonfiction requiring a distinctive voice and demanding a formal artistry generally associated with fiction. Prerequisite: consent of creative writing director.

ENGL 805. Creative Writing: Poetry (3). Advanced work in the writing of poetry. Repeatable for credit. Prerequisite: consent of creative writing director.

ENGL 875. MFA Final Writing Project (1-6).

ENGL 880. Writer's Tutorial: Fiction (3). *S/U* grade only. Tutorial work in creative writing in prose fiction with visiting writer. Prerequisite: consent of creative writing director.

ENGL 881. Writer's Tutorial: Poetry (3). *S/U* grade only. Tutorial work in creative writing in poetry with visiting writer. Prerequisite: consent of creative writing director.

Linguistics

Courses for Graduate/Undergraduate Credit

ENGL 667. English Syntax (3). Cross-listed as LING 667 and ANTHR 667. Studies the basic principles of English syntax, covering the major facts of English sentence construction and relating them to linguistic theory. Prerequisite: ENGL 315 or equivalent or departmental consent.

ENGL 672. Studies in Language Variety (3). Cross-listed as LING 672. Introduces the study of language variety with special attention to regional and social dialect in America and methods of studying it. May be repeated for credit when content varies. Prerequisite: ENGL315 or departmental consent.

ENGL 727. Teaching English as a Second Language (2-3). Cross-listed as LING 727. Discusses current methods of teaching English to non-native speakers. Students learn to analyze interlanguage patterns and to design appropriate teaching units for class and language laboratory use.

ENGL 740. Graduate Studies in Linguistics (3). Cross-listed as LING 740. Selected topics in theories of language and

methods of linguistic study. Repeatable for credit with departmental consent.

Literature

Courses for Graduate/Undergraduate Credit

ENGL 503. Studies in American Literature I (3). The major fiction, poetry, and nonfiction prose of the classic American period. Discussions may include the historical evolution of American letters, the development of the novel and romance, the transcendental period, and the rise of western and regional literatures.

ENGL 504. Studies in American Literature II (3). Fiction, poetry, and drama from the late 19th century to after World War II. Readings also may include literary criticism and other types of nonfiction prose. Discussions cover themes, topics, and literary forms inspired by the social and cultural movements and events of the first half of the 20th century.

ENGL 512. Studies in Fiction (3). Subjects announced each semester. Repeatable for credit.

ENGL 513. Studies in Poetry (3). Subjects announced each semester. Repeatable for credit.

ENGL 514. Studies in Drama (3). Subjects announced each semester. Repeatable for credit.

ENGL 515. Studies in Shakespeare (3). Subjects announced each semester. Repeatable for credit, except by students who take ENGL340Q. Prerequisites: junior standing and one college literature course, or instructor's consent.

ENGL 521. Readings in Medieval Literature (3). English and Continental literature, 12th to 15th century. Chaucer, Malory, the Pearl Poet, medieval lyric, drama, epic, romance, and saga. Prerequisites: junior standing and one college literature course, or instructor's consent.

ENGL 522. Readings in Renaissance Literature (3). Sidney, Spenser, Shakespeare (poetry), Donne, Jonson, Milton, and their contemporaries. Prerequisites: junior standing and one college literature course, or instructor's consent.

ENGL 524. Readings in Restoration and 18th Century Literature (3). Swift, Pope, Johnson, and their contemporaries. Prerequisites: junior standing and one college literature course, or instructor's consent.

ENGL 526. Readings in Romantic Literature (3). Blake, Wordsworth, Coleridge, Byron, Shelley, Keats, and their contemporaries. Prerequisites: junior standing and one college literature course, or instructor's consent.

ENGL 527. Readings in Victorian Literature (3). Writers from Carlyle to Yeats studied in relation to political events and the social, scientific, and religious thought of the age. Prerequisites: junior standing and one college literature course, or instructor's consent.

ENGL 532. Studies in Modern British Literature (to 1950) (3). English and Irish literature of the first half of the 20th century. Subjects announced each semester. Repeatable for credit.

ENGL 533. Studies in Contemporary Literature (3). Modern literature, primarily British and American, since 1950. Subjects announced each semester. Repeatable for credit.

ENGL 535. Literary Images of Women: Diverse Voices (3). Cross-listed as WOM S 535. Explores literature written in English by women of diverse ethnic, racial, class, and other backgrounds, as well as of varying sexual orientations, ages, and degrees of physical ability. Materials analyzed both as literary works and as expressions of women's differences from one another. Works selected on their specific attention to the question of gender as it intersects with other elements of culture.

ENGL 536. Writing by Women (3). Cross-listed as WOM S 536Q. Explores various themes in critical approaches to literature composed by women writers, especially those whose works have been underrepresented in the literary canon. Genres and time periods covered, critical theories explored and specific authors studied vary in different semesters.

ENGL 537. Contemporary Women's Drama (3). Cross-listed as WOM S 537. Examines contemporary plays by and about women to discover and explore the insights of the various playwrights into the lives and roles of women. In addition to reading and analyzing plays, students write plays of their own.

ENGL 580. Special Studies (1-3). Topic selected and announced by the individual instructor. Repeatable for credit. Prerequisite: departmental consent.

ENGL 610. Old English (3). Cross-listed as LING 610. Studies the Old English language in enough detail to enable the reading of some prose and poetry, including parts of *Beowulf* in the original. Some literature, including all of *Beowulf*, is read in translation, with attention to important literary and cultural features of the period.

ENGL 615. Chaucer (3). Chaucer's *Canterbury Tales*, *Troilus and Cressida*, and selected lyrics, with a few works by other late 14th century authors and some critical and historical studies. Focuses on close reading of Chaucer in Middle English. Prerequisites: junior standing and one college literature course, or instructor's consent.

ENGL 681. Editing American English (3). Students master the rules and conventions of grammar, sentence structure, spelling, punctuation, usage, and mechanics, and learn how to apply them while they are revising and editing a written text. Students work as tutors in the Writing Center to learn and understand the practical application of editing rules. Includes instruction in the conventions of editing Standard English (also known as Edited American English) and in methods of effective tutoring. Prerequisites: ENGL 101 and 102.

ENGL 750. Workshop (2-4). Repeatable for credit.

Courses for Graduate Students Only

ENGL 800. Introduction to Graduate Study in English (3). Prepares students to perform effectively in graduate classes in English. Covers: (1) basic bibliographical tools; (2) terminology both technical and historical; (3) various approaches to the study of literature, such as intrinsic analysis of a literary work, the relationships of biography to literary study, and the relevance of other disciplines, such as psychology, to literature; and (4) the writing of interpretative and research essays. Maintains a balance between criticism and research throughout the semester.

ENGL 817. Graduate Readings in 20th Century British Literature (3). Yeats, Joyce, Lawrence, Auden, Spender, and their contemporaries.

ENGL 821. Graduate Readings in American Literature I (3). From the beginnings to 1870 emphasizing Emerson, Thoreau, Hawthorne, Melville, Whitman and Dickinson.

ENGL 822. Graduate Readings in American Literature II (3). From 1870 to 1920 emphasizing James, Twain, Crane, Dreiser, Robinson and Frost.

ENGL 823. Graduate Readings in American Literature III (3). From 1920 to 1970, including Eliot, Stevens, Hemingway, Faulkner, and their contemporaries.

ENGL 825. Theories of Rhetoric: Classical (3). An intensive study of the rhetorical theories of classical writers from 466 B.C. to the decline of Roman oratory. Emphasizes Isocrates, Plato, Aristotle, Quintilian, Cicero and Longinus.

ENGL 826. Theories of Rhetoric: Renaissance to Early Modern (3). Cross-listed as COMM 831. A study of the emerging patterns of rhetoric from the Second Sophistic to modern times. Analyzes the rhetorical systems associated with such figures as Augustine, Fenelon, Bulwer, Sheridan, Steele, Rush, John Quincy Adams, Blair, Campbell, and Whately.

ENGL 830. Graduate Studies in Drama (3). Selected topics in the history and nature of dramatic literature.

ENGL 832. Graduate Studies in Fiction (3). Selected topics in the development of the form and content of prose fiction.

ENGL 834. Graduate Studies in Poetry (3). Selected topics in forms, techniques, and history of poetry.

ENGL 840. Graduate Studies in Criticism (3). Selected topics in the theory and practice for literary criticism.

ENGL 841. Graduate Studies in Contemporary Literature (3). Covers selected topics in the literature of the last quarter-century, including literature in translation. Deals with a broad range of authors and genres. Repeatable for credit with change of content and departmental consent.

ENGL 845. Graduate Studies in a Major Author (3).

Careful study of the works of a major author with readings in secondary sources; reports, discussions, and papers. Repeatable for credit with change of content.

ENGL 855. Directed Reading (2-3). For graduate students who want to pursue special research in areas not normally covered in course work. Repeatable for credit with departmental consent. Prerequisite: departmental consent.

ENGL 860. Graduate Seminar in Special Topics (1-3).

Intensive study of selected texts, writers, or literary problems. Seminar discussions, reports, and research projects. Repeatable for credit with departmental consent.

ENGL 870. Master's Essay (2-3).**Environmental Science**

Graduate Faculty

Graduate faculty from the departments of biology, chemistry, and geology

The Master of Science degree program in environmental science is interdisciplinary. The purpose of providing this program is to allow graduates

1. to appreciate the complex working of natural systems,
2. to develop an appreciation for the interdisciplinary nature of this subject, and
3. to acquire the skills necessary to analyze and apply solutions to environmental problems.

The intent of this program is to educate scientists in a multidisciplinary approach (involving primarily biology, chemistry, and geology) rather than from the perspective of a single discipline. Such an effort will produce scientists who are able to approach environmental problems and environmental management from a multidisciplinary point of view. Both foundations and practical applications will be emphasized; classroom activity will be focused on local environmental issues to provide practical experience.

Prerequisites

Applicants for admission must present an undergraduate degree (or equivalent in degree hours) in one of the natural sciences with a GPA that meets department and Graduate School requirements. In addition to an undergraduate degree in a natural science, prerequisite courses also include an appropriate introductory major's course in biology, geology, and chemistry. Students who have not completed these courses may be accepted in a conditional status with the expectation that deficiencies will be fulfilled prior to enrollment in the environmental core curriculum. If organic chemistry was not taken as an undergraduate, students must also complete this course prior to enrollment in the core curriculum. In such case, organic chemistry may be listed as a graduate elective course on the student's Plan of Study.

Core Curriculum

All students must enroll in a two-semester (10-credit-hour) environmental science core course that includes advanced topics in environmental biology, chemistry, and geology. During two semesters of enrollment, students will be required to enroll in a 1-credit-hour environmental science colloquium. Students may enroll in a maximum of 4 credit hours in colloquium. In addition to the 10 hours of core and 2 hours of colloquium, students will complete a Plan of Study that totals a minimum of 30 hours, which includes credit for either an internship or research thesis.

Each student will choose a graduate advisor from one of the three participating departments. It is expected that the majority of elective courses will be taken in this particular department. A minimum of 3 hours of elective credit must be chosen in a department other than the one of major emphasis. Both the student's advisor and the graduate program committee will help the student design a coherent, practical program of study.

During the second year of study, all graduate students will be required to take a comprehensive written examination based on material presented in the core curriculum. Students choosing the option of a research thesis for degree completion will be required to prepare and orally present a research proposal prior to research initiation. Students choosing an internship option will be required to submit a detailed description to the graduate faculty for approval. Both the research thesis and internship options require completion of a written research paper and formal seminar presentation.

Relevant Elective Courses in the Natural Sciences

BIOL560, Plant Ecology
 BIOL573, Statistical Applications in Biology
 BIOL575, Field Ecology
 BIOL578, Aquatic Ecology
 BIOL630, Behavioral Ecology
 BIOL640, Environmental Risk Assessment
 BIOL771, Evolutionary Ecology
 BIOL7xx, Environmental Toxicology
 CHEM 514, Inorganic Chemistry
 CHEM 523-524, Analytical Chemistry
 CHEM 531-532, Organic Chemistry
 CHEM 603, Industrial and Polymer Chemistry
 CHEM 661, Introductory Biochemistry
 CHEM 821, Equilibrium and Statistics in Analytical Chemistry
 CHEM 822, Analytical Separations
 CHEM 823, Analytical Spectroscopy
 CHEM 824, Electroanalytical Chemistry
 GEOL560, Geomorphology and Land Use
 GEOL564, Remote Sensing Interpretation
 GEOL602, Laboratory Methods in Geology
 GEOL621, Geochemical Cycling
 GEOL630, 830, Field Studies in Geology
 GEOL650, Geohydrology

GEOL678, Geologic Perspectives on Climate Change

GEOL 680, Geologic Resources and the Environment

GEOL684, Methods of Subsurface Analysis

GEOL720, Geochemistry

GEOL724, Soils

GEOL725, Clay Mineralogy

GEOL730, Perspectives: Geoscience and the Environment

GEOL751, Advanced Geohydrology

GEOL821, Special Studies in Geochemistry

GEOL870, Advanced Biogeology

Ethnic Studies

See Community Affairs, School of.

Geography (GEOG)

Although there is no graduate program in geography, the following courses are available for graduate credit.

Courses for Graduate/Undergraduate Credit

GEOG 510. World Geography (3). A study of world regions including an analysis of each region's physical, political, economic, historical, and cultural geography. Focus on a specific geographical problem for an in-depth study and analysis. Prerequisite: instructor's consent. May not be taken if credit has been received for GEOG 210Q.

GEOG 520. Geography of the United States and Canada (3). Physical, political, economic, historical, and human geography of the United States and Canada.

>GEOG 530. Geography of Latin America (3). *General education further study course (social science).* Physical, political, economic, historical and human geography of Latin America.

>GEOG 542. Geography of Europe (3). *General education further study course (social science).* Physical, political, economic, historical, and human geography of Europe.

GEOG 580. Economic Geography (3). A geographical analysis of the distribution and utilization of basic world resources.

GEOG 620. Field Studies in Geography (2-6). Off-campus, systematic field study in a selected area of geographic significance. Course given upon demand; repeatable for credit when the locality and content differ. Where appropriate, travel, lodging, and board costs are charged.

GEOG 670. Urban Geography (3). 2R; 3L. Lab fee. Geography of cities; the origin, growth, functions, characteristics, and environmental problems of urban areas; structure and dynamic elements of intraurban space; land-use analysis and approaches to urban planning; and problems of urban ecology.

GEOG 695. Special Studies in Geography (1-3). 3R or 2R; 3L. Lab fee (Lab is included when appropriate.) Systematic study in a selected area of topical interest in geography. Course given on demand; repeatable for credit when content differs. May require field trips. Prerequisite: junior standing.

GEOG 750. Workshop in Geography (1-4). Short-term courses with special focus on geographical problems. Prerequisite: instructor's consent.

Courses for Graduate Students Only

GEOG 820. Field Studies in Geography (2-6). Off-campus, systematic field study in a selected area of geographic significance. Course given upon demand; repeatable for credit when the locality and content differ. Where appropriate, travel, lodging, and board costs are charged. Prerequisite: instructor's consent.

Geology (GEOL)

Graduate Faculty

Professors: William D. Bischoff (dean, Fairmount College of Liberal Arts and Sciences), James N. Gundersen, Salvatore J. Mazzullo (graduate coordinator)

Associate Professors: Collette D. Burke, John C. Gries (chairperson)

Assistant Professors: William Parcell, Wan Yang

The Department of Geology offers courses of study leading to the Master of Science (MS) degree.

Admission Requirements

Admission to the MS program in geology requires the completion of an undergraduate major in geology, normally including the achievement of the skills of geologic field mapping of igneous, metamorphic, and sedimentary rocks; their petrology; and report writing on their geological evolution.

In general, students entering the program must have the same background required for a WSU Bachelor of Science degree, including science courses in chemistry, physics, and biology; mathematics and statistics; language (English and speech); and computer science abilities. Students with undergraduate majors in the sciences, mathematics, or engineering are encouraged to apply because their training is appropriate for certain fields in modern geology. Most deficiencies can be removed by appropriate course work but prior consultation and evaluation are encouraged.

Degree Requirements

Although the department emphasizes field and laboratory skills of sedimentary geology, graduate students may elect advanced courses and guided research to meet professional needs in a wide variety of geologic fields. Particular attention is directed to solving problems of mineral-fuel and mineral-resources depletion and to improving the environment. The practical aspects of geology are stressed and modern approaches of computer applications are employed in solving problems.

The student must be accepted by the Graduate School and by the Department of Geology; this assures all prerequisites have been fulfilled. In general, 30 credit hours are required. One to 6 of these hours may be thesis credit and at least 18 must be at

the 700 and 800 level. The department encourages students to take courses relevant to their program outside geology.

Tool Requirement. Although the department does not have a tool requirement, students are encouraged to obtain proficiency in modern languages (especially French, German, and/or Russian), particularly if continuing for a PhD. Also it is important to have a certain level of proficiency in statistics and computer programming (FORTRAN, BASIC, and/or C are recommended.)

Examinations. The student is required to present the thesis proposal—GEOL890—orally before the faculty to obtain approval before initiating work on the project. The proposal must be presented in enough detail to assure the faculty of the research promise of the topic and that the candidate can complete satisfactorily the project in the allotted time. Upon passing the oral examination, the written proposal is approved. After completing the thesis, the student must give a public oral defense.

Courses for Graduate/Undergraduate Credit

GEOL 526. Sedimentary Geology (3). 2R; 3L. Origin, classification, primary structures, and physiochemical processes controlling deposition of sedimentary rocks. Reviews diagenesis of carbonate rocks and evaporites. Includes a survey of modern and ancient sedimentary depositional environments and petrographic study of sedimentary rocks in thin sections. May require field trips. Prerequisite: GEOL 102 (with lab) or 111Q.

GEOL 540. Field Mapping Methods (2). 6L. Field mapping methods with special reference to use of level, compass, barometer, alidade, and airphotos. Field trips required. Prerequisite: GEOL102 (with lab) or 111Q or GEOL/GEOG 201.

GEOL 544. Structural Geology (3). 2R; 3L. Stress-strain theory and mechanics of rock deformation, description, and genesis of secondary structural features in crustal rocks resulting from diastrophism, elements of global tectonics, and laboratory solution of geologic problems in three dimensions and time. May require field trips and field problems. Prerequisites: MATH 112 or 123; GEOL312; and GEOL324 or 526.

GEOL 552. Physical Stratigraphy (3). 2R; 3L. Description, classification, methods of correlation, and determination of relative ages of stratigraphic rock units; stratigraphic principles and practice; importance and use of biostratigraphy; the nature of cyclic sedimentation and controls on deposition; elements of sequence stratigraphy; measurement and correlation of stratigraphic sections in outcrops. Requires field trips. Prerequisites: GEOL312 and 526.

>GEOL 560. Geomorphology and Land Use (2). *General education further study course.* Identification of landforms and their genesis; processes producing landforms; the influence of geomorphology in aspects of natural hazards such as landslides, floods, earthquakes, and volcanic activity; soil erosion, drainage basin modification, coastal and desert environments, mineral resource exploitation, and their effects on

humans; importance of these influences in environmental management and land-use planning. Prerequisite: GEOL 111Q or GEOL102 or GEOL/GEOG 201.

GEOL 562. Regional Geology of the United States (2). A detailed regional survey of the general geology, geomorphology, stratigraphy, and structural geology of the U.S., including its national parks, and their interrelationships. Requires field trips (instructor's option). Prerequisite: GEOL102 or 111Q or GEOL/GEOG 201.

GEOL 564. Remote Sensing Interpretation (3). 2R; 3L. Introduces interpretation techniques for most types of images acquired by remotely positioned means. Physical principles that control various remote sensing processes using the electromagnetic spectra are applied to geology, land use planning, geography, resource evaluation, and environmental problems. Derivative maps generated from a variety of images. May require field trips. Prerequisite: GEOL 102 or 111Q or GEOL/GEOG 201.

>GEOL 570. Paleontology (3). 2R; 3L. *General education further study course.* Systematic survey of major fossil biogeological materials, analysis of the origin and evolution of life, and paleoecological interpretation of ancient environments and climates. Includes handlens and binocular microscopic examination of major fossil biogeological materials. Includes application of analyzed fossil data to the solution of problems in biostratigraphy, paleoecology, paleoclimatology, and paleogeography. Cites examples from fields of invertebrate, vertebrate and micropaleontology, and palynology. May require museum and field trips. Prerequisite: GEOL312.

>GEOL 574. Special Studies in Paleontology (3). 2R; 3L. *General education further study course.* A systematic study in selected areas of biogeology and paleontology. Content differs, upon demand, to provide in-depth analysis in the fields of: (a) invertebrate paleontology, (b) vertebrate paleontology, (c) micropaleontology, (d) palynology, and (e) paleoecology. Gives appropriate laboratory instruction in the systematics, taxonomy, and biogeological relationships within the selected fields listed. May require field trips. Repeatable for credit to cover all five areas listed.

GEOL 602. Laboratory Methods in Geology (1). Methods of data collection and analysis of geologic samples; special instruction in the use of (a) scanning electron microscope; (b) X-ray diffractometry; (c) atomic absorption spectrophotometry; (d) cathodoluminescence petrography; and (e) other instrumentation. Repeatable for credit. Prerequisite: GEOL 312, 320; or instructor's consent.

GEOL 621. Geochemical Cycling (3). Capstone course. The geochemistry of earth materials and the important geochemical processes; cycles operating on and within the atmosphere, hydrosphere, and lithosphere through time; anthropogenic effects on these cycles today. Prerequisites: GEOL 102 (with lab) or GEOL 111Q and CHEM 111Q; or instructor's consent.

GEOL 630. Field Studies in Geology (2-6). (A) Geology of Kansas (1-3); (B) Geology and Natural History of Tropical

Marine Environments (3). Off-campus, systematic field study in a selected area of geological significance. Course given upon demand; repeatable for credit when locality and/or content differ. Where appropriate, travel, lodging, and board costs are charged. Prerequisite: instructor's consent.

GEOL 640. Field Geology (6). Capstone course. Field investigation of sedimentary, igneous, and metamorphic rock units and their structures. Includes the application of mapping methods in solving geologic problems. Held at an off-campus field camp for five weeks (including weekends). Preparation of geologic columns, sections, maps, and an accompanying report are due on campus during the sixth week. Prerequisite: GEOL 324, 540, 544, and 552.

GEOL 650. Geohydrology (3). 2R; 3L. Capstone course. The hydrologic cycle, physical, and chemical properties of water; fluid flow through permeable media; exploration for and evaluation of groundwater; water quality and pollution; and water law. Prerequisites: GEOL 552, MATH 242Q and 243; or instructor's consent.

GEOL 657. Earth Science Instructional Methods (3). Practice in teaching an introductory course in the earth sciences. Developing and presenting the latest scientific laboratory techniques and evaluating their effectiveness. May be taken more than once if content and objectives differ. Prerequisite: senior standing and department chairperson's permission.

GEOL 678. Geologic Perspectives on Climatic Change (3). Capstone course. Modern climate and climatic changes and analysis of climatic deterioration; systematic study of geologic evidence of climate change through time. Emphasizes theoretical causes, feedback mechanisms, and recognition of effects on climatic perturbations in the rock record. Prerequisites: GEOL312 and 526.

GEOL 680. Geologic Resources and the Environment (3). 2R; 3L. Occurrence and origin of metallic and nonmetallic economic mineral deposits; laboratory examination of ores and industrial minerals. Occurrence and supply, regeneration, and future demand for water and soil resources; and fossil and nuclear fuels. Studies environmental aspects of resource exploitation and use, generation and disposal of waste, environmental hazards, and reclamation. May require field trips. Prerequisite: GEOL324.

GEOL 681. Computer Applications in Geology (3). Capstone course. Applications of computers in the solution and presentation of geologic and affiliated studies, using available software. Lectures and practice on: (a) analysis of numerical data using spreadsheet and statistical programs; (b) simulation and quantitative analysis of physical processes of deposition, including time-series analyses; (c) modeling of surface and subsurface fluid flow, including groundwater hydrology; (d) mapping and analysis of geologic data; (e) programming in available spreadsheet programs; and (f) methods of presentation of geologic data utilizing computer graphics programs. Prerequisites: GEOL526 and 552, STAT 370; or senior standing.

GEOL 682. Petroleum Geology (3). 2R; 3L. The origin, migration, and accumulation of oil and gas in the earth's crust; reservoir trap types in common hydrocarbon fields, origin and types of porosity systems, and distribution of world petroleum supplies. Introduces subsurface study techniques. May require field trips. Prerequisites: GEOL526 and 552.

GEOL 684. Methods of Subsurface Analysis (2). 1R; 3L. Methods of remotely logging and describing the geologic occurrence of subsurface strata; characterization of subsurface strata, including laboratory analysis of recovered subsurface samples; application to petroleum geology, mineral resource evaluation, and environmental geology. Prerequisites: GEOL 312, 526, and 552; or instructor's consent.

GEOL 690. Special Studies in Geology (1-5). Systematic study in selected areas of geology. Offered on demand; repeatable for credit when content differs. Requires laboratory work or field trips (instructor's option). Prerequisite: instructor's consent.

GEOL 698. Independent Study in Geology (1-3). Independent study on special problems in selected areas of geology: (a) general, (b) mineralogy, (c) petrology, (d) structural, (e) paleontology, (f) economic geology, (g) sedimentation, (i) stratigraphy, (j) geophysics, and (k) petroleum. Requires a written final report. Prerequisite: consent of sponsoring faculty.

GEOL 702. Environmental Science I (4) 2R; 3L. Cross-listed as BIOL 702 and CHEM 702. Advanced theoretical and applied principles of the interdisciplinary study of environmental science. Includes chemical cycling, atmospheric chemistry, aquatic chemistry, and phase interactions. Prerequisite: acceptance in the master's program in environmental science or instructor's consent.

GEOL 703. Environmental Science II (4) 2R; 3L. Cross-listed as BIOL703 and CHEM 703. Advanced theoretical and applied principles of the interdisciplinary study of environmental science. Includes environmental chemical analysis, environmental toxicology, aquatic microbial biochemistry, environmental biochemistry, water treatment, photochemical smog, and hazardous waste chemistry. Prerequisite: acceptance in the master's program in environmental science or instructor's consent.

GEOL 704. Environmental Science Colloquium (1). Cross-listed as BIOL704 and CHEM 704. Students in the master's program in environmental science are required to enroll each semester (maximum 4 credit hours). Includes presentations by guest speakers and required readings for class discussion. May also include student involvement in environmentally related community groups and projects.

GEOL 706. Environmental Science Internship (3-6). Cross-listed as BIOL706 and CHEM 706. Students in the master's program in environmental science may gain interdisciplinary skills in environmental science by participating in applied and/or basic research internship projects with local business, industry, or government agencies. Internship option is an alternative to thesis research for degree requirements.

Enrollment in internship projects requires an approved proposal. Completion of an internship for graduation requires a formal oral presentation of the internship activity and a written report. Prerequisites: Environmental Science I and II.

GEOL 720. Geochemistry (3). The chemistry of natural aqueous solutions and their interaction with minerals and rocks; thermodynamics and kinetics of reactions; emphasizes application to sedimentary environments and environmental problems. Requires some laboratory work. Prerequisites: GEOL 324 and Chem 112Q or instructor's consent.

GEOL 724. Soils (3). Geologic analysis of soil types, their formation, occurrence, and mineralogy; soil management and conservation; environmental aspects of soil occurrence including stability studies, pollution, and reclamation.

GEOL 725. Clay Mineralogy (3). 2R; 3L. An evaluation of compositional and structural elements of clay-mineral families, related phyllosilicates and associated diagenetic-authigenic minerals in sedimentary environment. Also laboratory identification and classification of minerals by x-ray powder diffraction and thermal analysis. Prerequisite: GEOL526.

GEOL 726. Carbonate Sedimentology (3). 2R; 3L. The origin and genetic description of carbonate particles, sediments and rocks, mineralogy and textural classifications; depositional environments in carbonate rocks and analysis of modern and ancient depositional system. May require field trips. Prerequisites: GEOL526, 552, or equivalents.

GEOL 727. Carbonate Diagenesis (3). 2R; 3L. Analyzes diagenesis of carbonate sediments and rocks. Includes mineralogical stability in natural waters, meteoric, marine and deep-burial diagenesis, dolomitization processes and products; trace-elements and isotopes as diagenetic tools, cathodoluminescence and x-ray diffraction studies of carbonates; origin and porosity. Prerequisite: GEOL726 or instructor's consent.

GEOL 730. Perspectives: Geoscience and the Environment (3). A perspective of global issues of geo-environmental concern with regard to past, present, and future exploitation, use, and availability of earth's resources; marine and terrestrial pollution and resource use; water, minerals, and fuel resources; population growth and resource availability; the Greenhouse effect, global climatic change, and sea level rise and their effects on populations; future trends in environmental management and remediation of environmental problems of geologic scope. Prerequisite: Geol 312, 680; or instructor's consent.

GEOL 740. Basin Analysis (3). A practical course in analysis of petroleum-bearing or other sedimentary basins; emphasizes detailed subsurface mapping to document depositional, tectonic, and burial history of sedimentary basins; subsurface lithologic and geochemical sample analysis and evolution of sedimentary facies systems and hydrocarbons maturation history. Includes compilation of existing data to determine geologic evolution of basins. Prerequisites: GEOL682, 684, or instructor's consent.

GEOL 745. Advanced Stratigraphy (3). Analysis of stratigraphic sequences at the local to global scales in terms of

sequence stratigraphic concepts and high-resolution interpretation of depositional sequences (from outcrop and subsurface data); seismic sequence stratigraphy, and significance of unconformities in sequence identification and development; local to global correlation of sequences and sea level history through time; cratonic sequences of North America. Required 7-day field trip. Prerequisites: GEOL312, 526, and 726.

GEOL 750. Workshop in Geology (1-3). Short-term courses with special focus on geological problems. Prerequisites: graduate standing and/or instructor's consent.

GEOL 751. Advanced Geohydrology (3). Integrations of practical and theoretical coverage of subsurface fluid flow as applied to shallow aquifers. Cover the mass transport in both the saturated and vadose zones as well as the occurrence and movement of non-aqueous fluids. Covers groundwater quality, sources of groundwater contamination, retardation of contaminants, retardation and attenuation of dissolved solids and the response of inorganic and organic substances to subsurface aqueous and framework chemistries. Computer simulation models used whenever practical along with detailed analysis of case histories, including those related to environmental geoscience. Prerequisite: GEOL650, 681, MATH 344, or instructor's consent.

GEOL 760. Exploration Geophysics (3). Introduces the theory and application of geophysical techniques for hydrocarbon, mineral, and groundwater prospecting. Includes use of seismic techniques; instrumentation for acquisition on land and sea; seismic processing; structural and stratigraphic modeling; 3-D seismic exploration; and seismic refraction techniques. Prerequisites: completion of geology undergraduate math and physics requirements; MATH 344 or 555; GEOL324 and 544; and instructor's consent.

GEOL 781. Advanced Numerical Geology (3). Involves practical implementation of algorithms and computer code. Includes the analysis of multivariate techniques and the development of the computer/algorithm skills needed to handle very large databases. Covers standard statistical approaches to data analysis; treatment of applied linear algebra and matrix theory; and the application of linear and non-linear discriminate analysis, various factor analytic techniques, hard and fuzzy clustering, linear and non-linear unmixing analysis, and other forms of data modeling. Prerequisites: GEOL681 or equivalent, competence in one or more high level computer languages, Math 344 or 555, and instructor's consent.

Courses for Graduate Students Only

GEOL 800. Research in Geology (3). 9L. Research in special areas of geology: (a) general, (b) mineralogy, (c) petrology, (d) structural, (e) paleontology, (f) economic geology, (g) sedimentation, (i) stratigraphy, (j) geophysics, and (k) petroleum. Requires a written final report. Prerequisite: consent of sponsoring faculty.

GEOL 808. History of Geology (1-3). Selected events and personalities in geology that have led to our present under-

standing of geology's place in science. Prerequisite: instructor's consent.

GEOL 810. Advanced Graduate Studies in Geology (1-6). Systematic study in a selected topic of professional or applied geology. Course given upon demand; repeatable for credit when content differs. May require field trips. Prerequisites: graduate standing, instructor's consent, and two years of professional postgraduate practice in geology.

GEOL 821. Special Studies in Geochemistry (3). A systematic study in selected areas of geochemistry. Content differs upon demand to provide in-depth analysis in fields of (a) sedimentary carbonate and silicate geochemistry and mineralogy, (b) organic geochemistry, (c) high pressure and temperature thermodynamics of earth materials, (d) exploration geochemical geochemistry, (e) exogenic geochemical cycling, (f) stable isotope geochemistry. May be repeated for credit to cover all six areas listed. May require some laboratory work. Prerequisite: GEOL720 or instructor's consent.

GEOL 823. Igneous and Metamorphic Petrology (3). 1R; 6L. Mineral paragenesis, bulk chemical compositions, physical chemical relationships, textures, structures, origins, and classifications of igneous and metamorphic rocks. Thin-section studies to facilitate rock identifications and the determination of petrogenetic relationships. May require field trips. Prerequisite: instructor's consent.

GEOL 826. Sedimentary Petrology (3). 2R; 3L. Detailed study of sedimentary rocks and their origins. Facilitates determinations of mineral compositions, textures, structures, fabrics, and petrogenetic relationships by the use of thin sections, peels, and geochemical analyses. May require field trips. Prerequisite: GEOL526.

GEOL 830. Field Studies in Geology (2-6). Off-campus, systematic field study in a selected area or region of geologic significance. Course given upon demand; repeatable for credit when locality and content differ. Where appropriate, travel, lodging, and board costs are charged. Prerequisites: summer field geology (or equivalent) and instructor's consent.

GEOL 840. Geotectonics (3). Physical and geological principles of crustal deformation and tectonic interpretation. Studies the relationship of interior earth processes to crustal deformation with special reference to global tectonics. May require field trips. Prerequisite: instructor's consent.

GEOL 852. Field Stratigraphy (3). 2R; 3L. Advanced concepts and principles of stratigraphic analysis and interpretation emphasizing original sources and current research investigations. Required field problem and field trips. Prerequisites: GEOL544 and 552 or instructor's consent.

GEOL 860. Special Topics in Geophysics (3). Systematic study in one or more selected topics of theoretical and applied geophysical techniques. Emphasizes applications of state-of-the-art concepts and principles to problems of regional to global significance. Potential topics include seismic stratigraphy, vertical seismic profiling, reservoir petrophysical response estimations, shallow aquifer geophysical modeling,

geophysical basin modeling, and regional and global environmental modeling. Prerequisites: GEOL 681, 760; MATH 344 or 555; or instructor's consent.

GEOL 870. Advanced Biogeology (3). 2R; 3L. Paleocological reconstruction of ancient plant/animal communities and environments emphasizing community structure, biostratigraphy, synthesis of total raw data, and problem solving. May require field trips. Prerequisite: a course in biogeology or equivalent.

GEOL 881. Special Topics in Numerical Geology (3). Systematic study in one or more topics of theoretical and applied quantitative analysis appropriate for environmental and geological research. Emphasizes applications of state-of-the-art concepts and principles to problems of regional to global significance. Potential topics include quantitative shape analysis, petrographic image analysis, multi-variable linear and non-linear unmixing, extrapolation and interpolation techniques, quantitative isotope chronostratigraphic techniques, modeling global phenomena, and simulations of multi-phase flow in aquifers and reservoirs. Prerequisites: GEOL681, 781; and Math 344 or 555; or instructor's consent.

GEOL 890. Thesis (1-6). Prerequisite: departmental consent.

Gerontology

See Community Affairs, School of.

History (HIST)

Graduate Faculty

Distinguished Professor: H. Craig Miner (Willard W.

Garvey Distinguished Professor of Business History and chairperson)

Professors: John E. Dreifort, James C. Duram, Anthony P. Gythiel, Phillip D. Thomas

Associate Professors: John D. Born, Jr., Judith R. Johnson, Willard C. Klunder, Keith H. Pickus (graduate coordinator), Craig L. Torbenson

Assistant Professors: Helen Hundley, Ariel Loftus, Jay Price (director of public history program), Benson Tong

Master of Arts and Areas of Specialization

The history department offers courses of study leading to the Master of Arts (MA) degree with specialization in U.S. history, European history, and public history.

Admission Requirements

Admission to the MA program in history requires completion of an undergraduate major in history, or the equivalent; a grade point average of 2.750 or better, including all undergraduate hours; and a 3.000 grade point average in history. Under unusual circumstances applicants with less than a 3.000 average in history may be granted a probationary or conditional admission. International students are required to have a minimum TOEFL of 600.

Degree Requirements

Students may follow one of three plans for a graduate degree in history: a thesis program, a nonthesis program, and a program in public history.

Thesis Program

Course	Hrs.
HIST 725, Advanced Historical Method.....	3
HIST 727, Readings in History.....	3
HIST 729, 730, 733, 734, Seminars.....	9
HIST 500- and 600-level Courses.....	12
HIST 801, Thesis Research.....	2
HIST 802, Thesis.....	2
Total	31

At least one seminar and one lecture-based course must be taken outside of the student's primary comprehensive field.

Students must pass a foreign language competency examination, pass a written examination in one comprehensive field, and pass an oral examination in defense of the thesis. The written examination must precede the oral examination.

Nonthesis Program

Course	Hrs.
HIST 725, Advanced Historical Method.....	3
HIST 727, Readings in History.....	6
HIST 729, 730, 733, 734, Seminars.....	12
HIST 500- and 600-level Courses.....	15
Total	36

Students must pass written examinations in two comprehensive fields.

Thesis Program in Public History

Course	Hrs.
HIST 701, Introduction to Public History.....	3
One course selected from the following:.....	3
HIST 702, Historical Preservation	
HIST 703, Museum Administration	
HIST 705, Introduction to Archives	
HIST 704, Interpreting History to the Public.....	3
HIST 725, Advanced Historical Method.....	3
HIST 729, 730, 733, 734, Seminars.....	6
HIST 500- and 600-level Courses.....	9
HIST 801, Thesis Research.....	2
HIST 802, Thesis	2
HIST 803*, Internship.....	4
Total	35

* HIST 781, Cooperative Education in History, may be substituted for HIST 803 with the consent of the director of the public history program.

Comprehensive Fields. Students may select from the following areas for their comprehensive examinations.

U.S. History
The Ancient and Medieval Worlds
Modern Europe
Public History

Courses for Graduate/Undergraduate Credit

>HIST 501. The American Colonies (3). *General education further study course.* Colonization of the New World emphasizing the British colonists and their development.

>HIST 502. The American Revolution and the Early Republic (3). *General education further study course.* Examination of selected phases of the revolutionary, confederation, and federal periods.

>HIST 503. The Age of Jefferson and Jackson (3). *General education further study course.* Political, economic, and cultural development of the United States from the election of Thomas Jefferson to the end of the Mexican War emphasizing the growth of American nationalism.

>HIST 504. Civil War (3). *General education further study course.* A study of the origins and military events of the American Civil War and the political and social ramifications of the conflict.

HIST 505. The United States, 1865 to 1900 (3). Covers the great economic, political, social, and moral questions of the late 19th century, Includes industrialism, the frontier, the city, immigration, race, class, culture, empire, gender, and reform.

>HIST 507. The United States, 1900-1945 (3). *General education further study course.* Examines political, social, and economic issues from the Progressive Era through World War II.

>HIST 508. The United States Since 1945 (3). *General education further study course.* The history of the United States from the Truman through the Nixon administrations.

HIST 511. Women in Early America, 1600-1830 (3).

HIST 512. Women and Reform in America, 1830-present (3).

HIST 515. Economic History of the United States (3). Cross-listed as ECON 627.

>HIST 516. History of American Business (3). *General education further study course.* A history of American business enterprise from colonial times to the present, emphasizing the industrial age since the Civil War, on case studies of individual firms, on biographies of business people, and on the social and political impact of business.

>HIST 517 & >HIST 518. Constitutional History of the United States (3 & 3). *General education further study courses.* 517: the evolution of the American constitutional system from English and colonial origins through the Civil War. 518: American constitutional development from Reconstruction to the present.

>HIST 521 & >HIST 522. Diplomatic History of the United States (3 & 3). *General education further study courses.* 521: from independence through World War I. 522: continues to present.

>HIST 525. American Military History (3). *General education further study course.* A history of the military in America, from the colonial period to the present, emphasizing warfare and military institutions and their impact on American social, economic, and political traditions.

HIST 528. History of Wichita (3). A history of Wichita, Kansas, 1865-present, emphasizing the lessons of local history for future planning and its importance to an individual citizen's sense of place.

HIST 530. The American Woman in History (3). Cross-listed as WOM S 530. Examination of the history, status, and changing role of women in American society.

>HIST 531. American Environmental History (3). *General education further study course.* Examines the historical, physical, economic, scientific, technological, and industrial interactions of the peoples of America with their environment. Emphasizes the period, 1800-present.

HIST 532. Women in Ethnic America (3). Cross-listed as ETH S 532 and WOM S 532. An in-depth, thematic understanding of the historical experiences of women of color across space and time in U.S. history. Employing a female-centered framework of analysis, course probes the intersections of race, class, gender, and sexuality in women's lives.

HIST 533. The American City: from Village to Metropolis (3). A study of urbanization and urban life from colonial times to the present—changing lifestyles and thought patterns, urban architecture, ethnic assimilation, emergence of the suburb, political and ecological adjustments, and the influence of new technology and forms of business organization.

>HIST 534. History of the Old South (3). *General education further study course.* Examines Southern civilization prior to the American Civil War.

>HIST 535Q. History of Kansas (3). *General education further study course.* History of the Kansas region from Spanish exploration to the present, emphasizing the period after 1854.

>HIST 536. Survey of American Indian History (3). *General education further study course.* Surveys the history of Native American nations from pre-historic times to the present. Includes the process of European colonization and indigenous responses; the strategies of accommodation, assimilation, and resistance; and the resurgence of tribalism in the 20th century.

HIST 537. The Trans-Mississippi West (3). Spanish, French, and Anglo-American penetration and settlement west of the Mississippi River from the 16th century to about 1900.

>HIST 538. The American West in the Twentieth Century (3). *General education further study course.* Explores the growth of the trans-Mississippi West in the 20th century, emphasizing political development, economic growth, cultural manifestations, the role of minority groups, and the impact of science and technology.

>HIST 541. Modern France (3). *General education further study course.* History of the major trends in French history from Napoleon to DeGaulle emphasizing French attempts to adjust politically, socially, economically, and culturally to the changing conditions of modern industrial society.

HIST 545Q. Neither War Nor Peace: The World Since 1945 (3).

>HIST 553. History of Mexico (3). *General education further study course.* Pre-Columbian Mesoamerica; the Spanish conquest and the colonial period; the independence movement; Juarez, the Reform, and the French intervention; the Porfiria-to; the Mexican Revolution; Mexico in recent years.

>HIST 558. The Ancient Near East (3). *General education further study course.* Political and cultural history of ancient Mesopotamia, Iran, Egypt, Palestine, Syria, and Asia Minor to the death of Alexander the Great.

>HIST 559Q & >HIST 560. Greek History (3 & 3). *General education further study courses.* 559Q: the Hellenic world from prehistoric times to the end of the Peloponnesian War. 560: the 4th century and the Hellenistic period.

>HIST 562 & >HIST 563. Roman History (3 & 3). *General education further study courses.* 562: the Roman Republic. 563: the Roman Empire.

>HIST 566 & >HIST 567. Medieval History (3 & 3). *General education further study courses.* 566: the history of Europe from the fall of the Roman Empire through the Crusades, 500 to 1200. 567: history of Europe, 1200 to 1500.

HIST 568. Social, Economic, and Intellectual History of the Middle Ages (3). Examines fundamental themes in the development of the social, economic, and intellectual history of the Middle Ages, emphasizing the rise of cities, universities, scholastic thought, diverse patterns of daily life, and economic activities of the Middle Ages.

HIST 569. Medieval England (3).

>HIST 575Q. The Italian Renaissance (3). *General education further study course.* Italian history from the 14th through the 16th centuries emphasizing cultural achievements.

>HIST 576. The Reformation (3). *General education further study course.* Cross-listed as REL 476. The great religious changes in the 16th century in the political, social, and intellectual contexts.

HIST 577. Medieval Women (3). Deals with the lives and accomplishments of Christian women in Late Antiquity and the Middle Ages.

>HIST 581. Europe, 1815-1870 (3). *General education further study course.*

>HIST 582. Europe, 1870-1945 (3). *General education further study course.* Surveys European history, 1870-1945.

>HIST 583. Europe, 1945-Present (3). *General education further study course.* A survey of European history, 1945-present.

>HIST 588. History of Early Russia (3). *General education further study course.* Covers the social, political, and cultural history of Kievan and Muscovite Russia.

>HIST 589. History of Imperial Russia (3). *General education further study course.* A survey of the political, social, and cultural history of Imperial Russia.

>HIST 592. History of the Soviet Union (3). *General education further study course.* A survey of Soviet history from the Bolshevik Revolution to the present.

>HIST 593. Former Soviet Union (3). *General education further study course.* An examination of contemporary life in the former USSR: historical background, Marxist/Lenist ideology, industrial and agricultural economies, roles played by women, national minorities and dissidents in Soviet society, the press, literature and art, health care, and prospects for the country's future.

>HIST 613. European Diplomatic History (3). *General education further study course.* European international politics and diplomatic practices, emphasizing the actions of the great powers and their statesmen. Versailles settlement, totalitarian aggression, appeasement, World War II, the cold war, and decolonization of Southeast Asia and the Middle East as prelude to major power involvement.

HIST 620. Media Courses in History (2-3). Courses created or coordinated by the Department of History, offered through various media: radio, television, and newspaper. Areas of historical emphasis vary. Repeatable with instructor's approval; however, 3 hours maximum credit will apply towards MA degree in history.

HIST 639. Religion in America (3). Covers major trends in American religious history focusing on the scholarly issues related to the study of these subjects. Students explore such subjects as religious awakenings, fundamentalism, pentecostalism, and rationalism and examine how historians have studied and disagreed over these topics.

HIST 698. Historiography (3). Review of the major schools of historical thought, philosophies of history, and eminent historians from the ancient world to the present. Required of history majors.

HIST 701. Introduction to Public History (3). Introduces the various areas of public history including historic preservation, archival administration, museum studies, litigation support, and corporate history. Students learn the philosophies, techniques, and practices that comprise the field and ways these areas interact with their academic training. Prerequisite: graduate standing or instructor's consent.

HIST 702. Historic Preservation (3). Advanced survey of the multifaceted, multidisciplinary field of historic preservation. Presents a broad and sophisticated view of the many arms of preservation in the U.S., as well as the numerous

opportunities available to trained professionals in the field. Prerequisite: HIST 701 or instructor's consent.

HIST 703. Museum Administration (3). Addresses the many facets of museum administration from a specialist's point of view. Covers collecting, management, law and ethics, and resource development. Gives a close view of the operations of American museums. Prerequisite: HIST 701 or instructor's consent.

HIST 704. Interpreting History to the Public: Explaining the Past (3). Looks at ways history can be communicated to audiences, including scholarly texts, popular written histories, movies, videos, guidebooks, museums, and other similar media. Explores the differences between various forms of historical communication and assesses the ways they reach audiences. Student learn to discern various components of historical texts to use in the design of interpretation materials on their own. Prerequisite: HIST 701 or instructor's consent.

HIST 705. Introduction to Archives (3). Introduces the basic knowledge, theory, and related skills of archival administration, including the nature of information, records, and historical documentation; the role of archives in modern society; and issues and relationships that affect archival functions. Covers the theory and skills necessary to understand and apply basic archival functions. Prerequisite: graduate standing and/or instructor's consent.

HIST 725. Advanced Historical Method (3). Reviews basic historical research methods, the general character of field bibliographies and recent interpretations, and the techniques of professional narrative development. Required of graduate degree students during their first year of enrollment. Prerequisite: departmental consent.

HIST 727. Readings in History (3). Readings in ancient, medieval, modern, European, and American field bibliographies. Repeatable for credit. Prerequisite: departmental consent.

HIST 729. Seminar in American History (3). Repeatable for credit. Prerequisite: departmental consent.

HIST 730. Seminar in American History (3). Repeatable for credit. Prerequisite: departmental consent.

HIST 733. Seminar in European History (3). Repeatable for credit. Prerequisite: departmental consent.

HIST 734. Seminar in European History (3). Repeatable for credit. Prerequisite: departmental consent.

HIST 750. Workshop in History (1-3). Repeatable for credit but does not satisfy requirements for history majors.

HIST 781. Cooperative Education in History (0-2). Graduate history students participate in internship experiences through the Cooperative Education program. Augments HIST 803. Prerequisite: instructor's consent.

Courses for Graduate Students Only

HIST 801. Thesis Research (2).

HIST 802. Thesis (2).

HIST 803. Internship in Public History (1-2). Public history students practice their skills in summer or semester internships. Type and level of responsibility vary depending on student's interests and work setting. Internship should be in area related to student's MATHesis. Prerequisites: HIST 701 and consent of public history faculty.

HIST 810. Special Topics in History (1-3). Repeatable for credit to a maximum of 6 hours.

HIST 865. State and Local Government Finance (3). Cross-listed as ECON 865, POLS 865, and PADM 865. An analysis of state and local government expenditure and revenue systems, with an introduction to state and local financial administration. Prerequisites: ECON 765 or instructor's consent.

Hugo Wall School of Urban and Public Affairs

See Urban and Public Affairs, Hugo Wall School of.

Liberal Studies (LAS-I)

Graduate Coordinator: Ramona Liera-Schwichtenberg
Advisory Committee: Wilson Baldrige (modern languages), Elsie Shore (psychology), Ron Matson (sociology), David Soles (philosophy), Benson Tong (history).

The Master of Arts in Liberal Studies (MALS) program is designed for people who wish to pursue a particular topical or interdisciplinary interest at the graduate level, but find the existing programs either too specialized or insufficiently individualized. The liberal studies program offers students an opportunity to design a program of study to answer their particular needs and interests in a focused, coherent manner.

Admission Requirements

Applicants must have a bachelor's degree from an accredited institution. Applicants must also have a grade point average of 3.000 or better for the last 60 hours of course work. No more than 6 hours of graduate credit from another institution will be considered for transfer into the liberal studies program.

When submitting an application to the Wichita State Graduate School, students must contact the MALS office for an initial interview with the graduate coordinator. In addition, students must complete a brief essay describing their motivation for selecting the liberal studies program, outlining their proposed three areas of study and showing how the program will contribute to their educational and career goals. Deadlines for application are April 1 for the fall semester and October 1 for the following spring semester.

The Liberal Studies Advisory Committee may request that the applicant submit Graduate Record Examination scores (verbal and quantitative).

Three graduate faculty representing at least two of the three departments in which the student's work will be concentrated should be secured as program advisors. One of these advisors, who must be a graduate faculty member of Fairmount College of Liberal Arts and Sciences, will serve as the student's primary advisor and chair the student's committee.

Before completing the first 12 hours of graduate work in the program, the student must:

1. Complete selection of members of the faculty thesis or terminal project committee and inform the graduate coordinator.

2. With the assistance of this committee, prepare a Plan of Study to be approved by the graduate coordinator and the Graduate School.

3. Complete LAS-I 800, Research Goals and Strategies, for 3 credit hours.

Once accepted by the Graduate School, the Plan of Study becomes the student's individualized curriculum and any changes to it must be approved by the student's thesis or terminal project committee.

Degree Requirements

The structural framework for the degree is a Plan of Study, developed by the student in consultation with faculty in the program. It must include:

1. A minimum of 36 semester hours of credit
2. No more than 12 semester hours from any one department
3. A maximum of 12 hours in a college other than liberal arts and sciences
4. At least 22 of the 36 total hours in courses numbered 700 or above
5. Three of the 36 hours in LAS-I 800, Research Goals and Strategies.
6. A master's thesis for 6 hours' credit or a terminal project for 6 hours' credit.

Graduate Certificate in Great Plains Studies

Fairmount College of Liberal Arts and Sciences offers a Graduate Certificate in Great Plains Studies, an interdisciplinary program for professional or personal enrichment. This certificate is for students interested in taking a concentration of courses from a number of disciplines focusing on a common topic, the Great Plains.

Requirements: Graduate students must meet requirements for admission to the WSU Graduate School in a degree program or nondegree, category A status. They must have a cumulative grade point average of at least 3.000 for all courses comprising the graduate certificate program with no grade below C. The Graduate School does not accept transfer credit for certificate programs.

Great Plains Studies students enrolled in LAS-I 800 work with the instructor and the Great Plains Studies coordinator to develop an appropriate focus.

Students complete 20 hours of course work, including three required courses (LAS-I 501, 510, and

800) with the remaining courses selected from these designated courses: ANTHR 612, ANTHR 613, BIOL 503, BIOL 575, ENGL 860, GEOL 562, GEOL 570, HIST 535Q, and HIST 536.

Courses for Graduate/Undergraduate Credit

LAS-I 501. Great Plains Experience (1-3). Offered during fall and spring semesters as a 1-hour field experience and in the summer session as a 3-hour field experience. For students in the Great Plains Studies certificate program. Visit museums, anthropological and archeological sites, nature preserves, and other places of significance in Great Plains Studies. Prerequisite: LAS-I 201 or 800 or instructor's consent.

LAS-I 510. Great Plains Seminar (3). For students completing the Great Plains Studies certificate program. Focuses on contemporary issues and critical contexts for research. Students develop research projects appropriate to their classification as undergraduates or graduates and which reflect their particular interests in Great Plains Studies. Supplemental resources provided by faculty through lectures, consultation, course materials, and mentoring. Prerequisites: 12 hours of Great Plains Studies course work, including LAS-I 201 and 501; undergraduates must have senior status or instructor's consent.

LAS-I 700. Workshop: Special Topics (1-3). Meets identified needs of specific audiences.

Courses for Graduate Students Only

LAS-I 800. Research Goals and Strategies (3). Introduces the methodology and practice of interdisciplinary research. Emphasizes the integration of methods native to the humanities, social sciences, and natural sciences. Develops skills required for the writing of research papers and theses. Required of all students in the Master of Arts in Liberal Studies (MALS) program during the first 12 hours of course work.

LAS-I 875. Thesis (1-6). For students who are finishing the Master of Arts in Liberal Studies. The student writing a thesis is enrolled in this course until the thesis is completed and all thesis requirements have been satisfied. Prerequisite: consent of student's degree committee chairperson and instructor.

LAS-I 885. Terminal Project (1-6). For students who are near the end of their MALS program and involved in a terminal project. The terminal project may have many aspects such as field work, practicum, curriculum development, or some other individualized activity. The project must have been approved by the student's advisory committee and the MALS Graduate Coordinator prior to beginning work on any terminal activity, whether thesis or project. While the terminal project allows for more creative flexibility than the thesis option, students and their terminal project committee should be aware that the standards of quality and research expectations are equivalent. The student involved in a project must be enrolled in this course until the project is completed and all project requirements have been satisfied.

Linguistics (LING)

Graduate Faculty

Professors: Tina L. Bennett-Kastor, Lawrence M. Davis

Although there is no graduate program in linguistics, the following courses are available for graduate credit.

Group A—Basic Linguistic Theory

Courses for Graduate/Undergraduate Credit

LING 667. Linguistics. English Syntax (3). Cross-listed as ENGL 667 and ANTHR 667. Studies the basic principles of English syntax, covering the major facts of English sentence construction and relating them to linguistic theory. Prerequisite: LING 315 or equivalent or departmental consent.

LING 672. Linguistics. Studies in Language Variety (3). Cross-listed as ENGL672. Introduces the study of language variety, emphasizing regional and social dialect in America and methods of studying it. May be repeated for credit when content varies. Prerequisite: LING 315 or departmental consent.

LING 680. Linguistics. Comparative Linguistics (3). Methods of establishing genetic relationship between languages and reconstructing protolanguages. Includes a survey of the major language families of the world and typological comparisons of languages and the problem of language universals. Prerequisite: LING 315.

LING 682. Linguistics. Structure of a Selected Non-Indo-European Language (3). Language offered depends on student demand and staff availability. May be conducted as a field methods course; repeatable for credit when different languages are offered. Prerequisite: LING 315.

Group B—Linguistic Study of Specific Languages or Language Groups

Courses for Graduate/Undergraduate Credit

LING 505. French. Advanced Phonetics and Diction (2). Cross-listed as FREN 505. Includes articulatory phonetics, phonemics, sound/symbol correspondences, dialectal and stylistic variations. Required for future French teachers. Prerequisite: any 200-level course or departmental consent.

LING 505. Russian. Russian Phonology (2). Cross-listed as RUSS 505.

LING 505. Spanish. Spanish Phonetics (2). Cross-listed as SPAN 505.

LING 610. English. Old English (3). Cross-listed as ENGL 610. Studies the Old English language in enough detail to enable the reading of some prose and poetry, including parts of *Beowulf* in the original. Some literature, including all of *Beowulf*, is read in translation, with attention to important literary and cultural features of the period.

LING 635. French and Spanish. Introduction to

Romance Linguistics (3). Cross-listed as FREN 635 and SPAN 635.

Group C—Areas of Contact Between Linguistics and Other Disciplines

Courses for Graduate/Undergraduate Credit

LING 545. Psychology. Psycholinguistics (3). Cross-listed as PSY532.

LING 651. Language and Culture (3). Cross-listed as ANTHR 651 and MCLL661. Prerequisite: 3 hours of linguistics or MCLL351 or 6 hours of anthropology.

LING 727. Teaching English as a Second Language (2-3). Cross-listed as ENGL 727. Discusses current methods of teaching English to non-native speakers. Students learn to analyze interlanguage patterns and to design appropriate teaching units for class and language laboratory use.

LING 740. Graduate Studies in Linguistics (3). Cross-listed as ENGL740. Selected topics in theories of language and methods of linguistic study. Repeatable for credit with departmental consent.

Others

Courses for Graduate/Undergraduate Credit

LING 590. Linguistics. Special Studies (2-3). Topic selected and announced by individual instructor. Credit is assigned to Group A, B, or C depending on content. Repeatable for credit when content varies.

LING 595. Linguistics. Directed Readings (2-3). Credit assigned to Group A, B, or C depending on content. Repeatable for credit.

Mathematics and Statistics

Graduate Faculty

Professors: Andrew Acker, Dharam V. Chopra, Alan R. Elcrat, Buma L. Fridman (chairperson), John J. Hutchinson, Victor Isakov, Peter Kuchment, Kirk E. Lancaster, Kenneth G. Miller (graduate coordinator), Hari Mukerjee, Phillip E. Parker, Ziqi Sun
Associate Professors: Stephen W. Brady, Thomas DeLillo, Lop-Hing Ho, Xiaomi Hu, Zhiren Jin, Daowei Ma, Vassilis Papanicolaou
Assistant Professor: Chungsheng Ma

The Department of Mathematics and Statistics offers courses of study leading to the Master of Science (MS) degree in mathematics and the Doctor of Philosophy (PhD) degree in applied mathematics.

Mathematics (MATH)

Master of Science

Admission Requirements

Students will be admitted to full graduate standing if they have the equivalent of an undergraduate degree

in mathematics, have a grade point average of at least 3.000 in mathematics courses, and meet Graduate School admission requirements.

Degree Requirements

To complete the MS degree, students must earn 33 semester hours of graduate credit*, with a minimum of 24 semester hours in courses in mathematics or statistics offered by the department (exclusive of the sis) numbered 700 or above. The 33 hours must include the completion of three two-semester sequences in mathematics and/or statistics numbered 700 or above.

Students who plan to enter the PhD program in applied mathematics should include Real Analysis I and II (MATH743 and 843) and Numerical Linear Algebra (MATH 751) in their MS program of study.

Generally not more than 6 hours of approved course work may be transferred from another university. Students may take either a thesis or a non-thesis option. Students electing to write a thesis should enroll in MATH 885 for up to 6 hours credit. A student's program must be approved by the department. A comprehensive examination is required of all degree candidates.

*Complex and Vector Analysis for Engineers (758) and mathematics or statistics courses numbered below 600 do not count toward the 33 hours needed for the MS in mathematics.

Doctor of Philosophy

The primary emphases in the doctoral program in applied mathematics are partial differential equations, probability and statistics, and computational mathematics.

Admission Requirements

Admission to the doctoral program will be through the Admissions and Exceptions Committee of the department. Students may enter the doctoral program in mathematics and statistics if they have the prerequisites for the initial required courses, have taken the advanced GRE, and have a 3.000 overall grade point average and a 3.250 grade point average in mathematics and statistics.

Students may satisfy the prerequisites for the initial requirements if they have taken 3 hours of course work in each of the following: advanced calculus, modern algebra, linear algebra, and numerical methods.

Degree Requirements

To complete the PhD program in applied mathematics, the student must satisfy the course, language, and residency requirements given below; pass the qualifying and preliminary examinations; and write a dissertation containing original research in applied mathematics.

Course Requirements: A total of at least 84 hours of graduate credit is required. Partial Differential Equations for Engineers (MATH757) and Complex and Vector Analysis for Engineers (MATH 758) and

mathematics or statistics courses numbered below 700 may not be included. At least 36 hours must be in mathematics and statistics courses numbered above 800 (exclusive of PhD Dissertation [MATH 985]). Courses used toward a master's degree may be included. A maximum of 36 hours may be transferred from another university at the discretion of the student's committee.

Real Analysis I and II (MATH 743 and 843) and Numerical Linear Algebra (MATH 751) are required of all students. In addition a student must complete one of the following two sets of requirements:

- A) Complex Analysis I and II (MATH 745 and 845), Partial Differential Equations I and II (MATH 755 and 855), Functional Analysis I and II (MATH 941 and 942), and Numerical Analysis of Partial Differential Equations (MATH 852).
 B) Theory of Statistics I and II (STAT 771 and 772), Theory of Probability I and II (STAT 861 and 862), Theory of Statistical Inference I and II (STAT 870 and 871), and Theory of Linear Models I and II (STAT 872 and 873).

Language Requirements: The student must demonstrate proficiency either in two foreign languages or in one foreign language and one high level computer language. The foreign languages are Chinese, French, German, and Russian. The language proficiency will be demonstrated by passing an examination that consists of the translation, with the use of a dictionary, of one or more passages of mathematics text from the foreign language into English.

Residency Requirement: The student must complete at least one academic year in residence as a full-time student at WSU.

Qualifying Exam: The qualifying exam is a written exam administered near the middle of both the fall and spring semesters. The exam is a six-hour exam given on two different days within a one week period. The topics covered by the exam are real analysis, numerical analysis, advanced calculus, and linear algebra. The exam should be taken at the first opportunity after completing Real Analysis I and II (MATH 743 and 843) and Numerical Linear Algebra (MATH 751).

A student who does not pass on the first attempt may be permitted to take the exam a second time. A person who retakes the exam must retake the entire exam. The exam may be retaken only once.

PhD Committee: Upon the student passing the qualifying exam, the graduate coordinator, in consultation with the student, recommends to the departmental PhD Advisory Committee a PhD committee for the student. The student's PhD committee consists of the student's dissertation advisor as chair and four other members. At least one, but no more than two, of the committee members shall be from departments outside the Department of Mathematics and Statistics. Within one semester after passing the qualifying exam the student should submit a Plan of Study to the committee for approval. This committee serves as examining committee for both the preliminary and final exams.

Preliminary Exam: The preliminary exam covers specific topics relevant to the student's research area as determined by his or her PhD committee. The student should meet as soon as possible with the committee to set the topics to be covered. For full-time students, the exam should normally be taken about one year after passing the qualifying exam. Before the preliminary exam is taken, one of the two language requirements must be satisfied. A student who fails the preliminary exam may be permitted to retake the exam if the committee so determines.

Dissertation and Final Exam: Upon passing the preliminary exam, the student becomes a candidate for the PhD degree. Soon thereafter the student must submit a written dissertation proposal to his or her committee for approval. While working on the dissertation the student should enroll for a total of at least 18 hours of PhD Dissertation. The student must be enrolled at the University during each semester after admission to candidacy until completion of the dissertation. After the dissertation is completed, the student must present and defend it before the committee. This defense constitutes the final exam. The dissertation defense is open to the public.

Courses for Graduate/Undergraduate Credit

Credit in courses numbered below 600 is not applicable toward the MS in mathematics.

MATH 501. Elementary Mathematics (5). A study of topics necessary to an understanding of the elementary school curriculum, such as set theory, real numbers, and geometry. Not for major or minor credit. Prerequisites: elementary education major and MATH 111 or equivalent with C or better or departmental consent.

MATH 511. Linear Algebra (3). An elementary study of linear algebra, including an examination of linear transformations and matrices over finite dimensional spaces. Prerequisite: MATH 243 with C or better.

MATH 513. Fundamental Concepts of Algebra (3). Defines group, ring, and field and studies their properties. Prerequisites: MATH 415 and 511 with C or better or departmental consent.

MATH 530. Applied Combinatorics (3). Basic counting principles, occupancy problems, generating functions, recurrence relations, principles of inclusion and exclusion, the pigeonhole principle, Fibonacci sequences, and elements of graph theory. Prerequisite: MATH 344 with C or better.

>MATH 531. Introduction to the History of Mathematics (3). *General education issues and perspectives course.* Studies the development of mathematics from antiquity to modern times. Solves problems using the methods of the historical period in which they arose. Requires mathematical skills. Prerequisites: MATH 511 and two additional courses at the 500 level or above, with C or better in each.

MATH 545. Integration Techniques and Applications (3). Studies the basic integration techniques used in applied

mathematics. Includes the standard vector calculus treatment of line and surface integrals, Green's Theorem, Stokes' Theorem, and the Divergence Theorem. Also includes the study of improper integrals with application to special functions. Prerequisite: MATH 344 with C or better.

MATH 547. Advanced Calculus I (3). Covers the calculus of Euclidean space including the standard results concerning functions, sequences, and limits. Prerequisites: MATH 344 and 415 with C or better in each.

MATH 551. Numerical Methods (3). Approximating roots of equations, interpolation and approximation, numerical differentiation and integration, and the numerical solution of first order ordinary differential equations. Some computer use. Prerequisites: MATH 344 and 451 with C or better or departmental consent.

MATH 553. Mathematical Models (3). Covers case studies from the fields of engineering technology and the natural and social sciences. Emphasizes the mathematics involved. Each student completes a term project which is the solution of a particular problem approved by the instructor. Prerequisite: Math 344 with C or better or departmental consent.

MATH 555. Differential Equations I (3). A study of first order equations including separation of variables and exact equations; second order equations including the general theory of initial value problems, constant coefficients, undetermined coefficients, variation of parameters, and special methods of solution using power series and the Laplace transform methods. A standard course in differential equation for students in the sciences and engineering. Credit not allowed in both MATH 550 and 555. Prerequisite: MATH 243 with C or better or departmental consent.

MATH 580. Selected Topics in Mathematics (3). Topic chosen from topics not otherwise represented in the curriculum. May be repeated up to a maximum of 6 hours credit with departmental consent. Prerequisite: departmental consent.

MATH 615. Elementary Number Theory (3). Studies properties of the integers by elementary means. Prerequisite: MATH 344 with C or better or departmental consent.

MATH 621. Elementary Geometry (3). Studies Euclidean geometry from an advanced point of view. Prerequisite: MATH 344 with C or better or departmental consent.

MATH 640. Advanced Calculus II (3). A continuation of MATH 547. Prerequisites: MATH 511 and 547 with C or better in each.

MATH 655. Differential Equations II (3). A continuation of MATH 555 (but with more emphasis on theoretical issues) that covers higher order differential equations, systems of first order equations (including the basics of linear algebra), some numerical methods, and stability and behavior of solutions for large times. Prerequisite: MATH 555 with C or better or departmental consent.

MATH 657. Optimization Theory (3). Introduces selected topics in linear and nonlinear optimization. Develops the

revised simplex method along with a careful treatment of duality. Then extends the theory to solve parametric, integer, and mixed integer linear programs. Prerequisite: MATH 511 with C or better.

MATH 690. Introduction to Mathematical Logic (3). An axiomatic development of elementary mathematical logic through first-order logic culminating in theorems on completeness and consistency. Investigates connections with Boolean algebra, formal languages, and computer logic. Prerequisite: MATH 415 or 511 with C or better or departmental consent.

MATH 713. Abstract Algebra I (3). Treats the standard basic topics of abstract algebra. Prerequisite: MATH 513 with C or better or departmental consent.

MATH 714. Applied Mathematics (3). Cross-listed as PHYS 714. A study of mathematical techniques applicable to physics and other sciences. Instructor selects topics, such as power series, infinite products, asymptotic expansions, WKB method, contour integration and residue methods, integral transforms, Hilbert spaces, special functions, and integral equations. Prerequisite: MATH 555 or instructor's consent.

MATH 720. Modern Geometry (3). Examines the fundamental concepts of geometry. Prerequisite: MATH 513 with C or better or departmental consent.

MATH 725. Topology I (3). Studies the results of point set and algebraic topology. Prerequisite: MATH 547 with C or better or departmental consent.

MATH 743. Real Analysis I (3). Includes a study of the foundations of analysis and the fundamental results of the subject. Prerequisite: MATH 640 with C or better or departmental consent.

MATH 745. Complex Analysis I (3). Studies the theory of analytic functions. Prerequisite: MATH 640 with C or better or departmental consent.

MATH 750. Workshop (1-3). Topics appropriate for mathematics workshops that are not in current mathematics courses. May be repeated to a total of 6 hours credit with departmental consent. Prerequisite: departmental consent.

MATH 751. Numerical Linear Algebra (3). Includes analysis of direct and iterative methods for the solution of linear systems, linear least squares problems, eigenvalue problems, error analysis, and reduction by orthogonal transformations. Prerequisites: MATH 511, 547, and 551 with C or better in each, or departmental consent.

MATH 753. Ordinary Differential Equations (3). Covers existence, uniqueness, stability, and other qualitative theories of ordinary differential equations. Prerequisite: MATH 545 or 547 with C or better or departmental consent.

MATH 755. Partial Differential Equations I (3). Studies the existence and uniqueness theory for boundary value

problems of partial differential equations of all types. Prerequisite: MATH 547 with C or better or departmental consent.

MATH 757. Partial Differential Equations for Engineers (3). Includes Fourier series, the Fourier integral, boundary value problems for the partial differential equations of mathematical physics, Bessel and Legendre functions, and linear systems of ordinary differential equations. Prerequisite: MATH 555 with C or better.

MATH 758. Complex and Vector Analysis for Engineers (3). A survey of some of the mathematical techniques needed in engineering including an introduction to vector analysis, line and surface integrals and complex analysis, contour integrals, and the method of residues. Not applicable toward a graduate degree in mathematics. Prerequisite: MATH 555 with C or better.

Courses for Graduate Students Only

MATH 813. Abstract Algebra II (3). A continuation of MATH 713. Prerequisite: MATH 713 or equivalent.

MATH 818. Selected Topics in Number Theory (2-3). Repeatable with departmental consent. Prerequisite: departmental consent.

MATH 825. Topology II (3). A continuation of MATH 725. Prerequisite: MATH 725 or equivalent.

MATH 828. Selected Topics in Topology (2-3). Repeatable with departmental consent. Prerequisite: departmental consent.

MATH 829. Selected Topics in Geometry (2-3). Repeatable with departmental consent. Prerequisite: departmental consent.

MATH 839. Selected Topics in Foundations of Mathematics (2-3). Repeatable with departmental consent. Prerequisite: departmental consent.

MATH 843. Real Analysis II (3). A continuation of MATH 743. Prerequisite: MATH 743 or equivalent.

MATH 845. Complex Analysis II (3). A continuation of MATH 745. Prerequisite: MATH 745 or equivalent.

MATH 848. Calculus of Variations (3). Includes Euler-Lagrange equations, variational methods, and applications to extremal problems in continuum mechanics. Prerequisite: MATH 547 or 757.

MATH 849. Selected Topics in Analysis (2-3). Repeatable with departmental consent. Prerequisite: departmental consent.

MATH 851. Numerical Analysis of Ordinary Differential Equations (3). Includes single-step and multi-step methods of ordinary differential equations, stability, consistency and convergence, error estimation, step size selection, stiff sys-

tems, and boundary value problems. Prerequisites: MATH 555 and 751.

MATH 852. Numerical Analysis of Partial Differential Equations (3). Includes analysis of algorithms for the solution of initial value problems and boundary value problems for systems of PDEs with applications to fluid flow, structural mechanics, electromagnetic theory, and control theory. Prerequisite: MATH 751.

MATH 854. Tensor Analysis with Applications (3). After introducing tensor analysis, considers applications to continuum mechanics, structural analysis, and numerical grid generation. Prerequisite: MATH 545 or 757.

MATH 856. Partial Differential Equations II (3). A continuation of MATH 755. Prerequisite: MATH 755.

MATH 857-858. Selected Topics in Engineering Mathematics I and II (3-3). Advanced topics in mathematics of interest to engineering students, including tensor analysis, calculus of variations and partial differential equations. Not applicable toward the MS in mathematics.

MATH 859. Selected Topics in Applied Mathematics (2-3). Repeatable with departmental consent.

MATH 880. Proseminar (1). Oral presentation of research in areas of interest to the students. Prerequisite: major standing.

MATH 881. Individual Reading (1-5). Repeatable up to a maximum of 6 hours with departmental consent. Prerequisite: departmental consent.

MATH 885. Thesis (1-4). May be repeated to a maximum of 6 hours credit. Prerequisite: departmental consent.

MATH 941-942. Applied Functional Analysis I and II (3-3). Introduces functional analysis and its applications. Prerequisites: MATH 843 and 755 (MATH 755 may be a corequisite).

MATH 947-948. Mathematical Theory of Fluid Dynamics I and II (3-3). Mechanics of fluid flow, momentum and energy principles, Navier-Stokes and Euler equations, potential flows, vortex dynamics, stability analysis, and numerical methods applied to fluid dynamics. Prerequisite: MATH 745.

MATH 952. Advanced Topics in Numerical Analysis (3). Advanced topics of current research interest in numerical analysis. Topics chosen at instructor's discretion. Possible areas of concentration are numerical methods in ordinary differential equations, partial differential equations, and linear algebra. Prerequisites: MATH 751, 851, and instructor's consent.

MATH 958 & MATH 959. Selected Advanced Topics in Applied Mathematics (3 & 3). Topics of current research interest in applied mathematics. Repeatable for credit with departmental consent. Prerequisite: instructor's consent.

MATH 981. Advanced Independent Study in Applied Mathematics (1-3). Arranged individual directed study in an area of applied mathematics. Repeatable to a maximum of 6 hours. Prerequisites: must have passed the PhD qualifying exam and instructor's consent.

MATH 985. PhD Dissertation (1-9). Repeatable to a maximum of 24 hours. Prerequisite: must have passed the PhD preliminary exam.

Statistics (STAT)

Courses for Graduate/Undergraduate Credit

Credit in courses numbered below 600 is not applicable toward the MS in mathematics.

STAT 570. Special Topics in Statistics (3). Covers topics of interest not otherwise available. Prerequisite: departmental consent.

>STAT 571->572. Statistical Methods I and II (3-3). *General education further study courses.* Includes probability models, points and interval estimates, statistical tests of hypotheses, correlation and regression analysis, introduction to nonparametric statistical techniques, least squares, analysis of variance, and topics in design of experiments. Prerequisite: MATH 243 with C or better or departmental consent.

>STAT 574. Elementary Survey Sampling (3). *General education further study course.* Reviews basic statistical concepts. Covers simple, random, stratified, cluster, and systematic sampling, along with selection of sample size, ratio, estimation, and costs. Applications studied include problems from the social and natural sciences, business, and other disciplines. Prerequisite: any elementary course in statistics, such as STAT 370, SOC 501, or PSY401 with a C or better.

>STAT 576. Applied Nonparametric Statistical Methods (3). *General education further study course.* Studies assumptions and needs for nonparametric tests, rank tests, and other nonparametric inferential techniques. Applications involve problems from the social and natural sciences, business, and other disciplines. Prerequisite: any elementary statistics course such as STAT 370, SOC 501, or PSY401 with C or better.

STAT 761. Probability (3). A study of axioms of probability, discrete and continuous random variables, expectation, examples of distribution functions, moment generating functions, and sequences of random variables. Prerequisite: MATH 344 with C or better.

STAT 762. Applied Stochastic Processes (3). Studies random variables, expectation, limit theorems, Markov chains, and stochastic processes. Prerequisite: STAT 761 or 771 with C or better or departmental consent.

STAT 763. Applied Regression Analysis (3). Studies linear, polynomial, and multiple regression. Includes applications to business and economics, behavioral and biological sciences, and engineering. Uses computer packages for doing prob-

lems. Prerequisites: STAT 571 and MATH 344 and 511 with C or better in each or departmental consent.

STAT 764. Analysis of Variance (3). An introduction to experimental design and analysis of data under linear statistical models. Studies single-factor designs, factorial experiments with more than one factor, analysis of covariance, randomized block designs, nested designs, and Latin square designs. Uses computer packages for doing problems. Prerequisites: STAT 571 and MATH 344 and 511 with C or better in each or departmental consent.

STAT 771-772. Theory of Statistics I and II (3-3). An examination of stochastic dependence distributions of functions of random variables limiting distributions, order statistics, theory of statistical inference, nonparametric tests, and analysis of variance and covariance. Prerequisite: MATH 545 or 547 with C or better or departmental consent.

STAT 774. Statistical Computing I (3). Trains students to use modern statistical software for statistical modeling and writing of technical reports. Examines many of the advanced features of most commercial statistical packages. Students perform complete statistical analyses of real data sets. Prerequisites: STAT 763 and 764 or departmental consent.

STAT 775. Applied Statistical Methods I (3). Covers selected topics from time series analysis including basic characteristics of time series, autocorrelation, stationarity, spectral analysis, linear filtering, ARIMA models, Box-Jenkins forecasting and model identification, classification, and pattern recognition. Prerequisite: STAT 763 with C or better or departmental consent.

STAT 776. Applied Statistical Methods II (3). Covers selected topics from multivariate analysis including statistical theory associated with the multivariate normal, Wishart and other related distributions, partial and multiple correlation, principal component analysis, factor analysis, classification and discriminant analysis, cluster analysis, James-Stein estimates, multivariate probability inequalities, majorization and Schur functions. Prerequisite: STAT 764 with C or better or departmental consent.

Courses for Graduate Students Only

STAT 861-862. Theory of Probability I and II (3-3). The axiomatic foundations of probability theory emphasize the coverage of probability measures, distribution functions, characteristic functions, random variables, modes of convergence, the law of large numbers and central limit theorem, and conditioning and the Markov property. Prerequisites: MATH 743 and STAT 761 or 771.

STAT 870-871. Theory of Statistical Inference I and II (3-3). Covers asymptotic theory of maximum likelihood estimation, sufficiency and completeness, unbiased estimation, elements of decision theory and the Neyman-Pearson theory of testing hypotheses. Prerequisites: MATH 743 and STAT 761 or 771.

STAT 872-873. Theory of Linear Models I and II (3-3). An introduction to the theory of linear models and analysis of variance. Includes multivariate normal distribution, distributions of quadratic forms, general linear models, general linear hypothesis, confidence regions, prediction and tolerance intervals, design models (1-factor and 2-factor), analysis of covariance, and components-of-variance models. Prerequisites: MATH 511 and STAT 772.

STAT 875. Design of Experiments (3). A study of basic concepts of experimental design which include completely randomized design, randomized block design, randomization theory, estimation and tests, latin square design, factorial experiments, confounding, split-plot designs, incomplete block designs, and intra- and inter-block information. Prerequisite: STAT 572 or 772.

STAT 876. Nonparametric Methods (3). An introduction to the theory of nonparametric statistics. Includes order statistics; tests based on runs; tests of goodness of fit; rank-order statistics; one-, two-, and k-sample problems; linear rank statistics; measure of association for bivariate samples; and asymptotic efficiency. Prerequisite: STAT 772.

STAT 877. Multivariate Statistical Methods (3). Elementary theory and techniques of analyzing multidimensional data; covers Hotelling's T^2 , multivariate analysis of variance, principal components analysis, linear discrimination analysis, canonical correlation analysis, and analysis of categorical data. Prerequisites: MATH 511 and STAT 772.

STAT 878. Special Topics (2-3). Repeatable with departmental consent. Prerequisite: departmental consent.

STAT 879. Individual Reading (1-5). Prerequisite: departmental consent.

STAT 884. Statistical Computing II (3). Teaches special graphics and numerical methods needed in the analysis of statistical data. Includes advanced simulation techniques, numerical methods for linear and nonlinear problems, analysis of missing data, smoothing and density estimation, projection-pursuit methods, and graphic techniques. Prerequisites: MATH 751 and STAT 772 with C or better or departmental consent.

STAT 971 & STAT 972. Selected Advanced Topics in Probability and Statistics (3&3). Topics of current research interest in probability and statistics. Repeatable for credit with departmental consent. Prerequisite: instructor's consent.

STAT 978. Advanced Independent Study in Probability and Statistics (1-3). Arranged individual directed study in an area of probability or statistics. Repeatable to a maximum of 6 hours. Prerequisites: must have passed the PhD qualifying exam and instructor's consent.

STAT 986. PhD Dissertation (1-9). Repeatable to a maximum of 24 hours. Prerequisite: must have passed the PhD preliminary exam.

Modern and Classical Languages and Literatures

Graduate Faculty

Professors: Ginette Adamson, Pedro Bravo-Elizondo, Dieter Saalmann (chairperson), Gary Toops

Associate Professors: Wilson Baldrige, John Koppenhaver, Eunice Myers, Brigitte Roussel

Assistant Professors: Carl Adamson, Patrick E. Kehoe

French (FREN)

Although a complete graduate program is not available currently in French, the following courses may apply toward a master's degree if approved in advance of enrollment by the student's advisor, the chairperson of the Department of Modern and Classical Languages and Literatures, and the dean of the Graduate School.

Courses for Graduate/Undergraduate Credit

Upper-division courses are given on a rotating basis. FREN 300 is a prerequisite for all upper-division literature and civilization courses, unless otherwise indicated. All literature courses, including FREN 223 and 300, may fulfill the general education literature requirement.

FREN 505. French Phonetics (3). 2R; 1L. Cross-listed as LING 505. Includes articulatory phonetics, phonemics, sound/symbol correspondences, dialectal and stylistic variations. Required for future French teachers. Prerequisite: any 200-level course or departmental consent.

FREN 515. Major Topics in French (1-4). Special studies in (a) language, (b) literature, (c) commercial French, (d) the language laboratory, (e) music, (f) composition, (i) problems in teaching French, (j) civilization, (l) translation, (k) conversation, and (m) phonetics. Repeatable for credit. Prerequisite: departmental consent.

FREN 525. Advanced French Conversation (3). Designed to increase proficiency in spoken French. Assignments include oral reports, dialogs, and work in the language laboratory. Prerequisite: FREN 324 or departmental consent.

FREN 526. Advanced French Composition and Grammar (3). Emphasizes theme writing, original compositions, and detailed study of modern French grammar. Prerequisite: FREN 324 or departmental consent.

FREN 540Q. French Literature in English Translation (3). Topic varies. May be used to satisfy the general education literature requirement and may count toward a French major or minor if readings and papers are done in French.

FREN 541Q. French Literature of Africa and the Caribbean in English Translation (3). A study of the concept of Negritude through the works of major contemporary African and Caribbean writers. No knowledge of a foreign language is necessary. May be used to satisfy the general education literature requirement and may count toward a French major or minor if readings and papers are done in French.

FREN 551. French Civilization: The Middle Ages to the Restoration (3). Emphasizes key aspects of the civilization of France as seen in its art, architecture, political structure, social evolution, and intellectual traditions. Interdisciplinary course complements studies in French language and literature. Class work and required readings are in French. Prerequisite/corequisite: FREN 300.

FREN 552. Contemporary French Civilization (3). Emphasizes the major events, themes, ideas, trends, and movements in French civilization since the Revolution. Interdisciplinary course complements French language and literature courses. Class work and readings are in French. Prerequisite/corequisite: FREN 300.

FREN 623. Seminar in French (3). Seminar in French literature, language, or civilization. Prerequisite: FREN 300. Repeatable for credit.

FREN 630. Renaissance French Literature (3). Analyzes and discusses major French works, 1500-1600. Prerequisite: FREN 300.

FREN 631. 17th Century French Literature (3). Prerequisite: FREN 300.

FREN 632. 18th Century French Literature (3). Prerequisite: FREN 300.

FREN 633. 19th Century French Literature (3). Prerequisite: FREN 300.

FREN 634. 20th Century French Literature: 1900-1945 (3). Analyzes and discusses major works of French fiction, poetry, and drama from the *Belle Epoque* through World War II. Prerequisite: FREN 300.

FREN 635. Introduction to Romance Language Linguistics (3). Cross-listed as LING 635 and SPAN 635. An introduction to the historical phonology and morphology of the romance languages emphasizing French and Spanish. Prerequisite: departmental consent.

FREN 636. Contemporary French Literature (3). Analyzes and discusses major works of French fiction, poetry, and drama, 1945-present. Prerequisite: FREN 300.

FREN 726. French Composition and Stylistics (3). Offers background in rhetoric and stylistics as an approach to literary models, with a view to developing the creative use of style together with grammatical accuracy in writing. Practice in revision forms the basis of this course. Prerequisite: FREN 526 or departmental consent.

FREN 750. Workshop in French. (2-4). Repeatable for credit.

Course for Graduate Students Only

FREN 815. Special Studies in French (3). Prerequisite: departmental consent. Repeatable for credit.

German (GERM)

Although a complete graduate program is not available currently in German, the following courses may apply toward a master's degree if approved in advance of enrollment by the student's advisor, the chairperson of the Department of Modern and Classical Languages and Literatures, and the dean of the Graduate School.

Courses for Graduate/Undergraduate Credit

GERM 524. Advanced German Conversation and Composition (3). Prerequisite: GERM 324 or instructor's consent.

GERM 650. Directed Studies in German (1-3). Enrollment in any of the areas listed takes place only upon consultation with the department and agreement with the instructor concerned: (a) introduction to the study of German literature; (b) survey I: from the medieval period through the Age of Goethe; (c) survey II: 19th century to 1945; (d) contemporary literature, including the literatures of East and West Germany, 1949-1989; (e) special topics in literature, repeatable once for credit; (f) special topics in language, repeatable once for credit. Prerequisite: GERM 344Q or instructor's consent.

GERM 750. Workshop in German. (2-4). Repeatable once for credit.

Greek (Ancient Classical) (GREEK)

Although a complete graduate program is not available currently in Greek, the following courses may apply toward a master's degree.

Courses for Graduate/Undergraduate Credit

GREEK 515. Special Studies in Greek (1-4). Topic announced by instructor. Repeatable for credit. Prerequisite: GREEK 224 or instructor's consent.

GREEK 531. Advanced Greek (3). Sophocles and Euripides. Prerequisite: GREEK 224.

GREEK 532. Advanced Greek (3). Thucydides. Prerequisite: GREEK 531.

Latin (LATIN)

Although a complete graduate program is not available currently in Latin, the following courses may apply toward a master's degree.

Courses for Graduate/Undergraduate Credit

LATIN 224 or departmental consent is the prerequisite for all upper-division courses.

LATIN 526. Advanced Grammar and Composition (3). Intensive study of the grammar and style of classical Latin prose of the Golden Age, especially of Cicero and Caesar. Required capstone course for the MCLLmajor with specialization in Latin.

LATIN 541. Roman Lyric Poetry (3). The lyric poems of Catullus and Horace emphasizing imagery, symbolism, structure, diction, and meter.

LATIN 542. Vergil's Aeneid (3). Selected books of the *Aeneid* in the original and the rest in translation. Studies imagery, symbolism, structure, meter, and diction. Considers the place of the *Aeneid* in Augustan Rome and in the epic tradition.

LATIN 543. Roman Drama (3). A study of Roman comedy and tragedy, their Greek background, and their influence on European literature. Includes selected plays of Plautus, Terence, and Seneca, some in the original and some in translation.

LATIN 545. The Roman Novel (3). Reading of the *Satyricon* of Petronius and the *Golden Ass* of Apuleius. The portions that are not read in Latin are read in English. Gives consideration to the development of the novel from its Greek beginnings up to the time of Apuleius and beyond.

LATIN 546. Advanced Latin (3). Directed reading of Latin. Reading may be combined with Latin prose composition at the option of the students. Repeatable for credit when content varies.

LATIN 651. Roman Historians (3). A study of the development of Roman historiography. Readings from Sallust, Caesar, Livy, and Tacitus.

LATIN 652. Cicero (3). The orations, letters, and essays of Cicero. Concentrates on Cicero as the master of Latin prose and as one of the most important political figures of the fall of the Roman Republic.

LATIN 653. Lucretius and Epicureanism (3). Reading of Lucretius' *De Rerum Natura* and study of Epicureanism, the atomic theory, and Democritean materialism. Gives consideration to the place of Lucretius in Latin poetry.

LATIN 750. Workshop in Latin (2-4). Repeatable for credit.

Modern and Classical Languages and Literatures (MCLL)

Course for Graduate/Undergraduate Credit

MCLL 661. Language and Culture (3). Cross-listed as ANTHR 651 and LING 651. An introduction to the major themes in the interactions of language and society and language and culture, including ethnography of communication, linguistic relativity, and determinism; types of language contact; the linguistic repertoire; and cross-cultural discourse analysis. Content may vary with instructor. Prerequisite: 3 hours of linguistics or MCLL351 or 6 hours of anthropology.

Russian (RUSS)

Although a complete graduate program is not available currently in Russian, the following courses may apply toward a master's degree.

Courses for Graduate/Undergraduate Credit

RUSS 505. Russian Phonology (2). Cross-listed as LING 505. Corrective pronunciation and auditory perception for non-native speakers of Russian. Includes articulatory phonetics, phonemics, and morphophonemics, as well as the study

and production of intonation contours (*intonatsionnyye konstruktsii*). Prerequisite: any 200-level course or instructor's consent.

RUSS 515. Special Studies in Russian (1-3). Advanced reading and translation in Russian social sciences, literature, and civilization. Repeatable for credit. Prerequisite: departmental consent.

RUSS 540Q. Russian Literature in English (3). Consideration of the works of one or two major authors, a literary movement, trend, or specific genre. No knowledge of Russian is necessary, although some is desirable. Repeatable once for credit. Prerequisite: departmental consent.

Spanish (SPAN)

Master of Arts and Areas of Specialization

The Department of Modern and Classical Languages and Literatures offers courses of study leading to the Master of Arts (MA) degree in Spanish. This degree program allows for specialization in Spanish language and literature or in Spanish-American literature.

Admission Requirements

Admission to the program requires the completion of 24 hours of undergraduate Spanish, 8 hours of which were on the junior-senior level (12 hours advanced for native speakers), and a 3.000 GPA in Spanish.

Degree Requirements

The MA degree in Spanish requires the completion of 32 semester hours beyond the BA degree, including at least two seminars—SPAN 623, 831, or 832—that require research papers. Of these hours, 20 must be in courses numbered 700 or above.

Each program must include 9 hours of related fields and 23 hours of Spanish, including SPAN 526 and three of the following survey courses—531, 532, 620, 621—if their equivalents were not taken as undergraduate courses.

A candidate for a degree must pass SPAN 526 or an equivalent course with a *B* or better at either the undergraduate or graduate level.

Related fields typically include another foreign language; art; English, American, and foreign literatures; Latin American history; or geography. All related field courses must be approved by the chairperson of the Department of Modern and Classical Languages and Literatures or the graduate coordinator.

Special recommendation is strongly made that all MA candidates in Spanish earn a minimum of 4 hours of transferable credit in a university located in a Spanish-speaking country.

Examinations

Before the MA degree in Spanish is granted, all candidates must pass written and oral comprehensive examinations over reading lists in three areas of specialization of their choice and prove by written examination a reading knowledge of a second foreign language.

Courses for Graduate/Undergraduate Credit

Upper-division courses are given on a rotating basis. SPAN 300 is a prerequisite for all upper-division literature and civilization courses, unless otherwise indicated. All literature courses, including SPAN 223 and 300, may fulfill the general education literature requirement.

SPAN 505. Spanish Phonetics (2). Cross-listed as LING 505. Includes articulatory phonetics, phonemics, sound/symbol correspondences, dialectal and stylistic variations. Required for future Spanish teachers. Prerequisite: any 200-level course or departmental consent.

SPAN 515. Major Topics in Spanish (1-4). Special studies in (a) language, (b) literary reports, (c) commercial Spanish, (d) the language laboratory, (e) music, (f) composition, (i) problems in teaching Spanish, (j) advanced conversation. Repeatable for credit. Prerequisite: departmental consent.

SPAN 525. Spanish Conversation III (2). Increases proficiency in spoken Spanish. Assignments include oral reports and dialogs. Prerequisite: SPAN 325 or departmental consent.

SPAN 526. Advanced Spanish Grammar and Composition (3). Prerequisite: SPAN 220 or departmental consent.

SPAN 531. Survey of Spanish Literature (3). Main currents of Spanish literature from 1700 to the present. Prerequisite: SPAN 300 or departmental consent.

SPAN 532. Survey of Spanish Literature (3). Spanish literature from the beginning to 1700. Prerequisite: SPAN 300 or departmental consent.

SPAN 534. Contemporary Spanish Theater (3). Prerequisite: SPAN 300 or departmental consent.

SPAN 536. Contemporary Spanish Novel (3). Prerequisite: SPAN 300 or departmental consent.

SPAN 540Q. Contemporary Spanish Literature in English Translation (3). Content may vary from semester to semester, including Spanish and/or Latin-American literature. No knowledge of a foreign language is necessary. May be used to satisfy the general education literature requirement and may count toward a Spanish major or minor if readings and papers are done in Spanish and prerequisite of SPAN 300 is met. Repeatable for credit.

SPAN 552. Business Spanish (3). Provides the opportunity to learn and practice commercial correspondence, business vocabulary, translation, and interpretation of business texts. Prerequisite: SPAN 526.

SPAN 557. Literary and Technical Translating in Spanish (3). Extensive translation of literary works and technical and legal documents from Spanish to English and English to Spanish. Prerequisite: SPAN 526 or departmental consent.

SPAN 620. Survey of Latin-American Literature (3). Main currents of Latin-American literature, 1500-1800. Prerequisite: SPAN 300 or departmental consent.

SPAN 621. Survey of Latin-American Literature (3). Main currents of Latin American literature, 1800-present. Prerequisite: SPAN 300 or departmental consent.

SPAN 622. Special Studies in Spanish (1-4). Topic for study chosen with aid of instructor. Repeatable for credit. Prerequisite: instructor's consent.

SPAN 623. Seminar in Spanish (1-5). Seminar in Spanish literature, language, or civilization. Repeatable for credit. Prerequisite: SPAN 300.

SPAN 625. Contemporary Latin-American Novel (3). Prerequisite: SPAN 300 or departmental consent.

SPAN 626. Spanish Civilization (3). Intensive study of Spanish culture, including historical and geographical factors in its development and its contributions to world civilization. Prerequisite or corequisite: SPAN 300 or departmental consent.

SPAN 627. Latin-American Civilization (3). Intensive study of Latin-American culture, including the historical and geographical factors of its development and its contributions to world civilization. Prerequisite or corequisite: SPAN 300 or departmental consent.

SPAN 628. Contemporary Latin-American Theater (3). A study of contemporary theater, 1900-present. Prerequisite: SPAN 300 or departmental consent.

SPAN 631. Latin-American Short Story (3). Study of the main writers in contemporary Latin-American literature. Prerequisite: SPAN 300 or departmental consent.

SPAN 635. Introduction to Romance Linguistics (3). Cross-listed as FREN 635 and LING 635. An introduction primarily to the historical phonology and morphology of the romance languages emphasizing French and Spanish. Prerequisite: departmental consent.

SPAN 640. Mexico: Its People and Culture (3). Study of the cultural development of Mexico, exploring the legacy of ancient cultures and the Spanish encounter in areas such as literature, the arts, music, and film industry. Prerequisite: SPAN 300 or departmental consent.

SPAN 650. South America: Its People and Cultures (3). Study of the cultural development of South America, exploring the legacy of Indian cultures and the Spanish encounter in areas such as literature, the arts, music, and the film industry. Prerequisite: SPAN 300 or departmental consent.

SPAN 750. Workshop in Spanish. (2-4). Repeatable for credit.

Courses for Graduate Students Only

SPAN 801. Spanish Linguistics (3). Historical and structural study of the Spanish language.

SPAN 805. Directed Readings in Spanish (1-4). Readings vary according to the student's preparation. Includes prepara-

tion of reports, literary critiques, and special projects in linguistics.

SPAN 826. Spanish Grammar and Stylistics (3). Intensive study of advanced grammar and stylistic usage.

SPAN 827. Latin American Civilization and Culture (3). Introduction to historical and cultural development in Latin America, exploring the legacy of the Spanish encounter/conquest. Emphasizes Spanish colonization. Prerequisite: graduate standing.

SPAN 831. Seminar in Spanish Literature (3). (a) Middle Ages, (b) Renaissance, (c) Golden Age theater, (d) Cervantes, (e) modern novel, (f) Generation of '98, (i) romanticism, (j) 20th century poetry, (k) criticism, (l) literature, (m) 20th century theatre, and (n) contemporary Spanish novel.

SPAN 832. Seminar in Latin-American Literature (3). (a) colonial period, (b) contemporary novel, (c) short story, (d) poetry, (e) modernism, (f) essay, (i) theater, (k) Latin-American literature.

Philosophy (PHIL)

Graduate Faculty

Professor: Gerald H. Paske

Associate Professors: Robert Feleppa, A.J. Mandt, Ben F. Rogers, David Soles (chairperson), Deborah H. Soles

Assistant Professor: J.W. Mallory

Although there is no graduate degree in philosophy, the following courses are available for graduate credit.

Courses for Graduate/Undergraduate Credit

PHIL 518. Recent British-American Philosophy (3). Examination of philosophical ideas and movements in recent British and American philosophy. Discusses movements such as logical positivism, pragmatism, ordinary language philosophy, and analytic philosophy. Readings are selected from figures such as Russell, Wittgenstein, Pierce, Dewey, and Quine.

PHIL 519. Empiricism (3). A study of the philosophical views that emphasize sensory experience rather than reasoning as a source of knowledge with particular attention to the philosophies of Hobbes, Locke, Berkeley, Hume, and Mill.

PHIL 540. Theory of Knowledge (3). A critical examination of the nature of knowledge and of the philosophical problems concerning skepticism; knowledge of the self; material objects; other minds; the past, present, and future; universals; and necessary truths. Includes selections from both historical and recent writings. Prerequisite: one course in philosophy.

PHIL 546. Rationalism (3). A study of the philosophical views that emphasize reasoning rather than sensory experience as the source of knowledge with particular attention to the philosophies of Descartes, Spinoza, and Leibniz.

PHIL 549. Topics in Ancient Philosophy (3). Explores one decisive issue in philosophy from the time of Thales through

the Stoics. The examination of an issue may confine itself to one period within the total span of ancient philosophy or it may trace the issue throughout the span, indicating its contemporary treatment. Some issues treated are: the nature of what is, the concept of the sacred, the meaning of truth, the relation of invariance and process, the existence of universal standards of thought and conduct, the problem of knowledge, skepticism, the nature of language, and the character of philosophical inquiry.

PHIL 550. Metaphysics (3). An exploration of some basic topics in the theory of reality. Includes such notions as space, time, substance, causality, particulars, universals, appearance, essence, and being. Prerequisite: one course in philosophy.

PHIL 555. Philosophy of the Social Sciences (3). Studies such topics as the relations of social science with natural science and philosophy, methodological problems peculiar to social science, the nature of sound explanation concepts, and constructs and the roles of mathematics and formal theories in social science.

PHIL 557. Contemporary European Philosophy (3). An exploration of a theme, issue, philosopher, or movement in contemporary European philosophy. Includes philosophers Husserl, Heidegger, Jaspers, Gadamer, Habermas, Marcuse, Adorno, Bergson, Sartre, Merleau-Ponty, Bachelard, Lacan, Derrida, Foucault, and Ricoeur. Examines philosophical movements such as phenomenology, idealism, existentialism, structuralism, process philosophy, hermeneutics, and Marxism.

PHIL 585. Studies in a Major Philosopher (3). A concentrated study of the thought of one major philosopher announced by the instructor when the course is scheduled. Repeatable for credit. Prerequisite: instructor's consent.

PHIL 590. Special Studies (3). Topic for study announced by instructor. Repeatable for credit. Prerequisite: instructor's consent.

PHIL 674. Artificial Intelligence and Philosophy (3). Cross-listed as CS 674. Transfer of ideas between artificial intelligence and philosophy: concept and techniques of artificial intelligence and their application in philosophy (search, heuristic, problem solving, knowledge representation, learning, discovering); sources of insight for artificial intelligence in different branches of philosophy. The analogy between minds and computers "cognition is a computation and the mind is a computer," is contrasted with "there are mental features not accessible to computation." Discusses the relevance of Godel's theorem and of other results in the domain of computability in this context. Prerequisites: at least one 300-level course in computer science or philosophy, MATH 243 and 5 hours toward the major in any one of the physical or biological sciences with grades of C or better or departmental consent.

PHIL 699. Directed Reading (2-3). For the student interested in doing independent study and research in a special area of interest. Repeatable for credit. Prerequisite: departmental consent.

Courses for Graduate Students Only

PHIL 805. Business and Morality (3). Critically examines moral issues particularly germane to business. Includes theories of distributive justice, theories of property rights, the role of business as a social institution, employment rights and obligations, environmental issues, and theories of socially responsible investment practices. Readings from classical and contemporary authors.

PHIL 850. Directed Reading (3). For the graduate student desiring independent study and research in an area of special interest. May be repeated for credit. Prerequisite: departmental consent.

Physics (PHYS)

Graduate Faculty

Professors: David R. Alexander, Elizabeth C. Behrman, Hussein Hamdeh (graduate coordinator), James C. Ho, Pawan K. Kahol (chairperson)
Associate Professors: Gerald Loper, Syed M. Taher
Assistant Professor: Jason Ferguson

Master of Science

Through its Master of Science (MS) degree program, the Department of Physics helps students prepare for doctoral work in physics or for jobs in research and industry.

The MS degree program is flexible so students can design their studies to meet their educational or career goals. Students may combine the study of physics with a chemical physics option or with interests in such fields as astronomy, engineering, geology, computer science, biological sciences, and education.

Admission Requirements

Admission to the MS program in physics requires the completion of 24 hours of undergraduate physics, including 3 semester hours of mechanics and 3 semester hours of electricity and magnetism, and meeting the Graduate School admission requirements.

Degree Requirements

The MS degree in physics requires the successful completion of a Plan of Study approved by the student's advisor and the department chairperson. Two options are available: a 36-hour nonthesis program and a 30-hour program which includes a research project written as a thesis.

Students in either option must take at least 12 hours in courses numbered 800 or above. The department recommends that each Plan of Study include PHYS 821, Classical Mechanics; PHYS 871, Statistical Mechanics; and PHYS 811, Quantum Mechanics. Up to 9 hours of course work may be taken outside the department under the thesis option, and up to 12 hours under the nonthesis option.

Other Program Options

Students entering the MS degree program with a chemical physics option must include within the

above requirements 6 hours from CHEM 711, 725, 741, 745, 746 or other approved chemistry courses. Students also should take PHYS 642 unless taken for undergraduate credit.

Other program options are available which provide the possibility of combining the study of physics with interests in other fields such as astronomy, engineering, geology, computer science, biological sciences, and education.

Examinations

During the first semester, students are given a diagnostic entrance examination. An oral defense of the thesis is required.

Courses for Graduate/Undergraduate Credit

***PHYS 501. Special Studies in Physics for Educators (1-3). 3L.** A series of courses covering basic physical concepts which provide physical science background for teachers. Repeatable for a maximum of 5 hours. Prerequisite: in-service or pre-service teacher.

PHYS 516. Advanced Physics Laboratory (2). 4L. Experiments in classical and modern physics to stress scientific methods and experimental techniques. The experiments are open-ended projects requiring individual study. Repeatable up to a maximum of 8 credit hours. Corequisite: PHYS 551.

PHYS 517. Electronics Laboratory (2). 1R; 3L. Experiments in electronics that treat some of the applications of electronics in scientific research. Experiments cover the uses of vacuum tubes, transistors, IC, and digital circuits. Prerequisite: PHYS 314Q.

***PHYS 551. Topics in Modern Physics (3).** An introduction to selected areas of modern physics emphasizing the features of atomic nuclear and solid state physics that require modifications of classical physics for their explanation. Prerequisite: PHYS 214Q or 314Q or departmental consent. Corequisite: MATH 344.

PHYS 555. Modern Optics (3). Geometrical and physical optics, coherence theory, and Fourier optics. Additional topics may include radiation, scattering, optical properties of solids, and optical data processing. Prerequisites: PHYS 214Q or 314Q and MATH 344.

PHYS 600. Individual Readings in Physics (1-3). Repeatable but total credit may not exceed 6 hours for physics majors. Prerequisite: departmental consent.

PHYS 601. Individual Readings in Astrophysics (1-3). Studies several topics in astronomy and astrophysics in depth. Lectures, independent readings, and student projects may be assigned. May be repeated up to 6 hours. Prerequisite: instructor's consent.

PHYS 616. Computational Physics Laboratory (2). 1R; 2L. Provides a working knowledge of computational techniques with applications in both theoretical and experimental physics, including a brief introduction to the FORTRAN language. Prerequisites: PHYS 551 and MATH 555.

***PHYS 621. Elementary Mechanics (3).** Motion of a particle in one and several dimensions, central forces, the harmonic oscillator, and the Lagrangian formulation of mechanics. Prerequisites: PHYS 214Q or 314Q and MATH 344 with grades of C or better.

***PHYS 631. Electricity and Magnetism (3).** Direct and alternating currents; electric and magnetic field theory, including an introduction to Maxwell's electromagnetic wave theory. Prerequisites: PHYS 214Q or 314Q and MATH 344 with grades of C or better.

PHYS 641. Thermophysics (3). The laws of thermodynamics, distribution functions, Boltzmann equation, transport phenomena, fluctuations, and an introduction to statistical mechanics. Prerequisites: PHYS 214Q or 314Q and MATH 344.

PHYS 651. Quantum Mechanics (3). Introduction to quantum mechanics, the Schrodinger equation, elementary perturbation theory, and the hydrogen atom. Prerequisite: PHYS 551.

PHYS 681. Solid State Physics (3). A one-semester introduction to solid state physics, which explores and explains—in terms of the microscopic processes that produce them—the thermal, mechanical, and electronic properties of solids. Discusses practical applications and interdisciplinary material. Prerequisite: PHYS 551.

PHYS 741. Theoretical Physics (3). A study of mathematical techniques applicable to physics and other sciences. Instructor selects topics, such as power series, infinite products, asymptotic expansions, WKB method, contour integration and residue methods, integral transforms, Hilbert spaces, special functions, and integral equations. Prerequisite: MATH 555 or instructor's consent.

*Course may not be counted for credit toward an MS in physics.

Courses for Graduate Students Only

PHYS 800. Individual Readings (1-3). Repeatable for credit up to 3 hours. Prerequisites: 30 hours of physics and departmental consent.

PHYS 801. Selected Topics in Physics (2-3). Repeatable for credit up to 6 hours. Prerequisite: departmental consent.

PHYS 807. Seminar (1). Review of current periodicals; reports on student and faculty research. Repeatable for credit up to 2 hours. Prerequisite: 20 hours of physics.

PHYS 809. Research (1-3). Repeatable for credit up to 6 hours.

PHYS 811. Quantum Mechanics (3). The Schrodinger and Heisenberg formulations of quantum mechanics. Applications include rectangular potentials, central forces, and the harmonic oscillator. Also includes spin, time independent and time dependent perturbation theory. Prerequisites: PHYS 621 and 651 or departmental consent and MATH 555.

PHYS 821. Classical Mechanics (3). The Lagrangian, Hamiltonian, and Hamilton-Jacobi methods of mechanics and an introduction to variational calculus. Applications selected from central forces, rigid bodies, relativity, small oscillations, and continuous media. Prerequisites: PHYS 621 and MATH 555.

PHYS 831. Classical Electricity and Magnetism (3). Maxwell's equations with application to static electricity and magnetism. Also may include electromagnetic fields, vector potentials, Green's functions, relativity, optics, and magneto-hydrodynamics. Prerequisites: PHYS 631 and MATH 555.

PHYS 871. Statistical Mechanics (3). An introduction to the basic concepts and methods of statistical mechanics with applications to simple physical systems. Prerequisites: MATH 555 and PHYS 621.

PHYS 881. Solid State Physics (3). A second course in solid state physics for students who have had an introduction to the subject. Transport, dielectric and optical properties, magnetic properties, superconductivity, and applications to semiconductor devices. Prerequisites: MATH 555, PHYS 651 and 681, or departmental consent.

Political Science (POL S)

Graduate Faculty

Professor: Melvin A. Kahn

Associate Professors: Kenneth Ciboski; David Ericson; John E. Stanga, Jr.; James F. Sheffield, Jr. (chairperson)

Although applications are not being accepted for the graduate program in political science, the following courses are available for graduate credit.

Courses for Graduate/Undergraduate Credit

POL S 505. The Politics of Health (3). Shows how governments in the United States make decisions in the health field, describes the political forces shaping governmental policy in health, and analyzes the arguments for and against an increased governmental role in health.

>POL S 523Q. Government and Politics of Latin America (3). *General education further study course.* An examination of the political institutions and processes that currently exist in the Latin American republics. Emphasizes the social, economic and psychocultural factors affecting these institutions and processes.

>POL S 524. Politics of Modern China (3). *General education further study course.* Studies China's political system since 1949 in terms of non-Western goals and ideas of social organization. Uses themes of political integration and political development to minimize distortion or cultural bias. Encompasses the roots of the political system, the system as it is now; and the goals China is striving to realize. Some assessment about the future development of communism in China. Includes Chinese communism and the ideological heritage; political culture; political leadership; leadership succession; political participation; the Chinese Communist Party; politi-

cal communications and socialization; legal developments; policy choices; and major events, such as the Hundred Flowers Campaign, Great Leap Forward, and the Proletarian Cultural Revolution.

>POL S 533. Policy Development in Foreign Relations (3). *General education further study course.* The process of U.S. foreign policy making in the American structure of government, emphasizing institutional conflict.

>POL S 534. Problems in Foreign Policy (3). *General education further study course.* Examines domestic and international problems associated with U.S. foreign policy.

>POL S 547. Contemporary Political Theory (3). *General education further study course.* Introduces the radically new ideas that emerged in the last century as a result of Darwin's theory of evolution, the doctrine of historicism, and the growth of modern science and explores their impact upon political thought. Although the multiplicity of philosophies makes generalization difficult, most of them draw strength from common sources. Studies philosophers such as Hans Kelsen, William Barrett, Frederick Nietzsche, and John Dewey. Covers the importance of these new philosophies upon political structures and issues.

>POL S 551. Public Law (3). *General education further study course.* An analysis of the role of appellate courts—especially of the U.S. Supreme Court—in the American political system. Emphasizes judicial review of state and federal legislation, the separation of powers, federalism, the taxing power, and the commerce clause.

>POL S 552Q. Civil Liberties (3). *General education further study course.* An analysis of the role of the appellate courts—especially of the U.S. Supreme Court—in the American political system. Emphasizes the guarantees of the Bill of Rights and the 14th Amendment.

POL S 560. The Planning Process (3). Cross-listed as P ADM 560. For students desiring to work in an urban planning agency or who will be involved in planning issues as an administrator at the city, county, state, or federal level. Also for students seeking an understanding of the complex process of urban-related life. Examines the role of planning in solving human and environmental problems. Emphasizes the relationship between specialists, citizens, and elective officials as participants in the planning process.

POL S 564. Comparative Public Administration (3). Cross-listed as PADM 564. Studies the administrative system of selected developed and developing countries emphasizing the various methods and approaches of comparative analysis and the relationships between administrative institutions and their environmental settings.

POL S 580. Administration and the Policy Making Process (3). The problems of government encountered in the administration of public policy. Analytical approach rather than descriptive. Repeatable for credit.

POL S 587. Administrative Theory and Behavior (3).

Cross-listed as PADM 587. A study of organization theory and the various approaches to the study of organization.

POL S 600. Senior Seminar (3). Required of all political science majors. Includes segments on each of the four major fields of the discipline: American politics, comparative politics, international relations, and political theory, so students can integrate their prior learning experiences within the discipline. Prerequisites: senior status; 18 hours of POLS courses

POL S 700. Advanced Directed Readings (3). Repeatable for credit. Prerequisite: departmental consent.

POL S 701. Method and Scope of Political Science (3). Emphasizes philosophy of science and methodology (as distinguished from method and technique) and exposes students to recent works of methodological import in the various subfields within the discipline. Prerequisite: departmental consent.

POL S 703. Professional Seminar in Political Science (3). Introduces entering graduate students to the various subfields of the discipline. Should be taken the first or second semester of graduate study.

POL S 710. Public Sector Organizational Theory and Behavior (3). Cross-listed as P ADM 710. Review of the scope of the field of public administration including a survey of key concepts and schools of thought underlying the field and identification of issues shaping the future development of the field.

POL S 725. Public Management of Human Resources (3). Cross-listed as PADM 725. Surveys the major areas of management of human resources in the public sector. Includes hiring, training, evaluation, and pay promotion policies. Emphasizes the laws governing public personnel management and the unique merit, equal employment opportunity, productivity, unionization, and collective bargaining problems found in the public sector.

POL S 750. Workshop. (2-4). Prerequisite: instructor's consent.

Courses for Graduate Students Only

POL S 810. Seminar in Comparative Government (3). The comparative study of selected aspects of the politics and institutions of foreign governments. Prerequisite: departmental consent.

POL S 835. Seminar in International Relations (3). Analysis of special problems in, and approaches to, the study of international relations. Prerequisite: departmental consent.

POL S 841. Seminar in Urban Politics (3). An intensive analysis of urban politics emphasizing individual research projects. Prerequisite: departmental consent.

POL S 842. Administration in Local Government (3). Cross-listed as P ADM 842. Examination of administrative processes and problems in local government, including the

role of the professional chief executive. Examines problems from the following: labor-management relations, program evaluation, county government reform, governmental decentralization, citizen participation, grant-in-aid programs, inter-local cooperation, affirmative action requirements, and service contracting. Prerequisite: POLS 317.

POL S 845. Seminar in Political Theory (3). Detailed study of the relevant works of a major political philosopher and his/her contribution to contemporary thought. Prerequisite: departmental consent.

POL S 851. Seminar in Public Law and Judicial Behavior (3). Analysis of special problems in and approaches to the study of legal systems. Emphasizes developing awareness of research in the field. Prerequisite: departmental consent.

POL S 856. Seminar in American Politics and Institutions (3). Analytical study of selected topics in American political behavior emphasizing individual research. Repeatable for credit when content differs substantially. Prerequisite: departmental consent.

POL S 865. State and Local Government Finance (3). Cross-listed as ECON 865, HIST 865, and PADM 865. An analysis of state and local government expenditure and revenue systems with an introduction to state and local financial administration. Prerequisite: PADM 765 or instructor's consent.

POL S 867. State and Local Government Budgeting (3). Cross-listed as PADM 867. Analysis of the development and utilization of the budgetary process in government administration emphasizing the budget in relation to its role in policy formulation and management. Prerequisite: PADM 865 or instructor's consent.

POL S 868. Seminar in Public Finance Systems (3). Cross-listed as PADM 868. An analytical study of selected topics in the politics and administration of revenue, expenditure, and borrowing policies of governmental organizations. Prerequisite: departmental consent.

POL S 873. Seminar Paper Option (3). Requires students to extensively revise a seminar paper they wrote within their area of emphasis. Paper is written under the direction of a faculty member and orally defended before a committee of three or more faculty, including a chairperson. Prerequisite: departmental approval.

POL S 874. Internship. (3-6). *S/U* grade only. An intensive applied learning experience supervised by a University department or committee. To receive credit, a student must secure approval of a written report from his/her own department. Prerequisite: departmental consent.

POL S 875. Research Design (3). *S/U* grade only. Requires the development of a research design for the thesis. The design must be submitted to a departmental committee for evaluation and approval. Prerequisite: departmental consent.

POL S 876. Thesis (1-3).

Psychology (PSY)

Graduate Faculty

Professors: Charles A. Burdsal, Jr. (chairperson); Peter A. Cohen (dean, College of Health Professions); Darwin Dorr; Gary Greenberg (graduate coordinator); Charles Halcomb; Gregory J. Meissen; Elsie R. Shore; James J. Snyder

Associate Professors: Alex Chaparro, Louis J. Medvene, Donald W. Nance, Marilyn L. Turner, Robert D. Zettle

Assistant Professors: Paul D. Ackerman, Darcee Datteri, Rhonda K. Lewis, Daniel S. McConnell

Degrees Offered

The psychology department offers courses of study leading to the Doctor of Philosophy degree. Students may complete requirements for study in either human factors psychology or community/clinical psychology.

Students in the doctoral program are awarded the master's degree in general experimental psychology upon completion of their second year project.

Admission Requirements

For all students: Appropriate applications for admission should be filed with the dean of the Graduate School and the psychology department by February 1 (community/clinical) or March 1 (human factors) for enrollment the following fall. In addition to the usual application information, the following are required: (1) four letters of reference from people acquainted with the applicant's academic background and potential; (2) a brief autobiographical statement describing particular interests, experiences, and goals related to academic and professional work in psychology; and (3) scores (verbal and quantitative) on the Graduate Record Exam (GRE).

Applicants are evaluated with respect to (1) undergraduate grade point average; (2) amount, type, and scope of undergraduate preparation; (3) reference letters; and (4) GRE scores. Applicants are informed of admission or rejection by approximately April 1.

Applications received after February 1 and March 1 are acted on periodically until fall enrollment, with acceptances depending upon the department's graduate teaching capacity.

Prerequisites

Regardless of the program to which the student is applying, for full graduate standing the student must have undergraduate courses in general psychology, psychological statistics, experimental psychology, and systems/theories or history of psychology. Additional program requirements are:

Human Factors: Applicants for this program are expected to have interdisciplinary strengths in the sciences, mathematics, computer technology, and related fields.

Community/Clinical: Applicants for this program are expected to have interdisciplinary strengths in the social sciences, health, and related fields.

Important: For both the community/clinical and human factors programs, interested students who are not psychology majors or who lack specific prerequisites may be provisionally accepted with an opportunity to make up deficiencies.

Degree Requirements

Students should be aware of the Graduate School's nine year time limit for completing doctoral degree programs. The psychology department expects all degree-bound students to make satisfactory progress toward the completion of their degree programs.

Students in both doctoral programs must complete the following foundations courses: PSY812, Biological and Philosophical Foundations of Psychology; PSY813, Cognitive/Learning Foundations of Behavior; PSY 814, Personality and Individual Differences; PSY 815, Social/Developmental Foundations of Behavior; PSY 810 and 811, Advanced Research Methods I and II.

Students in both programs must complete a pre-doctoral research program (PSY 911) for a minimum of 10 hours before admission to doctoral candidacy. Students take a qualifying examination upon completion of all required courses. On passing this examination, students can be admitted to doctoral candidacy and begin work on a dissertation. All doctoral degree students are required to complete a dissertation with a minimum of 12 hours of enrollment in PSY 910. The dissertation ordinarily is a major research project which must be preceded by approval of a formal written proposal by the student's dissertation committee. In addition to regular course examinations, all students must pass an oral examination based on their dissertation.

Additional program requirements:

Human Factors: Students must complete the following: PSY820, Seminar in Human Factors Psychology, PSY 946, Seminar in Motor and Sensory Processes; PSY947, Seminar in Perception; PSY921, Psychological Principles of Human Factors; and PSY 922, Seminar in Software Psychology. To complete the PhD program, a minimum of 90 credit hours (of required courses and electives) is required. Of the electives, 12 credit hours must be courses outside of the department. The program has a calculus tool requirement that must be satisfied before a student is admitted to candidacy. Students may satisfy this requirement by (a) satisfactorily completing a college-level calculus course; (b) demonstrating proficiency on an exam; or (c) providing other evidence of such skills. Students must complete a research internship of 3 hours per semester over a period of two semesters for a total of 6 hours and must enroll in Graduate Research each semester for a total of 16-18 credit hours.

Community/Clinical: Within the 90-hour community/clinical program there are two tracks, a community track and a clinical track. All community/clinical students take the program wide required courses listed above as well as PSY830, Seminar in Community-Clinical Psychology. Community track students are required to take three community courses: PSY 931,

Applied Research Methods in Community Settings; PSY938, Seminar in Prevention; and PSY937, Seminar in Community and Organizational Intervention. Community track students are also required to take two of three clinical courses: PSY 935, Seminar in Cognitive-Behavioral Assessment; PSY 930, Advanced Psychopathology; and PSY 936, Seminar in Cognitive-Behavioral Therapy. Clinical track students are required to take all three of the clinical courses and two of the three community courses. Community track students take a minimum of 12 hours of practicum (PSY932) with at least 3 hours of clinical practicum (PSY 933). Clinical track students take a minimum of 12 hours of practicum (PSY933) with at least 3 hours of community practicum (PSY 932). A one calendar year internship is required for all clinical track students. The remainder of the required 90 graduate hours are electives.

Courses for Graduate/Undergraduate Credit

PSY 502Q. Comparative Psychology (3). Develops a unified theoretical perspective about the origins of behavior of all animals. Focuses on the evolution and development of behavior. Field trips supplement lectures. Prerequisite: one course from Group 1.

PSY 508. Psychology Tutorial (3). Selected topics in psychology. Repeatable for a maximum of 6 hours' credit. Instructor's consent may be required. Check *Schedule of Courses*. Prerequisite: PSY111Q.

PSY 512. Primatology (3). A survey of the primates (including humans) and their behavior. Includes principles of evolution and taxonomy, the evolution of the primates to *Homo sapiens*, the emergence of language, cognitive functioning, and culture. Prerequisite: PSY111Q.

PSY 514. Psychology of Health and Illness (3). A survey of the relationships between psychology/behavior and physical health and illness. Includes stress and coping, health habits, symptom perception, health care provider-client relationships, hospitalization, and prevention. May include a self-study of life style and behavior in relation to health and illness. Prerequisite: PSY111Q.

>PSY 516. Drugs and Human Behavior (3). *General education further study course.* A survey of the actions and effects of use of legal and illegal psychoactive drugs and of the use of prescription drugs in the treatment of psychological disorders. Details social-cultural, personal, and situational determinants and consequences of drug use and abuse. Prerequisite: PSY111Q.

>PSY 522. Biological Psychology (3). *General education further study course.* A review of the biological foundations of behavior. Includes the evolutionary basis of behavior, behavior genetics, a critical analysis of brain-behavior relationships, the role of hormones in behavior, and neurochemical correlates of behavior. Prerequisite: PSY111Q.

PSY 524. Advanced Psychology of Personality (3). More intensive treatment of the topics of psychology of personality

emphasizing contemporary theories, research, and application of the psychological study of personality. Prerequisite: PSY 324Q.

PSY 526. Psychological Testing and Measurement (3). A critical analysis of the psychological foundations of tests and the interpretation of test findings. Surveys several tests representing the areas of intelligence, personality, normal and abnormal psychology, interests, special abilities, and aptitudes to illustrate general principles of testing. Prerequisite: PSY 401.

>PSY 532. Psycholinguistics (3). *General education further study course.* Cross-listed as LING 545. Survey of psychological, linguistic, and informational analyses of language. Includes the performance-competence distinction, child development of speech, animal communication systems, and the relation of language to thought. Prerequisite: PSY111Q.

>PSY 534. Psychology of Women (3). *General education issues and perspectives course.* Cross-listed as WOM 5 534. Psychological assumptions, research, and theories of the roles, behavior, and potential of women in contemporary society. Prerequisite: PSY111Q.

PSY 536. Behavior Modification (3). A study of the basic assumptions, principles, and issues of behavioral approach to helping persons with psychological problems. Includes demonstration and individualized practice in general helping skills as well as individual projects in applying these skills. Prerequisites: PSY111Q and instructor's consent.

PSY 544. Abnormal Psychology (3). An introductory survey of abnormalities of behavior. Examines definitions, causes, types, and classifications of abnormal behavior. Covers various theories of abnormality, research evidence, and various methods of diagnosis and treatment. Presents hypotheses regarding prevention of abnormality. Prerequisite: PSY324Q.

PSY 546. Practicum in Applied Behavior Analysis and Social Learning (3). 1R; 4L. Placement in local human service agencies for about eight hours a week for 14 weeks. Under supervision, students assist in the development and delivery of services at the agency site. Repeatable once. Prerequisites: PSY 536 and instructor's consent.

PSY 556. Introduction to Clinical Psychology (3). A survey of current ethical, conceptual, and research issues involved in the assessment and treatment of psychopathology. Reviews contemporary psychotherapies emphasizing the relative efficacy of each and the therapeutic mechanisms through which they initiate behavioral change. Prerequisite: PSY 324Q.

PSY 566. Perspectives on Self-Help Groups (3). Cross-listed as Nurs. 566 and SC WK 566. Provides an interactive format that constitutes a community resource for health and human service professionals and promotes an interdisciplinary understanding of the nature and diversity of self-help groups for persons with virtually any health problem or personal issue. Reviews contemporary theory and research, explaining the attractiveness and effectiveness of self-help

groups. Panels of support group members share their experience with self-help groups on such topics as addiction, cancer and other illnesses, eating disorders, bereavement, mental illness, and parenting.

PSY 568. Computer Applications to the Behavioral Sciences (3). 2R; 2L. Introduces computer applications to the behavioral sciences including 1) techniques of analyzing experimental data, 2) statistical applications, 3) interactive computing, 4) "canned" statistical programs, 5) word processing, and 6) other current computer applications. Prerequisites: 9 hours in the social sciences.

PSY 601. Systems and Theories in Psychology (3). Includes behaviorism, Gestalt psychology, and structuralism. Attempts to develop the logical relations of these theories to each other as well as to common historical themes and current issues. Prerequisite: 15 hours of psychology including PSY 411 or instructor's consent.

PSY 608. Special Investigation (1-3). Upon consultation with instructor, advanced students with adequate preparation may undertake original research or directed readings in psychological problems. Repeatable for a maximum of 6 credit hours. Requires consultation with and approval by appropriate advisor prior to registration. Prerequisites: 9 hours in psychology and instructor's consent.

PSY 622. History of Psychology (3). Traces the development of philosophical and empirical concepts of psychology from the ancient Greeks through the 19th century. Examines the origins and various views of the body-mind relationship. Emphasizes the influences of naturalistic assumptions and research methods on 20th century psychology. Prerequisite: 9 hours of psychology or instructor's consent.

PSY 720. Aerospace Psychology (3). Exploration of the many roles of scientific psychology in aviation and aerospace science. Surveys the research and literature in areas such as psychophysiological aspects of flight, environmental effects on human performance in aviation, aircrew skill requirements and training, pilot workload, cockpit control and display systems, and aviation safety. Prerequisite: 15 hours of psychology or instructor's consent.

PSY 750. Psychology Workshop (1-3). Specialized instruction, using various formats in selected topics and areas of psychology. Graded *S/U*.

Courses for Graduate Students Only

PSY 810. Advanced Research Methods I. (4). 3R; 3L. Part one of a two-course sequence aimed at advanced treatment of statistical and research design issues. Statistical methods included are analysis of variance, analysis of covariance, multiple comparisons, and multiple regression. Design issues include research planning, validity, quasi vs. experimental designs, prediction vs. explanation, and modeling. The associated lab provides basic computer skills for access to the mainframe and some basic training in SPSS-X, SAS, and BIO-MED statistical routines. Prerequisite: instructor's consent.

PSY 811. Advanced Research Methods II. (4). 3R; 3L. Continuation of PSY 810. Statistical techniques emphasized are a continuation of multiple regression, structural analyses including Path Analysis and LISREL, factor analysis, canonical correlation, and discriminant analysis. Includes advanced design issues. Students carry out research projects as part of the course requirements. The associated lab provides additional computer skills for access to the mainframe and some basic training in SPSS-X, SAS, and BIOMED statistical routines. Prerequisites: PSY810 and instructor's consent.

PSY 812. Biological and Philosophical Foundations of Psychology (3). Develops the idea that psychology is a biosocial science. Accordingly, course examines the philosophical foundations of science itself before exploring the biological foundations and contextual nature of psychological science. Readings cover biological factors as they pertain to psychology: evolution, genetics, maturation, functional neuroanatomy, physiology. Includes critical reviews of genetic determinism, neural localization, and hemispheric specialization. Prerequisite: instructor's consent.

PSY 813. Cognitive/Learning Foundations of Behavior (3). Focuses on how human beings learn, maintain, and modify behavior and how cognitive knowledge is acquired, maintained, represented, and used. Serves as an integrated resource of the main issues and theoretical questions investigated in the psychology of learning and cognition. Provides a basic understanding of classical and instrumental conditioning, and the cognitive processes of memory, language, speech, thought, decision making, and problem solving. Prerequisite: instructor's consent.

PSY 814. Personality and Individual Differences (3). Provides an advanced understanding of the theories and measurement of personality and individual differences. Also discusses the utilization of this information to an applied psychological setting. Prerequisite: instructor's consent.

PSY 815. Social and Developmental Foundations of Behavior (3). Examines basic assumptions, theories, and methods in social and developmental psychology. Describes and analyzes research concerning the functional significance of social relationships for development and the embeddedness of behavior in social, ecological, and cultural contexts, focusing on a number of substantive issues such as person perception and social cognition, affiliation and attachment, socialization and interpersonal interaction, social support and social roles, and contexts over the life span. Considers applications of theories and research in social-development psychology to the solution of individual and social problems. Prerequisite: instructor's consent.

PSY 820. Seminar in Human Factors (3). Focuses on a sample of contemporary human factors problems through review of current literature and theory. Content changes as new problems attain prominence internationally, but a typical sample might be human factors in the aging population; human factors in airport security and baggage marking; and human factors in third-world industrialization. Prerequisites: completion of 9 hours of Foundations of Psychology doctoral

courses; for doctoral students from other disciplines, instructor's consent after an interview.

PSY 830. Seminar in Community-Clinical Psychology (3). Introduces basic historical, conceptual, research, methodological, and ethical issues in community-clinical psychology. Examines the responsibilities and roles of psychologists in the promotion of human functioning. Reviews models and determinants of human behavior from individual, developmental, and ecological/contextual perspectives. Details the reciprocal relationship between research and practical applications of psychological knowledge and the application of that knowledge to human psychosocial problems. Prerequisite: instructor's consent.

PSY 840. Seminar in Environmental Psychology (3). Explores historical, theoretical, and empirical bases of environmental psychology. Presents contemporary models of environmental psychology including the ecological, social, community, and human factors perspectives along with a historical review of the field. Could include behavior-environment congruence, person-environment fit, social impact assessment, social policy, and the prevention of psychosocial problems through environmental intervention. Prerequisite: PSY 815.

PSY 841. Seminar in Motivation and Emotion (3). Intensive study of theory and research in motivational and emotional processes. Prerequisite: instructor's consent.

PSY 842. Seminar in Psychology of Learning (3). Intensive study of theory and research in learning processes. Includes the study of principles of individual behavior and some of the variables of which it is a function as illustrated by respondent and operant conditioning along with some areas of application. Prerequisites: PSY302 and instructor's consent.

PSY 843. Seminar in Psychotherapy (3). Provides an in-depth description and critical analysis of various theories and methods of psychotherapy, an examination of the efficacy of these therapeutic approaches, and a survey of common issues in psychotherapy, such as process and outcome, and client and therapist variables in the therapeutic process. Prerequisites: PSY111Q and instructor's consent.

PSY 910. Doctoral Dissertation (1-3). Graded *S/U* only. Repeatable for credit. Prerequisite: admission to candidacy and instructor's consent.

PSY 911. Graduate Research (1-3). Individual research. Graded *S/U*. Prerequisites: advisor's consent and graduate standing.

PSY 920. Internship in Human Factors Psychology (1-3). Repeatable up to 6 hours. A planned placement experience in an off-campus setting, giving the doctoral human factors psychology student an opportunity to apply the principles of human factors psychology. Prerequisite: advisor's consent.

PSY 921. Psychological Principles of Human Factors (3). Focuses on the interaction of people with machines and

technology in a variety of environments. Provides depth to the topics surveyed in PSY 386 and serves as a means of integrating cognitive, biological, and perceptual psychology in applied settings. Prerequisites: completion of undergraduate course in cognitive psychology or PSY813; and instructor's consent after interview for doctoral students from other disciplines.

PSY 922. Seminar in Software Psychology (3). Intensive study of principles and methods of engineering psychology (human factors) applies to the design and evaluation of computer software. Includes research methods, programming as human performance, programming style, software quality evaluation, organizing the programming team, interactive interface issues, and the design of interactive computer systems. Prerequisite: instructor's consent.

PSY 930. Advanced Psychopathology (3). An overview of major categories of psychopathology consistent with the most recent edition of the *Diagnostic and Statistical Manual of Mental Disorders*. Reviews descriptive features of each diagnostic category and information on the clinical course and etiology. Examines differing definitions of psychopathology and paradigmatic approaches to the study of psychopathology. Prerequisite: instructor's consent.

PSY 931. Applied Research Methods in Community Settings (3). An examination of research methods which are used in community settings to develop and evaluate programs. Regarding program development, there is discussion of different data collection strategies used to assess community needs. Explores a variety of topics related to program evaluation including research design issues, developing criteria of merit, and the politicization of program evaluation. Prerequisite: instructor's consent.

PSY 932. Internship in Community-Clinical Psychology (1-3). Graded *S/U* only. A planned placement experience in an off-campus setting, giving the doctoral community-clinical psychology student an opportunity to further develop and apply skills in community-clinical psychology. Repeatable for a maximum of 9 credit hours. Prerequisite: advisor's consent.

PSY 933. Practicum in Clinical Psychology (1-3). Gives the student further experience in developing clinical skills. Students are supervised in their clinical work with individual clients seen through the department clinic, and/or other appropriate sites. Graded *S/U* only. Prerequisite: instructor's consent.

PSY 934. Practicum in Community Psychology (1-3). Provides supervised practice working in community-based organizations on such tasks as needs assessment, program development, and program evaluation. Organizational settings may be in the areas of mental health, health, and education. Services may be prevention-oriented. Repeatable for credit. Graded *S/U* only. Prerequisite: instructor's consent.

PSY 935. Seminar in Cognitive-Behavioral Assessment. (4). Surveys issues of reliability and validity; provides description, critical analysis, and practice in clinical use of such psychological assessment methods as interviewing,

observation, self-report, and standardized intelligence and personality tests. Focuses upon comprehensive clinical assessment, including integration and reporting of assessment data for treatment planning. Prerequisite: instructor's consent.

PSY 936. Seminar in Cognitive-Behavior Therapy. (4). 3R; 3L. Reviews the theoretical and empirical support for specific behavior therapeutic practices. Approaches may include systematic desensitization, flooding, contingency management techniques, and aversive therapies. Also discusses the interface between behavioral assessment and clinical practice. Prerequisite: instructor's consent.

PSY 937. Seminar in Community and Organizational Intervention. (4). 3R; 3L. Focuses on the development and/or change of community-based programs and organizations and the implementation and funding of community-based programs. Explores theoretical and conceptual basis of these interventions, drawing on material from community psychology, clinical psychology, public health, health psychology, and applied social psychology. Helps prepare students to become involved as professionals in community-based health or mental health interventions in a variety of roles: as program developers, proposal writers, program implementors, and program managers. Prerequisite: instructor's consent.

PSY 938. Seminar in Prevention (3). Reviews the historical, theoretical, and empirical bases of prevention psychology. Presents contemporary models of prevention psychology including the ecological, social, and community mental health perspectives. Could include primary prevention, empowerment, community-based prevention, self-help, social policy, and the prevention of psychosocial problems through environmental intervention. Prerequisite: instructor's consent.

PSY 940. Development of Abnormal Behavior (3). Considers the descriptive characteristics of abnormal behavior; a developmental perspective. Considers the ecological, social-environmental, personal, and genetic-biological contexts and causes of such behavior. Discusses implications for preventative and clinical interventions. Prerequisite: instructor's consent.

PSY 941. Measurement of Human Performance (3). Develops the logic of fundamental measurement and applies it to human performance from detection to decision. Covers Signal Detection Theory (SDT) and compares it with threshold theory. Demonstrates procedures for assessing both detection and discrimination under both SDT and threshold theory. Develops information measurement and utility theory and applies it to the transmission and coding of information and to decision making respectively. Examines measures of work reliability and well-being. Prerequisite: instructor's consent.

PSY 942. Seminar in Behavioral Development (3). A critical analysis of the concept of development and of theories of behavioral development. Begins with a review of the concept of integrative levels and proceeds to a discussion of modern evolutionary thought. Examines the concept of development from psychological, biological, and anthropological perspectives. Prerequisite: instructor's consent.

PSY 943. Seminar in Comparative Psychology (3). Intensive study of general principles of behavior origins and development. Oriented around the evolution and development of behavior. Includes a review of the concept of integrative levels in psychology. Prerequisites: PSY 502Q and instructor's consent.

PSY 944. Seminar in Consultation (3). Examines theories and techniques of psychological consultation as applied to individuals, organizations, and systems. Prerequisite: instructor's consent.

PSY 945. Seminar in Current Developments (3). Intensive study of current issues, techniques, research, and application. Repeatable for different topics for a maximum of 6 hours. Prerequisite: instructor's consent.

PSY 946. Seminar in Motor and Sensory Processes (3). Focuses on the interface between human sensory and motor systems. Covers the sensory, motor, cognitive, and affective processes as related to human factors psychology. After a review of the anatomy and physiology of sensory-motor systems, emphasizes contemporary research and literature regarding the interface of sensory-motor processes. Prerequisite: instructor's consent.

PSY 947. Seminar in Perception (3). Intensive study in theory and research in perceptual processes. Prerequisites: PSY 332, or equivalent, and instructor's consent.

Public Administration

See Urban and Public Affairs, Hugo Wall School of.

Religion (REL)

Graduate Faculty

Associate Professor: Stuart Lasine

Although there is no graduate program in religion, the following courses may be taken for graduate credit.

Courses for Graduate/Undergraduate Credit

REL 750. Workshop in Religion (2-4).

REL 790. Independent Study (1-3). For the student who is capable of doing graduate work in a specialized area of the study of religion not formally offered by the department. Repeatable for credit. Prerequisite: departmental consent.

Russian

See Modern and Classical Languages and Literatures.

Social Work (SC WK)

Graduate Faculty

Assistant Professors: Elwin Barrett, Brien Bolin, Janice Garner, Linnea Flynn GlenMaye, Timothy Lause, Cathleen A. Lewandowski (director and graduate coordinator)

Master of Social Work

The Master of Social Work (MSW) degree program has an emphasis in advanced generalist practice and is designed for people who are interested in entering

the social work profession at an advanced professional level.

MSW Program Mission

The mission of the MSW program at Wichita State University is to prepare its graduates to be autonomous advanced generalist social work practitioners within complex, diverse, and ever-changing metropolitan environments. Emphasis is placed on developing knowledge and skills for ethical, culturally competent and socially just and empowering interventions on all practice levels.

Accreditation Status

WSU's MSW program is in candidacy for accreditation through the Council on Social Work Education. Interested individuals are encouraged to contact the School of Social Work, (316) 978-7250, for current information on accreditation status.

Licensure

In 1999, the School of Social Work submitted their curriculum and accreditation materials to the Behavioral Sciences Regulatory Board (BSRB) of Kansas for review. Based on this review, graduates of the MSW program are eligible to sit for Kansas' licensure exam. Interested individuals are encouraged to contact the School of Social Work or BSRB for further information on social work licensure.

Admission Requirements

Admission to the MSW program requires that the applicant:

1. Have a baccalaureate degree from an accredited four-year institution(s) acceptable to the Graduate School.
2. Have evidence of a strong liberal arts background from an accredited college or university prior to enrollment. Applicants should be knowledgeable about diverse cultures; social problems; social conditions; and the social, psychological, and biological determinants of human behavior. Previous course work should include a solid background in the liberal arts, as evidenced on the transcript by courses in the humanities (2), behavioral and social sciences (3), oral communication (1), written communication (2), human biology (1), analytical skills (1), and human diversity (1). Examples of courses in each area are provided in the admissions materials.
3. Have a cumulative undergraduate grade point average of 3.000 or better.
4. Have completed applications (to both the MSW program and the Graduate School) postmarked no later than February 1 for the following fall semester.

Non-academic Factors for Admission

Non-academic considerations include experiences in providing social services, references, and personal narratives. Measures of volunteer as well as paid experience in social services contribute to candidate rankings. References are primarily asked to provide an indication of the applicant's suitability for entrance into the profession. Indicators of readiness for graduate studies and of suitability for the profession are

drawn from descriptions of life experience, motivation, career goals, and values as described in the applicant's personal statement and letters of reference.

Admission Procedure

To be reviewed for admission, applicants should do the following:

1. Request an application packet from the School of Social Work.

2. Submit to the Graduate School the designated Application for Admission and supporting transcripts.

3. Submit to the School of Social Work by February 1 a completed MSW application, including a personal statement, three letters of reference, and documentation of academic work and professional training.

As described in the application materials, applicants should submit their reference letters in sealed envelopes along with their completed MSW application to the School of Social Work. Applicants should be aware that their records can only be reviewed when all materials have been submitted and they have met eligibility requirements. Applicants will be notified of their admission status by the Graduate School.

Advanced Standing

The School of Social Work offers an advanced standing program. Interested applicants must have an undergraduate degree in social work from a social work program that is accredited by the Council on Social Work Education. Advanced standing students will complete 32 credit hours—29 credits comprising the advanced generalist concentration curriculum and 3 credit hours for a bridge course to be taken during the summer before beginning the core curriculum. Students enrolling in the bridge course must be admitted to the Graduate School prior to course enrollment. Undergraduate students completing their bachelor's degree during the summer must be enrolled in the course under the Graduate School Senior Rule option.

Full- and Part-Time Enrollment Options

Applicants choose to apply for either the full-time or the part-time track. Applicants admitted into the full-time program enroll in four full-time semesters, consisting of 12-16 hours a semester, not counting summer semester. Applicants admitted for Advanced Standing enroll in two full-time semesters plus one 3-credit-hour summer bridge course. Applicants admitted into the part-time program must enroll in 6-9 credit hours a semester, with the exception of summer semester, and complete the degree within four years or for Advanced Standing students, two years. Courses are sequential and are generally offered once a year. Applicants should contact the School of Social Work for further information on the part-time curriculum plan.

Field Practicum Requirements

In addition to classroom work, students enroll in field practicum. The foundation year practicum con-

sists of 480 clock hours over the course of two semesters. The advanced generalist concentration practicum consists of 700 clock hours over the course of two semesters, for a total of 1,180 clock hours. The MSW program's Field Practicum Director makes arrangements for field practicum placements.

Transfer of Academic Credit

Transfer of credits from another MSW program will be considered on a case-by-case basis. As a general rule, only courses taken in a Council on Social Work Education accredited Master of Social Work program will be eligible for transfer of credits. The applicants must have received a *B* or better in the course(s) being considered for transfer. In most instances, transfer of credits will only be granted for first-year foundation courses or electives, if applicable to Wichita State University's advanced generalist social work program. Students may transfer up to 6 elective hours from other graduate programs in related fields, if applicable to the advanced generalist specialization and/or content is comparable to WSU's elective courses outside the Social Work Program. Transfer of elective credit hours must be approved by the assigned advisor and the director of the MSW program at the time of admission to the MSW program.

Life Experience

In accordance with Council on Social Work Education accreditation requirements, academic credit will not be given for life experience or work experience in course work or field practicum.

Nondegree Students

Students wishing to enroll in graduate social work courses for continuing education may do so on a space available basis. Nondegree students who then decide to pursue an MSW degree at Wichita State University must go through the normal admission procedures. A maximum of 6 credit hours taken prior to admission to the MSW program can be applied toward the MSW program. Nondegree seeking students who do not have a BSW degree from a CSWE accredited program may not enroll in social work practice classes. Only students admitted into the MSW program may enroll in field practicum courses.

Degree Requirements

The curriculum for the regular MSW program consists of 56 credit hours—42 credits of classroom work and 14 credits of supervised practicum. The curriculum for the advanced standing program consists of 32 credit hours—24 credits of classroom work and 8 credits of supervised practicum. Students must maintain a 3.000 grade point average; a grade of *C* is the minimum passing grade.

Courses for Graduate/Undergraduate Credit

SC WK 500. Social Welfare Development and Policy Analysis (3). Provides development of analytical frame-

works for understanding the processes of policy formation, factors shaping policy decisions, the content of program designs, and the performances of social welfare policy and service programs. Examines voluntary and proprietary systems in the development of knowledge and skills for the engagement of complex community resources, the promotion of service innovations, and the shaping of decisions in the arenas of public policy. Emphasizes diverse populations in metropolitan environments. Prerequisites: POL S 121Q or HIST 132Q, SC WK 300Q.

SC WK 502. Social Work Interviewing: Strategies and Techniques (4).

Introduces the study and practice of interpersonal professional interaction skills within the framework of a social work helping process. Focuses on developing skills in professional observation, communication, interviewing, recording, and reporting. Course is didactic as well as interactive and includes an integrated laboratory component focusing experiential learning. Required for social work majors.

SC WK 512. Social Work Research (3). Provides an introduction to methods of social work research. Examines both qualitative and quantitative methodologies. Students apply these methods to social work practice, providing the foundation for advanced social work research.

SC WK 541. Women, Children, and Poverty (3). Cross-listed as WOM S 541. Addresses the problem of poverty among women in the U.S. today and examines existing and proposed public policies designed to alleviate the problem. Explores theoretical models of poverty policy analysis and the role of values in their formulation and implementation. Discusses issues of age, race, and family; special attention to poverty among women in Kansas. Prerequisites: 6 hours of social science preferably in women's studies, including WOM S 287Q, or instructor's consent.

SC WK 551. Independent Studies (1-3). Individual projects for social work students who are capable of doing independent work in areas of special interest. Repeatable for credit not to exceed 6 hours. Prerequisite: instructor's consent.

SC WK 560. Person in Society I (3). Provides a beginning theoretical framework within which the integration of prior knowledge can be made regarding physical, mental, and social development of the human being, perspectives on American culture and subcultural variations and their effect on human adaptability in the social environment, and the relationship of those entities to beginning professional social work practice. Prerequisites: 6 hours from a list of social and behavioral science courses approved by the social work faculty and selected in consultation with a social work advisor.

SC WK 561. Person in Society II (3). Explores theories and perspectives which explain human behavior in groups, organizations, and communities. Includes application of systems theory to macro and mezzo systems, social interaction theories, group and family dynamics, majority/minority relations, organizational dynamics, community structures, and the effects of discriminatory structures and prac-

tices on minority groups and communities in our society. Prerequisite: SC WK 560.

SC WK 566. Perspectives on Self-Help Groups (3). Cross-listed as Nurs. 566 and PSY566. Provides an interactive format that constitutes a community resource for health and human service professionals and promotes an interdisciplinary understanding of the nature and diversity of self-help groups for persons with virtually any health problem or personal issue. Reviews contemporary theory and research, explaining the attractiveness and effectiveness of self-help groups. Panels of support group members share their experience with self-help groups on such topics as addiction, cancer and other illnesses, eating disorders, bereavement, mental illness, and parenting.

SC WK 601. Generalist Practice I (3). Approach emphasizing problem-solving, assessment, and the knowledge and skills of generalist practice. Focuses on skill, ethics, techniques, and processes of social work practice with individuals, families, and groups. Corequisite: SC WK 602 except by program consent. Prerequisite: SC WK 502.

SC WK 602. Practicum I (4). Placement in community social welfare agencies for supervised periods of observation and direct service assignments emphasizing performance of basic practice skills and understanding of the social welfare agency and its role in the community service network. To be taken concurrently with SC WK 601 except by program consent. Prerequisites: SC WK 502 and program consent.

SC WK 603. Generalist Practice II (3). Focuses on developing generalist social work practice knowledge and skills at the group, organizational, and community levels. Presents macro practice roles and skills and links to group and individual practice skills for beginning-level social work interventions with systems of all sizes. Must be taken concurrently with SC WK 605. Prerequisite: SC WK 601.

SC WK 604. Advanced Social Work Research (3). A critical look at practice, services, and professional issues, using social work research. Analyzes current social work practice as well as future directions. Prerequisite: SC WK 512 and an approved research methods course.

SC WK 605. Practicum II (5). Placement in community social welfare agencies for supervised direct service assignments emphasizing formulation of appropriate goals. Includes the selection of various social work roles and in-depth development of techniques and skills common to practice in the social welfare field. Prerequisite: SC WK 602.

SC WK 610. Topics in Social Work (1-3). Selected topics in practice, policy, research, and human behavior in the social environment within a selected field of social welfare. Covers specific topics identified by the program in consultation with majors, groups of community practitioners, and area service institutions. Repeatable. Prerequisite: instructor or program consent.

SC WK 700. Foundations of Generalist Practice I (3). Provides foundation content in the knowledge and skills for empowerment-based generalist social work practice with individuals, families, groups, organizations, and communities. Includes professional role development, communication and interviewing theory, skill development in social work assessment, intervention, and evaluation methods. Corequisite: SC WK 720.

SC WK 702. Foundations of Generalist Practice II (3). Provides continued social work practice foundation content emphasizing developing generalist knowledge and skill at the group, organizational, community, and societal levels. Emphasizes material on group process and organizational and community leadership in the development of a problem-solving model for work with systems of all sizes. Prerequisite: SC WK 700 or instructor's consent.

SC WK 710. Micro Human Behavior and the Social Environment (3). Provides theories and knowledge of human biol-psycho-social development and functioning of individuals and families, and of the transaction between individuals and families and their environment. Presents theoretical perspectives on development over the life span and family functioning. Explores areas of universality and differences across gender, race, ethnicity, class, physical and mental ability, and sexual orientation.

SC WK 712. Macro Human Behavior and the Social Environment (3). Provides theories and content on organizational and community structure, dynamics and change, social movements, large groups, and structural oppression, and provides a theory base for the contextualization of social work practice within diverse environments and macro systems. Emphasizes understanding the needs of minority communities and on understanding change and empowerment strategies which further social justice in communities and organizations. Prerequisite: SC WK 710 or instructor's consent.

SC WK 716. Social Welfare Development (3). Critical examination of the history of American social welfare institutions, policies, and the social work profession as a context for understanding contemporary social policy issues. Provides the knowledge and skills needed to effectively enact policy in practice with clients, and develop social policy both within their agencies and in the larger political arena. Students develop an appreciation for the profession's ethical commitment to promote social justice and the general welfare of society and to improve social institutions to meet basic human needs. Prerequisite: program approval.

SC WK 717. Social Welfare Policy and Analysis (3). Surveys social welfare institutions, emphasizing the strengths and weaknesses of programs within the context of the social problems they address. The comparison of these structures and provisions enables the development and use of frameworks for analyzing social policies and evaluating programs in light of the mission of the social work profession; the principles of social and economic justice; and the historical, economic, and political factors which impinge on

policy. Content on the effects of policy and social work practice includes the uses of professional roles in shaping the processes of policy formulation in agency and governmental arenas. Prerequisite: SC WK 716.

SC WK 720. Field Practicum I (3). Placement in community social welfare agencies for supervised periods of observation and direct service assignments emphasizing development of basic practice knowledge and skills. Includes developing understanding of the social welfare agency and its role in the community service network. Corequisite: SC WK 700.

SC WK 721. Field Practicum II (3). Requires placement in community social welfare agencies for supervised periods of observation and direct service assignments emphasizing development of basic practice knowledge and skills. Promotes an understanding of the social welfare agency and its role in the community service network. Corequisite: SC WK 702.

SC WK 730. Graduate Topics in Social Work (1-3). Specialized instruction using a variable format in a social welfare relevant subject. Course may be offered together with SC WK 150. Prerequisite: instructor's consent.

SC WK 750. Social Work Workshops (1-5). Selected topics in practice, policy, research, and human behavior in the social environment within a selected field of social welfare. Covers specific topics identified by the program in consultation with majors, groups of community practitioners, and area service institutions. Repeatable for up to a total of 6 hours of credit.

SC WK 751. Fundamentals of Social Work Research (3). Provides an introduction to the components of quantitative research design and how research is designed to conduct studies which seek to improve social work practice. Introduces the basic concepts of the social work research process as well as the methods that are employed. Students develop a framework for critically evaluating methods employed in current social work research and the potential benefits of applying these research findings to social work practice. Prerequisite: program approval.

SC WK 760. Advanced Standing Seminar (3). Builds upon the advanced standing student's knowledge, experience, and skills by integrating social work theory, values, ethics, methodology, and literature. Based in the generalist perspective. Prepares students for the advanced generalist practice course work in the MSW program.

Courses for Graduate Students Only

SC WK 810. Cultural Competency for Advanced Generalist Practice (3). Examines the impact of culture, race, and ethnicity on client/worker interactions. Presents practice theories and interventions for culturally competent advanced generalist practice with different populations. Emphasizes experiential learning of cultural competence skills to provide services cross-culturally. Prerequisite: program consent.

SC WK 816. Advanced Generalist Practice with Multiple Systems (3). Provides a critical examination of theories of practice relevant for advanced generalist practice across systems. Theories included address the biological, psychological, social, and spiritual dimensions of human behavior. Emphasizes theories applying to social work intervention with individuals, family systems, and small groups. Prerequisite: program consent.

SC WK 817. Community Empowerment and Social Administration (3). Provides students with advanced generalist knowledge and skills for organizing and empowering communities and managing community-based organizations. Examines the history, strategies, and approaches relevant to community organizing. Focuses upon intervention and administrative skills to meet organizational and community needs. Emphasizes understanding the particular needs of minority communities. Prerequisite: program consent.

SC WK 822. Field Practicum III (4). Placement in community social welfare agencies for supervised periods applying direct and indirect practice. Provides students the opportunity to integrate and apply advanced generalist practice theory within their field experience. Students are required to demonstrate increased knowledge and skills in practice, research, and evaluation across multi-level systems. Requires 350 hours of agency service. Prerequisite: program consent.

SC WK 823. Field Practicum IV (4). Continuation of SC WK 822. Requires 350 hours of agency service. Prerequisite: program consent.

SC WK 832. Social Work Practice in the Schools (3). Conveys an understanding of systematic intervention in schools using various intervention modalities. Focuses on the roles of social workers in schools, including provision of direct service, consultation, advocacy, program development, and evaluation, as well as liaison functions with families and community systems. Students integrate an understanding of child development, familial, and school crises that affect child development and the importance of the social worker/parent relationship.

SC WK 833. Family Therapy (3). Examines theoretical approaches to social work assessment and intervention with families. Reviews and evaluates various approaches to family therapy, and focuses on assessment and intervention with different types of families (e.g., differing levels of functioning, ethnicity, vulnerability, and oppression). Examines theoretical constructs, strategies for change, and use in actual social work intervention for such models of family therapy as structural, Bowenian, strategic, experiential, cognitive/behavioral, psychoanalytic, and solution-focused.

SC WK 851. Applied Social Work Research (3). Prepares students to be ethical practitioners who assess the benefits of social work interventions on an ongoing basis. Because of the importance of evaluation in social work, students develop the research skills needed to evaluate their own practice, conduct program evaluations, use the

computer as a research tool, and interpret descriptive and inferential statistics. Prerequisite: SC WK 751 or program consent.

SC WK 860. Integrative Seminar for Advanced Generalist Practice (3). Integrates social work theories, knowledge, and skills to develop each student's framework for advanced generalist practice. Emphasizes applying social work theories in practice with populations at risk of violence. Develops skills in applying a wide array of social work roles within a multi-level practice environment. Prerequisite: SC WK 816.

SC WK 870. Clinical Assessment for Advanced Generalist Practice (3). Uses a biopsychosocial perspective to understand problematic patterns of functioning identified as diagnoses in the DSM-IV. Students critically examine the DSM-IV as a basis for social work assessment and learn its use within an advanced generalist practice perspective. Prerequisite: program consent.

Sociology (SOC)

Graduate Faculty

Associate Professors: Kathleen O'Flaherty Perez, Ronald R. Matson (chairperson), David W. Wright (graduate coordinator)

Assistant Professors: Joan G. Gilbreth, Twyla J. Hill, Charles S. Koeber, Victor T. Wynn

Master of Arts

The sociology department offers courses of study leading to the Master of Arts (MA) degree with options for thesis and nonthesis programs.

Admission Requirements

In addition to the Graduate School requirements for admission, the Department of Sociology requires: 1) one college algebra course and at least 15 hours in sociology including an introductory sociology course, one descriptive and inferential statistics course, two research methods courses, and one theory course (similar courses in other fields of study may be substituted at the discretion of the graduate coordinator); 2), three letters of reference from professors who are familiar with the student's undergraduate course work; and 3) a typed, double-spaced statement of purpose (approximately 500 words) articulating the student's area of research interests and academic/career goals.

Degree Requirements

Students pursuing the MA degree in sociology may follow either a thesis or a nonthesis program.

Thesis Program. Students in the thesis program must take a total of 32 hours, including SOC 860, Proseminar-Teaching Sociology; SOC 801, Application of Advanced Statistical Techniques; SOC 812, Advanced Research Methods; SOC 845, Seminar in Sociological Theory; and two 800-level graduate seminars as well as completion of their thesis hours. Sixty percent of the 32 hours must be 700 level or above.

Nonthesis Program. Students in the nonthesis program must take a total of 36 hours, including SOC 860, Proseminar-Teaching Sociology; SOC 801, Application of Advanced Statistical Techniques; SOC 812, Advanced Research Methods; SOC 845, Seminar in Sociological Theory; and two 800-level graduate seminars. SOC 851, Directed Research, is needed to fulfill this requirement. A total of 60 percent of the 36 hours must be 700 level or above.

Examinations

Students electing the thesis program in sociology must pass an oral defense of the thesis.

Courses for Graduate/Undergraduate Credit

SOC 501. Sociological Statistics (3). Generally offered fall semester only. Application of descriptive and inferential statistics to sociological problems. Includes measures of central tendency, dispersion and association, simple linear regression, hypothesis testing, and analysis of variance. Prerequisites: SOC 111Q, SOC 312, MATH 111 or 331Q or equivalent.

SOC 512. Measurement and Analysis (4). Generally offered spring semester only. An applied study of the conceptual tools and methodological skills needed to conduct quantitative sociological research. Prerequisites: SOC 111Q, 312, 501.

>SOC 513. Sociology of Aging (3). *General education further study course.* Cross-listed as GERON 513. Analyzes the social dimensions of old age, including changing demographic structure and role changes and their impact on society. Prerequisite: SOC 111Q.

>SOC 515. Sociology of the Family (3). *General education further study course.* Analyzes American family behavior, including the selection of marriage partners, the husband-wife and parent-child relationships, and the relation of these patterns of behavior to other aspects of American society. Prerequisite: SOC 111Q.

>SOC 516. Sociology of Gender Roles (3). *General education further study course.* Cross-listed as WOM S 516. Analyzes the institutional sources of male and female roles, the source of changes in these roles, the consequent ambiguities and conflicts. Prerequisite: SOC 111Q.

SOC 517. Intimate Relations (3). Examines the social dimensions of intimacy including an analysis of intimacy in different types of relationships, i.e. romantic, friendship, marriage. Reviews theory and research in the area with a special focus on the place of intimacy in social interaction. Prerequisite: SOC 111Q.

SOC 520. Family and Aging (3). Cross-listed as GERON 520. Analyzes the families and family systems of older people. Emphasizes demographic and historical changes, care giving, and intergenerational exchanges and relationships. Prerequisite: SOC 111Q or GERON 100Q or jr. standing.

SOC 523. Sociology of Law (3). Considers the impact of law on society, the role of law in effecting social change, various methods of dispute resolution, and recent research on judicial, legislative, and administrative processes, all with the aim of comparing and evaluating strengths and weaknesses of legal systems, with partial, but not exclusive, emphasis on those societies utilizing the common law. Prerequisite: SOC 111Q.

SOC 527. Violence and Social Change (3). Analyzes the causal processes and functions of extreme and violent political behavior, i.e., revolutionary, insurrectionary, and protest movements. Includes an analysis of consequences for social change. Prerequisite: SOC 111Q.

>SOC 534. Urban Sociology (3). *General education further study course.* Studies the process of urbanization and its influence on the development of cultural and social structures throughout the world. Also discusses social problems associated with urbanization. Prerequisite: SOC 111Q.

SOC 537. The Social Consequences of Disability (3). Cross-listed as GERON 537. An eclectic survey of the social aspects of disability showing the impact of social values, institutions, and policies upon adults with disabilities. Appropriate for both students of sociology and the service professions. Prerequisite: SOC 111Q.

SOC 538. Medical Sociology (3). Analyzes social and cultural factors related to physical and mental illness. Also includes the dynamics of communication and role relationships among patients and medical personnel and social research and theory relevant to the health professions. Prerequisite: SOC 111Q.

>SOC 539. Juvenile Delinquency (3). *General education further study course.* The factors related to juvenile delinquency and the measures of treatment and prevention. Prerequisite: SOC 111Q.*

SOC 540. Criminology (3). The extent and nature of criminal behavior and societal reactions to it. Prerequisite: SOC 111Q.*

SOC 541. Contemporary Corrections (3). Historical and contemporary programs for the treatment of offenders viewed as societal reactions to criminal behavior. Prerequisite: SOC 539 or 540.*

SOC 545. Sociological Theory (3). Generally offered fall semester only. A comprehensive survey of sociological theory, spanning both classical and contemporary theorists relevant to the development of sociology. Prerequisite: 9 hours of sociology.

SOC 598. Internship (1-6). Supervises persons involved in internships or placements in the community where credit can be given. Prerequisite: departmental consent.

SOC 600. Selected Topics in Sociology (3). Study in a specialized area of sociology emphasizing student research

projects. Includes deviant behavior, political sociology, and the family. Repeatable for a maximum of 6 hours credit. Prerequisites: SOC 111Q, instructor's consent, and substantive area course.

SOC 651. Directed Research (3). Gives the student further research skills in an area of special interest. All students are under the direction of a member of the graduate faculty who guides them in developing research skills. Prerequisites: SOC 512 or equivalent and instructor's consent.

SOC 670. Independent Reading (1-3). For the advanced student capable of doing independent work in an area of special interest. Prerequisites: 15 hours of sociology and instructor's consent.

SOC 750. Sociology Workshop (1-3). Provides specialized instruction using a variable format in a sociologically relevant subject.

SOC 781. Cooperative Education in Sociology (1-4). Provides practical experience, under academic supervision, that complements the student's academic program. Consultation with and approval by an appropriate faculty advisor are necessary. Graded Cr/N/Cr only.

*Prerequisite may be waived with departmental consent.

Courses for Graduate Students Only

SOC 801. Application of Advanced Statistical Techniques (3). Usually offered fall semester only. Seminar demonstrates the application of statistical packages via mainframe and personal computers to analyze data and interpret the output. Examines statistical tests from univariate to multivariate. Prerequisite: SOC 501 or departmental consent.

SOC 812. Advanced Research Methods (3). Through classical and contemporary readings, graduate students deepen their understanding of the methodological steps of the research process. Students address methodological issues while conducting a research project using design methodologies, sampling practices, and measurement strategies. Prerequisite: SOC 512 or departmental consent.

SOC 815. Seminar on the Family (3). Review of recent research on the family and the theoretical implications thereof. Prerequisite: SOC 515 or departmental consent.

SOC 820. Seminar in Social Movements (3). Analyzes the elements in social movements as factors in social and cultural change. Prerequisite: departmental consent.

SOC 822. Seminar in Deviant Behavior (3). In-depth examination of recent theory, methods, and research in the area of deviance. Includes implications of future theory development. Prerequisite: departmental consent.

SOC 825. Seminar in Organizational Analysis (3). Explores selected problems in organizational theory based

on major theoretical and empirical approaches, both classical and contemporary. Prerequisite: departmental consent.

SOC 830. Seminar in Stratification and Power Structure (3). Examines different theoretical and methodological approaches to understanding stratification and class analysis. Prerequisite: departmental consent.

SOC 834. Seminar in Urban Sociology (3). Through classical and contemporary readings, course examines issues and concerns of countries in the process of urbanization. Prerequisite: SOC 534 or departmental consent.

SOC 845. Seminar in Sociological Theory (3). Usually offered spring semester only. Examines classical and contemporary sociological theories and focuses on including the application of such theories in students' thesis and nonthesis projects. Prerequisite: SOC 545 or departmental consent.

SOC 847. Seminar in Recent Developments in Sociology (3). Major issues, new theories, new techniques of research, new areas of research, and new applications. Repeatable for credit but not to exceed 6 hours. Prerequisites: 15 hours of sociology and departmental consent.

SOC 851. Directed Research (1-3). For the advanced student who wants to achieve research competence in a specific area. Each student is directed by a member of the graduate faculty in the development of a project in research not leading to thesis research. Prerequisites: SOC 812 and instructor's consent.

SOC 860. Proseminar—Teaching Sociology (1). Usually offered fall semester only. Examines the academic roles of sociologists. Prerequisite: departmental consent.

SOC 870. Independent Reading. (2-3). Advanced systematic reading in a topical area under the tutorship of a member of the graduate faculty. Repeatable for credit not to exceed 6 hours. Prerequisite: departmental consent.

SOC 875-876. Thesis. (3-6).

Spanish

See Modern and Classical Languages and Literatures.

Urban and Public Affairs, Hugo Wall School of

The Hugo Wall School of Urban and Public Affairs is committed to enhancing the quality of public life through high-quality graduate instruction, excellence in applied research, and responsive community service. This focus results not only in an excellent graduate education for students, but also allows a special connection with the community's needs through research and service. By integrating teaching, research, and service, the school makes a distinctive contribution to Wichita State University's long-standing commitment of service to Wichita, the surrounding communities, and the region.

The school serves as the academic home for the Master of Public Administration degree, the Center for Urban Studies, and the Kansas Public Finance Center. Through these units, faculty, staff, and students blend teaching, research, and service in the interdisciplinary field of urban and public affairs. The Hugo Wall School offers special opportunities for students interested in urban and public affairs. Students completing the Master of Public Administration degree gain experience through hands-on research and network with practitioners in the field of public administration.

The Hugo Wall School is committed to enhancing the quality of public life through high-quality graduate instruction, excellence in applied research, and responsive community service. This focus results not only in an excellent graduate education for students, but allows a special connection with the community's needs through research and service.

Financial Assistance

The school has two forms of financial aid available to provide students with financial assistance, as well as an opportunity to be directly involved with research and service projects. Financial aid in the form of graduate assistantships and fellowships is awarded competitively on the recommendation of the faculty in the Hugo Wall School of Urban and Public Affairs.

Graduate assistants aid faculty in the Hugo Wall School in instruction, as well as work directly with faculty and professional staff on research and community service projects through the Center for Urban Studies and the Kansas Public Finance Center. Graduate assistants work 20 hours per week with faculty and staff in the school's teaching, research, and public service activities.

The Hugo Wall School has four endowed fellowships available for financial assistance to qualifying graduate students enrolled in the Master of Public Administration degree. These fellowships—the Hugo Wall, George Pyle, Mike Hill, and George Van Riper—are awarded on a competitive basis to students with exemplary records and specific career interests in the field of public administration.

Public Administration (P ADM)

Graduate Faculty

Regents Distinguished Professor of Public Finance: W. Bartley Hildreth

Professors: H. Edward Flentje (director, Hugo Wall School and Center for Urban Studies), Mark A. Glaser, Joseph P. Pisciotte, Samuel J. Yeager (graduate coordinator)

Associate Professors: Nancy McCarthy Snyder, John D. Wong

Master of Public Administration

The Master of Public Administration (MPA) degree program, with instruction in public management,

public finance, and public policy, prepares students for positions of leadership in public and nonprofit organizations. The degree is structured to respond to the unique student body of an urban university.

The Master of Public Administration (MPA) degree draws upon the methods and perspectives of the social and behavioral sciences, economics, and the humanities. The link between these disciplines and the challenges of public management are emphasized through the use of practitioners in the classroom, policy-relevant research assignments, public affairs seminars, and internships. Teaching faculty, with significant professional experience in state and local government, are engaged in cutting-edge research relevant to public and nonprofit organizations in Kansas. This experience allows faculty to bring relevant perspectives on public management into the classroom.

Nearly 300 graduates of the MPA degree program now hold positions of responsibility in state and local government and in nonprofit agencies throughout the United States and in other countries. Graduates serve as city managers and department heads, program managers, finance directors, budget analysts, management analysts, and agency planners. Although the majority are employed in public service, some graduates of the program have taken positions in the private sector, while still others have pursued additional study in law, doctoral education, or other specializations.

Admission Requirements

Applicants for the degree program must meet the requirements for admission to the Graduate School, including a bachelor's degree from a regionally accredited institution, a grade point average of at least 2.750 based upon the last 60 hours of course work (or nearest semester or term break to this) including any post-bachelor's graduate work. In addition, students should be familiar with basic microcomputer applications such as word processing and spreadsheets.

International students must attain a minimum score of 600 on the Test of English as a Foreign Language (TOEFL).

Degree Requirements

The Master of Public Administration degree consists of 39 graduate hours, taken over at least three semesters of study.

Core Curriculum. All degree candidates are required to complete the eight core courses:

P ADM 702, Research Methods in Public Administration

P ADM 710, Public Sector Organizational Theory and Behavior

P ADM 725, Public Management of Human Resources

P ADM 745, The Environment of Public Administration

P ADM 765, Public Sector Economics

P ADM 802, Quantitative Methods for Public Sector Professionals

P ADM 865, State and Local Government Finance

P ADM 895, Public Decision Making

Areas of Emphasis. In addition to the core, students develop an area of emphasis approved by an advisor. Students may select areas that fit their career interests. Common areas include state and local government management, financial management, and policy analysis.

Internships

Internships are an important part of the MPA program. Pre-service students are encouraged to take an internship which must last at least nine months. Internship (PADM 890) carries 3 hours of credit and includes attendance at periodic seminars. Intern positions are remunerative and are awarded on a competitive basis. Although placement cannot be guaranteed, the public administration program has an excellent placement record.

Graduate Certificate in Public Finance

This graduate certificate program offers advanced study in public finance. The program enhances students' career opportunities and provides public finance practitioners an avenue to improve their skills. The four-course sequence includes: P ADM 765, Public Sector Economics; PADM 865, State and Local Government Finance; P ADM 866, State and Local Financial Systems; and P ADM 867, State and Local Government Budgeting.

Successful completion of this certificate's requirements is noted on the student's University transcript, and a Graduate Certificate is awarded by Wichita State University. Application for the certificate program requires completion of a bachelor's degree, course prerequisites, and admission to the Graduate School.

Courses for Graduate/Undergraduate Credit

P ADM 501. Integrity in Public Service (3). Cross-listed as CJ 501, GERON 502, and ETH S 501. Exposes the student to basic principles of personal and professional integrity and how those principles apply to their daily life as a member of the community and as an employee of a government or social service agency. Employs a case study method, using cases and examples from a wide range of government and non-profit agency experiences. Students become aware of the moral and ethical issues which may arise in their professional and personal lives; begin to develop critical thinking and analytical skills regarding ethical behavior; and become more personally and professionally responsible. Prerequisite: junior- or senior- level or instructor's permission.

P ADM 550. Workshop (3). Specialized instruction using variable format in relevant urban and public affairs subjects. Repeatable for credit up to 6 hours.

P ADM 560. The Planning Process (3). Cross-listed as POLS 560. For students desiring to work in an urban planning agency or who will be involved in planning issues as an administrator at the city, county, state, or federal level. Also for students seeking an understanding of the complex process of urban-related life. Examines the role of planning in solving human and environmental problems. Emphasizes the relationship between specialists, citizens, and elected officials as participants in the planning process.

P ADM 564. Comparative Public Administration (3). Cross-listed as POLS 564. Studies the administrative system of selected developed and developing countries emphasizing the various methods and approaches of comparative analysis and the relationships between administrative institutions and their environmental settings.

P ADM 585. Management in the Nonprofit Sector (3). Examines the management and governance of nonprofit organizations. Includes strategic planning, marketing and fund-raising, management of financial and human resources (including volunteers), governing structures, and the role of boards.

P ADM 587. Administrative Theory and Behavior (3). Cross-listed as POLS 587. A study of organization theory and the various approaches to the study of organization.

P ADM 597. Applied Research Methods (3). Cross-listed as CJ 597, GERON 597, and ETH S 597. Studies research methods including questionnaire construction, survey methods, experimental design, and report preparation. Emphasizes completion of an applied research project. Prerequisite: either CJ 407, GERON 407, ETH S 407, or P ADM 407.

P ADM 621. Environmental Law (3). Cross-listed as CJ 621 and ETH S 621. An in-depth analysis of emerging federal, state, and local legislation; judicial decisions; and administrative policies in environmental protection. Explores the roles of a variety of governmental agencies and nongovernmental organizations as related to prevention and enforcement processes of environmental protection. Includes issues in the development and implementation of environmental policy. Prerequisite: an approved methods class.

P ADM 625. Computer Applications for Public Policy (3). Cross-listed as CJ 625, ETH S 625, and GERON 625. Familiarizes students with major types of software applications for microcomputers and their use in public policy analysis.

P ADM 651. Dispute Resolution (3). Cross-listed as CJ 651, ETH S 651, and GERON 651. Examines a range of topics including causation, typologies, communications, mediation, arbitration, and other dispute resolution techniques. Includes criminal and victim mediation and both intergroup and inter-organization relations and dispute resolution techniques. Analyzes case studies.

P ADM 688. Urban Economics (3). Cross-listed as ECON 688. A survey of the economic structure and problems of urban areas on both the microeconomic and macroeconomic levels. Stresses the application of regional economic analysis in the study of urban areas as economic regions. Prerequisites: ECON 201Q and 202Q, or ECON 800, and junior standing.

P ADM 700. Urban Affairs (3). A study of the policy issues faced by local government in an urban setting from a multidisciplinary point of view.

P ADM 702. Research Methods (3). Cross-listed as CJ 702, ETH S 702, GERON 702. Acquaints students with applied public policy research methods. Emphasizes locating, collecting, appraising, and utilizing both primary and secondary sources of data of the type used in policy, planning, and administrative research. Students must complete several short research projects.

P ADM 710. Public Sector Organizational Theory and Behavior (3). Cross-listed as POL S 710. Reviews the scope of the field of public administration, including a survey of key concepts and schools of thought underlying the field, and examines issues shaping the future development of the field.

P ADM 725. Public Management of Human Resources (3). Cross-listed as POL S 725. Surveys the major areas of management of human resources in the public sector. Includes hiring, training, evaluation, and pay promotion policies. Emphasizes the laws governing public personnel management and on the unique merit, equal employment opportunity, productivity, unionization, and collective bargaining problems found in the public sector.

P ADM 745. The Environment of Public Administration (3). Surveys the political and governmental institutions that underlie the practice of public administration. Includes political systems, constitutional authority, legislative process, intergovernmental relations, and government regulation.

P ADM 750. Public Administration Workshops (1-3). Specialized instruction using variable format in a public administration or urban affairs relevant subject. Repeatable for credit.

P ADM 755. Special Topics in Urban and Public Affairs (3). Provides students with an opportunity to engage in advanced study in topics that are of immediate concern and arise only occasionally. Content varies with issues that arise, student needs, and faculty expertise. Directed to Master of Public Administration students. May be repeated if topics are different. Prerequisite: instructor's consent.

P ADM 765. Public Sector Economics (3). Cross-listed as ECON 765. An analysis of fiscal institutions and decision making in the public sector of the American economy, budget planning and execution, taxation, debt, and fiscal policy. Prerequisites: ECON 201Q and 202Q or instructor's consent.

P ADM 775. State and Local Government Law (3). Exposes students to the legal principles which undergird the foundation of governmental operation and administration.

P ADM 785. Public Works Administration (3). Introduces public works administration and management. Includes discussion of public works professionals; public works organizations and institutions; infrastructure planning, policy, and project analysis; procurement, purchasing, and contract administration; geographic information systems; and transportation, water, waste water, and surface water system construction, maintenance, and replacement.

P ADM 798. Independent Study (1-3). For graduate students to pursue research in areas not normally covered in course work. Repeatable for credit with departmental consent. Prerequisite: departmental consent.

Courses for Graduate Students Only

P ADM 802. Quantitative Methods for Public Sector Professionals (3). Cross-listed as CJ 802 and GERON 802. Uses standard microcomputer statistical software and analysis to introduce statistics and quantitative analysis for organizational and policy decision making. Emphasizes the application of statistics and writing with quantitative evidence to real public sector policy questions. Assumes little or no background in statistics and software applications. Prerequisite: either CJ 702, GERON 702, or PADM 702.

P ADM 825. State and Local Government Administration (3). Examines administrative leadership in state and local government through case study and field experience. Draws on the experience of professional public managers. Designed for students nearing completion of the Master of Public Administration degree and planning careers in public management. Prerequisite: instructor's consent.

P ADM 842. Administration in Local Government (3). Cross-listed as POL S 842. Examines administrative processes and problems in local government, including the role of the professional chief executive. Examines problems from the following: labor-management relations, program evaluation, county government reform, governmental decentralization, citizen participation, grant-in-aid programs, interlocal cooperation, affirmative action requirements, and service contracting. Prerequisite: POLS 317.

P ADM 845. Public Policy Analysis and Program Evaluation (3). Cross-listed as CJ 797. An overview of approaches to public policy analysis and program evaluation. Examines the roles of participants in public policy development, implementation, and evaluation. Explores policy and program functions and their intended and unintended impacts. Focuses on methodologies for collection of data and their use in the assessment of programs and program impacts. Prerequisites: an approved statistics class and an approved methods class.

P ADM 865. State and Local Government Finance (3). Cross-listed as ECON 865, HIST 865, and POLS 865. Analyzes state and local government expenditure and revenue

systems; introduces state and local financial administration. Prerequisites: PADM 765 or instructor's consent.

P ADM 866. State and Local Financial Systems (3). Deals with selected aspects of state and local government financial management. Introduces fund accounting, costing of government services, capital budgeting, and asset management. Prerequisite: PADM 865 or instructor's consent.

P ADM 867. State and Local Government Budgeting (3). Cross-listed as POLS 867. Analyzes the development and utilization of the budgetary process in government administration emphasizing the budget in relation to its role in policy formulation and management. Prerequisite: P ADM 865 or instructor's consent.

P ADM 868. Seminar in Public Finance Systems (3). Cross-listed as POLS 868. An analytical study of selected topics in the politics and administration of revenue, expenditure, and borrowing policies of governmental organizations. Prerequisite: departmental consent.

P ADM 890. Internship (3). Integrates academic pursuits and practical experience. Students admitted to the internship are assigned to work in an approved government, community, or private organization for a minimum of nine months. Prerequisites: completion of all PADM core courses and 6 hours of additional graduate-credit courses.

P ADM 895. Public Decision Making (3). Focuses on decision making by public managers through case study method. Reviews models of public decision making. Explores public management from the perspective of public purposes, politics, organizational results, and ethics. Prerequisites: successful completion of all other core courses in the MPA or instructor's consent.

P ADM 897. Advanced Research Methods (3). Cross-listed as CJ 897 and GERON 897. Advanced research course; studies the selection and formulation of research problems, research design, hypothesis generation, scale construction, sampling procedures, and data analysis and interpretation. Prerequisite: either CJ 597, GERON 597, ETH S 597, PADM 597, or equivalent, and PADM 702 and 802.

P ADM 898. Applied Research Paper (3). Original research project under a faculty member's direction. Project requires conceptualization, execution, preparation of a written report, and defense of that report before a faculty committee. Intended to be a major project or capstone activity completed at the end of a student's program of study. It must be an individual effort, not a group project. Prerequisite: graduate-level research methods class.

Women's Studies (WOM S)

Graduate Faculty

Professor: Carol Konek

Associate Professors: Gayle Davis, Deborah Gordon, Ramona Liera-Schwichtenberg, Dorothy C. Miller (director)

Students may earn a master's degree in several areas with an emphasis in women's studies. These include

curriculum and instruction; counseling, educational, and school psychology; sociology; and cross-cultural communications. Women's studies may be included as one of two or three areas of interest under the MA degree in liberal studies, an individually designed, interdisciplinary graduate program (described in the Fairmount College of Liberal Arts and Sciences, Liberal Studies section of the *Graduate Bulletin*). In other areas, such as the community/clinical program in psychology, students may orient course electives and thesis research to accommodate an interest in women's studies. The following courses are available for graduate credit.

Courses for Graduate/Undergraduate Credit

>WOM S 511. Women in Early America, 1600-1830 (3). *General education further study course.* Traces women's contributions and experiences in building the U.S., 1600-1830s. Includes both conventional and newly developed methodologies in women's history research.

>WOM S 512. Women and Reform in America, 1830-Present (3). *General education further study course.* Examines the history of women in the U.S., 1830-present. Focuses especially on women's involvement in various social reform activities, efforts which eventually led to work toward equal rights and improved conditions for women.

WOM S 516. Sociology of Gender Roles (3). Cross-listed as SOC 516. Analyzes the institutional sources of male and female roles, the source of changes in these roles, the consequent ambiguities and conflicts. Prerequisite: SOC 111Q.

WOM S 521. Women's Traditional Arts (3). Surveys various art forms which are usually identified as the creative work of women. Using such examples as quilts or other textile arts, students focus not only on the aesthetics of these traditional forms, but also on their historical and social value to the culture.

WOM S 522. Contemporary Women's Art (3). Examines art by women in the contemporary world. Emphasizes the impact of the women's movement on the creative energies and on the career directions and opportunities of these women in the arts.

WOM S 523. Feminist Film Criticism (3). Applies critical methods of analysis from the field of feminist film studies (such as psychoanalysis, ideology critique, close textual analysis, narrative, and genre criticism) to the representation of women in film. Emphasizes historical development of feminist film theory and criticism as it relates to classical Hollywood narrative, film genres, and avant-garde film. Prerequisite: 3 hours of upper-level humanities or 3 hours of upper-level women's studies.

WOM S 530. The American Woman in History (3). Cross-listed as HIST 530.

WOM S 532. Women in Ethnic America (3). Cross-listed as ETH S 532 and HIST 532. An in-depth, thematic

understanding of the historical experiences of women of color across space and time in U.S. history. Employing a female-centered framework of analysis, course probes the intersections of race, class, gender, and sexuality in women's lives.

WOM S 533. Women and the Law (3). Introduces the legal aspects of women's rights, including the equal rights amendment to the U.S. Constitution; right to choose a name; sex discrimination in employment, education, and credit; welfare; and criminal justice. Also considers women in the field of law, such as lawyers and legislators.

WOM S 534. Psychology of Women (3). Cross-listed as PSY534.

WOM S 535. Literary Images of Women: Diverse Voices (3). Cross-listed as ENGL535. Explores literature written in English by women of diverse ethnic, racial, class, and other backgrounds as well as of varying sexual orientations, ages, and degrees of physical ability. Analyzes materials as literary works and as expressions of women's differences from one another. Works are selected based on their specific attention to the question of gender as it intersects with other elements of culture. Prerequisites: ENGL101, 102, and one course in literature.

WOM S 536Q. Writing by Women (3). Cross-listed as ENGL536. Explores various themes in critical approaches to literature composed by women writers, especially those whose works have been underrepresented in the literary canon. Genres and time periods covered, critical theories explored, and specific authors studied vary in different semesters.

WOM S 537. Contemporary Women's Drama (3). Cross-listed as ENGL537. Examines contemporary plays by and about women to discover and explore the insights of the various playwrights into the lives and roles of women. Writers considered vary. In addition to reading and analyzing plays, students write plays of their own. Prerequisites: ENGL101 and 102 and 3 hours of English literature.

>WOM S 541. Women, Children, and Poverty (3). *General education issues and perspectives course.* Cross-listed as SOC Wk. 541. Addresses the problem of poverty among women in the U.S. today and examines existing and proposed public policies designed to alleviate the problem. Explores theoretical models of poverty policy analysis and the role of values in their formulation and implementation. Discusses issues of age, race, and family; special attention to poverty among Kansas families. Prerequisites: 6 hours of social science preferably in women's studies, including WOM S 287Q.

WOM S 542. Gender in Other Cultures (3). Cross-listed as ANTHR 542.

WOM S 543. Women and Health (3). Cross-listed as Nurs. 543. Examines the historical development of the women's health movement, focuses on current issues relevant to women and health care, and explores the roles of

women in the health care system and as consumers of health care. Examines self-care practices of women and studies ways to promote positive health practices. Open to non-nursing majors.

WOM S 570. Directed Readings (1-3). For students who wish to pursue special reading or research projects not covered in course work. Prerequisite: instructor's consent.

WOM S 580. Special Topics (1-3). Focuses on advanced topics of interest to women's studies.

>WOM S 586. Gender, Race, and Knowledge (3). *General education issues and perspectives course*. Examines the impact of gender and race on knowledge (understanding of objects, people, events, and activities). Assumes that gender, race, and knowledge are socially constructed categories. Concerned with science as a practice of representation. Focuses on the "white masculinist" ideas or beliefs that motivate and affect the practice of academic disciplines. Considers: What is the relationship between the

making of masculinity and femininity and science? How are gender and race woven into science and social science and with what results? Does the entrance of white women and people of color into the sciences and humanities change how they are practiced? Do they produce significantly different understanding about the world? Central premise is that all knowledge emerges from some type of love or passion. What types of passion produce knowers, knowing, and the known?

WOM S 587. Theories of Feminism (3). Because feminism is not a single ideological stance or perspective, course examines a variety of ideas underlying feminist cultural critiques and visions for social change. Discusses the contribution of women's studies to various academic disciplines. Prerequisites: WOM S 287Q and 387Q, or 6 hours of women's studies courses, or instructor's consent.

WOM S 635. Leadership Techniques for Women (3). Cross-listed as COMM 635. Provides the female student experience in decision making and improves skills in

leadership through role playing and exercise in group dynamics.

Courses for Graduate Students Only

WOM S 870. Directed Readings. (2-3). For graduate students to pursue research in areas not normally covered in course work. Repeatable for credit with departmental consent. Prerequisite: instructor's consent.

WOM S 880. Seminar in Women's Studies (3). Intensive study of selected women's studies topics. Seminar discussion, reports, and research project. Previous topics include Advanced Theories of Feminism and Contemporary Women's Fiction. Repeatable for credit with departmental consent. Prerequisite: instructor's consent.

The following abbreviations are used in the course descriptions: R stands for lecture and L for laboratory. For example, 4R; 2L means 4 hours of lecture and 2 hours of lab.