<table>
<thead>
<tr>
<th>Program and Area</th>
<th>Degree</th>
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<tr>
<td>Liberal Studies (MA)</td>
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<tr>
<td>Mathematics (MS)</td>
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<tr>
<td>Mathematics—Applied Mathematics (PhD)</td>
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<td>Conducting (instrumental)</td>
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<td>History / Literature</td>
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<td>Performance</td>
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<td>piano/organ</td>
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<td>piano/pedagogy</td>
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<td>strings/wind/percussion</td>
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<td>voice</td>
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<td>Theory / Composition</td>
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<td>Music Education (MME)</td>
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<td>Elementary</td>
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<td>Physical Education (MEd)</td>
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<td>Physical Therapy (MPT)</td>
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<tr>
<td>Physics (MS)</td>
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<td>Political Science (MA)</td>
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<td>Psychology—Community/Clinical Psychology (PhD)</td>
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<td>Psychology—Human Factors Psychology (PhD)</td>
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<td>Public Administration (MPA)</td>
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<td>Public Health (MPH)</td>
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<td>School Psychology (MEd) (EdS)</td>
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<td>Spanish (MA)</td>
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<tr>
<td>Special Education (MEd)</td>
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<td>Sports Administration (MEd)</td>
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M = Master  S = Specialist in Education  D = Doctoral
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This catalog is a guide for information only and is not a contract.

The official University address is:
Wichita State University
1845 Fairmount
Wichita, Kansas 67260-0004

The Graduate School telephone number is (316) 689-3095.

NOTICE OF NONDISCRIMINATION
Wichita State University does not discriminate on the basis of race, color, national origin, sex, age, or disability. Any person having inquiries concerning this may contact James J. Rhatigan, Vice President for Student Affairs and Dean of Students, Wichita State University, 1845 Fairmount, Wichita, Kansas 67260-0008, (316) 689-3021.

The University reserves the right to revise or change rules, charges, fees, schedules, courses, requirements for degrees and any other regulations affecting students whenever considered necessary or desirable. The University reserves the right to cancel any course for insufficient registration and to phase out any program.
Academic Calendar

Fall Semester 1995

Aug. 14-18 .................................. Fall semester registration
Aug. 21 ................................ Classes begin
Sept. 2-4 ................................ Labor Day, holiday
Sept. 12 ................................ Final date for filing Application for Degree card in Graduate School Office
Oct. 13 ................................ Midterm point
Oct. 27 ................................ Final date for withdrawal with nonpenalty grades
Nov. 10 ................................ Last day for oral defense*
Nov. 13-21 ................................ Early registration period for spring semester
                                          (exact dates published in the Schedule of Courses)
Nov. 22-26 ................................ Thanksgiving recess
Dec. 7 ................................ Last day of classes
Dec. 8 ................................ Last day for incomplete grades to be removed*
                                          Bound thesis due in Graduate School office*
                                          All financial obligations to the University must have been met*
                                          All departmental requirements must have been met*
Dec. 9-15 ................................ Final examinations
Dec. 16 ................................ Fall semester ends

Spring Semester 1996

Jan. 8-12 ................................ Spring semester registration
Jan. 15 ................................ Martin Luther King, Jr. Day, holiday
Jan. 16 ................................ Classes begin
Feb. 5 ................................ Final date for filing Application for Degree card in Graduate School Office
March 15 ................................ Midterm point
March 24-30 ................................ Spring recess
March 29 ................................ Final date for withdrawal with nonpenalty grades
April 1 ................................ Classes resume
April 18-24 ................................ Early registration period for fall semester
                                          (exact dates published in the Schedule of Courses)
April 19 ................................ Last day for oral defense*
May 3 ................................ Last day for incomplete grades to be removed*
                                          Bound thesis due in Graduate School office*
                                          All financial obligations to the University must have been met*
                                          All departmental requirements must have been met*
May 6 ................................ Last day of classes
May 7 ................................ Study day
May 8-14 ................................ Final examinations
May 15 ................................ Spring semester ends
May 16-18 ................................ Commencement

These dates may be subject to change.

*Graduate School deadlines to insure graduation that semester.
Summer Semester 1996

May 20-31 .............................................. Presession and workshops
May 27 .................................................. Memorial Day, holiday
May 28-31 .............................................. Summer Session registration
June 3 ..................................................... Classes begin, first four-week term
June 7 ..................................................... Final date for filing Application for Degree card in Graduate School Office
June 28 .................................................. Last day of first four-week term
                                       Registration for second four-week term
July 1 .................................................. Classes begin, second four-week term
July 4 .................................................. Independence Day, holiday
July 10 .................................................. Last day for oral defense
July 24 .................................................. Last day for incomplete grades to be removed*
                                       Bound thesis due in Graduate School office*
                                       All financial obligations to the University must have been met*
                                       All departmental requirements must have been met*
July 26 .................................................. Summer Session ends

Fall Semester 1996

Aug. 19-23 .............................................. Fall semester registration
Aug. 26 .................................................. Classes begin
Aug. 31-Sept. 2 ...................................... Labor Day, holiday
Sept. 16 .................................................. Final date for filing Application for Degree card in Graduate School Office
Oct. 18 .................................................. Midterm point
Nov. 1 .................................................. Final date for withdrawal with nonpenalty grades
Nov. 8 .................................................. Last day for oral defense*
Nov. 18-26 ............................................ Early registration period for spring semester
                                       (exact dates published in the Schedule of Courses)
Nov. 27-Dec. 1 ....................................... Thanksgiving recess
Dec. 6 .................................................. Last day for incomplete grades to be removed*
                                       Bound thesis due in Graduate School office*
                                       All financial obligations to the University must have been met*
                                       All departmental requirements must have been met*
                                       Study day
Dec. 12 .................................................. Last day of classes
Dec. 14-20 ............................................. Final examinations
Dec. 21 .................................................. Fall semester ends

These dates may be subject to change.
* Graduate School deadlines to ensure graduation that semester.
Spring Semester 1997

Jan. 13-17 ................................ Spring semester registration
Jan. 20 ...................................... Martin Luther King, Jr. Day, holiday
Jan. 21 ...................................... Classes begin
Feb. 10 ....................................... Final date for filing Application for Degree card in Graduate School Office
March 23-29 ................................ Spring recess
March 24 ..................................... Midterm point
March 31 ..................................... Classes resume
April 4 ...................................... Final date for withdrawal with nonpenalty grades
April 17-23 ................................ Early registration period for fall semester
                                (exact dates published in the Schedule of Courses)
April 18 ..................................... Last day for oral defense*
May 9 ...................................... Last day for incomplete grades to be removed*
                                Bound thesis due in Graduate School office*
                                All financial obligations to the University must have been met*
                                All departmental requirements must have been met*
May 12 ..................................... Last day of classes
May 13 ..................................... Study day
May 14-20 .................................. Final examinations
May 17 ..................................... Commencement
May 21 ..................................... Spring semester ends

Summer Semester 1997

May 26 ..................................... Memorial Day, holiday
May 27-June 6 ............................. Presession and workshops
June 3-6 ..................................... Summer Session registration
June 9 ...................................... Classes begin, first four-week term
June 13 ..................................... Final date for filing Application for Degree card in Graduate School Office
July 3 ...................................... Last day of first four-week term
                                Registration for second four-week term
July 4 ..................................... Independence Day, holiday
July 7 ...................................... Classes begin, second four-week term
July 11 ..................................... Last day for oral defense*
July 25 ..................................... Last day for incomplete grades to be removed*
                                Bound thesis due in Graduate School office*
                                All financial obligations to the University must have been met*
                                All departmental requirements must have been met*
August 1 .................................. Summer Session ends

* Graduate School deadlines to insure graduation that semester.

These dates may be subject to change.
General Information

1994-95 University and Academic Officers
Eugene M. Hughes, President of the University
Bobby R. Patton, Vice President for Academic Affairs
Elizabeth H. King, Vice President for University Advancement
Roger D. Lowe, Vice President for Administration and Finance
James J. Rhatigan, Vice President for Student Affairs and Dean of Students
Frederick Sudermann, Vice President for Research and Governmental and Industrial Relations
Michael Tilford, Dean of the Graduate School and Associate Vice President for Academic Affairs
Gerald H. Graham, Dean of the W. Frank Barton School of Business
James L. Carroll, Dean of the College of Education
William J. Wilhelm, Dean of the College of Engineering
Gene Bicknell, Dean of the College of Fine Arts
M. Diane Roberts, Dean of the College of Health Professions
David C. Glenn-Lewin, Dean of Fairmount College of Liberal Arts and Sciences
Jacqueline J. Snyder, Dean of Academic Outreach
Jasper G. Schad, Dean of Libraries
James W. Kelley, Dean of University College and Associate Vice President for Student Affairs
Bill Belknap, Director of Intercollegiate Athletics
Anthony R. Ross, Associate to the President

Board of Regents
State of Kansas

Gene Bicknell, Pittsburg
Robert C. Caldwell, Salina
Tom E. Hammond, Wichita
Dr. John B. Hiebert, Laurence
Karen Kreppas, Lawrence
John G. Montgomery, Junction City
Phyllis Nolan, Louisburg
Frank C. Sabatini, Chairperson, Topeka
Sidney Warner, Cimarron
Stephen M. Jordan, Executive Director, Topeka

Graduate Council
Michael P. Tilford, Dean of the Graduate School and Associate Vice President for Academic Affairs

James A. Jackson, Assistant Dean of the Graduate School
Bertil H. van Boer, College of Fine Arts
Kenneth G. Miller, Natural Sciences and Mathematics
Kenneth Burk, Communicative Disorders and Sciences, and Health and Physical Education
Gary Greenberg, Social Sciences
Randolph A. Ellsworth, Curriculum and Instruction; and Administration, Counseling, Educational, and School Psychology
Robert H. Ross, W. Frank Barton School of Business
Karen Patch-Sedeh, Master of Business Administration
John W. Carter, College of Health Professions
William E. Unrau, Humanities
M. Edwin Sawaan, College of Engineering

Wichita State University Profile

Wichita State University is located in the largest city in Kansas, which allows students to enjoy the convenience and educational advantages of a dynamic metropolitan setting. The University encourages multicultural diversity, and has students from all 50 states and more than 70 countries.

WSU students' ages range from 15 to 81 years, with an average age of 28. Approximately 79 percent of the students work full- or part-time. Many classes are offered at night to facilitate attendance and the earning of a degree; some graduate programs can be completed entirely during evening classes.

The 330-acre campus, both modern and accessible, is adorned with 53 pieces of sculpture and art by internationally known artists, including Personages Oiseaux by Joan Miro and Grand Torso of a Man and The Prayer by Auguste Rodin. Wiedemann Hall houses the first world-famous Marcussen organ installed in North America. Various recreational areas are on and convenient to campus, including the adjoining 18-hole University golf course.

Wichita State's Ablah Library serves as the nucleus of the library system, housing the main collection, as well as microforms, government documents, and special collections. Combined resources total more than 3 million items, including nearly 900,000 bound volumes and 4,300 journals. The music and chemistry libraries contain specialized resources. All collections are accessed through LUIS, an integrated, automated system which also handles the circulation of books. The libraries offer computerized literature searches, both on-line and through CD-ROM, and they participate in automated borrowing programs with other research libraries.

Many services are located on campus or nearby, including a residence hall and affordable housing suitable for families, the University Child Development Center, Resource Center for Independence, Student Health Services, the Counseling Center, and Career Services. Wichita State has almost 200 active student groups, and a continuous series of athletic and cultural events on campus.

Recent WSU construction projects include the Elliott Building for the Elliott School of Communication and the Science Classroom and Laboratory Building, which houses the departments of computer science, mathematics, physics, and psychology, as well as the Computing Center and its mainframe system.

Other campus facilities include KMUW Radio, a member of the National Public Radio network; WSU Channel 13, the University's cable television station; the International Reference Organization in Forensic Medicine and Sciences (INFORM); the Saviano-Cress Language Laboratory; the Small Business Development Center; the University Gerontology Center, which serves as a resource center and information clearinghouse to assist community agencies and organizations; the WSU Center for Energy Studies; the Social Sciences Research Laboratory; and several computer laboratories for student use, including those in computer science, business, and engineering.

Special campus equipment includes a Varian XL-300 nuclear magnetic resonance spectrometer; a DEC VAX minicomputer; a CAD/CAM laboratory with Apollo DN-320 digital workstations; and modern aerodynamic laboratories which include two lowspeed wind tunnels, two supersonic wind tunnels, two smoke tunnels, a boundary layer tunnel, and a water tunnel for flow-visualization studies.

Graduate education at Wichita State is affordable, as state funding enables the University to maintain relatively low tuition and fees. In addition, several
Mission Statement
In December 1986, the Kansas Board of Regents approved the following mission statement for Wichita State University:

Wichita State University is an urban university with a focused mission intended to meet the industrial, business, educational, social, and cultural needs of the greater Wichita area. The University's primary goal is to serve citizens in the 13-county area surrounding Wichita and Sedgwick County, with special sensitivity to the large number of minority citizens residing in the urban area. Its urban student body is predominantly part time and beyond the traditional college age, thus requiring special support services.

Programs of study in the liberal arts and sciences, fine arts, business, engineering, education, and health and human services lead to the associate through the doctoral degree, but primary emphasis is at the bachelor's and master's level. Building on a foundation in the liberal arts and sciences, the institution's unique role resides in the delivery of programs in the visual and performing arts, engineering, business, and education.

Terminal degrees currently approved are the Master of Fine Arts in studio arts and in creative writing, and the Doctor of Philosophy in applied mathematics; chemistry; communicative disorders and sciences; aerospace, electrical, industrial, and mechanical engineering; and human factors psychology. A Doctor of Education is available in educational administration. At an appropriate time, the institution will pursue development of a joint doctoral degree with the University of Kansas and Kansas State University in computer science.

Research activity will occur principally in those areas with existing terminal degrees and those identified for terminal degrees. Applied research related to industry in the service area is the major thrust of these activities.

Service activities such as those conducted at the Center for Economic Development and Business Research, the Center for Entrepreneurship, the Small Business Development Center, the National Institute for Aviation Research, and the Hugo Wall Center for Urban Studies are especially tailored to meet the needs of the institution's service area.

History
Wichita State began as Fairmount College and was operated by the Congregational Church from 1895 until 1926 when by a vote of the citizens of Wichita, it became the first municipal university west of the Mississippi.

After 38 years as a municipal university, WSU again changed its status July 1, 1964, when it officially entered the state system of higher education. Now, Wichita State University is one of six state universities governed by the Kansas Board of Regents.


The City of Wichita
Wichita, the largest city in Kansas and part of a metropolitan area of 400,000, offers the cultural and economic advantages of a big city, but maintains the friendly atmosphere of a smaller town. Home of Beech, Boeing, Cessna, and Learjet, Wichita is known as the "Air Capital of the World," is a regional medical center, and also is home to energy and agricultural industries. Public and private schools offer diverse learning opportunities, and numerous cultural activities provide family entertainment year round. Native American, Hispanic, Asian, and Middle Eastern groups are typical of Wichita's multicultural and ethnic diversity.

The Wichita symphony orchestra plays brown-bag concerts in addition to its regular season offerings, and theatre troupes perform presentations ranging from Broadway musicals to Shakespeare in the park. Art museums, historic Cowtown, Botanica gardens, the Omnisphere Space Center, Lake Afton Public Observatory, international fairs, water fun parks, and the zoo provide entertainment and culture for people of all ages.

Wichita, the industrial and educational center of Kansas, enjoys a diversified economy. Your neighbors may work at one of the large aircraft plants, they may have careers related to agriculture or energy, or they may be health care professionals in one of the area's regional medical centers.

Wichita provides outstanding career opportunities in a variety of fields. In addition to the aircraft industry, many other high tech companies such as NCR, UNISYS, Vulcan Chemicals, Cargill, IFR, Bank IV, Southwestern Bell, Electrotech, and Microtech are located in the Wichita area. Also Pizza Hut, Taco Tico, Koch Industries, and Rent-A-Center are major local employers with their corporate headquarters in Wichita.

Many of the companies in Wichita have generous tuition reimbursement plans. Thus, they provide their employees with an excellent opportunity to pursue additional graduate education while building their careers.

In short, Wichita is a very "livable" city. The variety of affordable housing suitable for families both near the University and in the surrounding region and abundant, moderate-priced child care facilities and recreational areas add to its attractiveness. Wichita is stimulating, pleasant, and enjoyable, and offers something for everyone.
The Graduate School

Offices: 107 Jardine Hall
Michael Tillford, dean and associate vice president for academic affairs
James A. Jackson, assistant dean
Margaret Wood, administrative officer

The Graduate School at the Wichita State University supervises graduate study at the University, establishes standards for admission to graduate work, and recommends students who have completed requirements for graduation to the Kansas Board of Regents.

Academic graduate programs at Wichita State include master's, specialist, and doctoral programs. Doctoral degrees are awarded in applied mathematics; chemistry; communicative disorders and sciences (logopedics); educational administration; human factors psychology; community-clinical psychology; and in aerospace, electrical, industrial, and mechanical engineering. A doctoral transfer arrangement with the University of Kansas is also available in educational administration.

The graduate faculty consists of the University president, the vice president for academic affairs, the deans of the Graduate School and all other colleges at Wichita State, and regular faculty members. Regular faculty are recommended for appointment to the graduate faculty by the chairpersons of their departments and approved by the Graduate Council. Recommendations for graduate faculty status are based on rank (above instructor); degree in the field, or training or experience; scholarly or professional work; and the need for the faculty member to hold graduate faculty status.

The Graduate Council consists of the deans of the Graduate School, 10 members of the graduate faculty elected by that faculty, one member appointed by the graduate deans, and one graduate student. The council determines and recommends general policies for the Graduate School. The council also advises with the dean on matters submitted by the dean and serves as a committee on exceptions.

In addition, a Doctoral Program Subcommittee exists for the general advocacy of doctoral programs throughout the University community and to review, determine, and recommend policies for doctoral programs. Membership consists of the graduate dean, one representative from each doctoral program, and one member elected from the Graduate Council.

The primary goals of the Graduate School are to encourage independent scholarship and to develop competence in research or other creative activity. Students are expected to master special fields as well as to develop appropriate methods of inquiry for future professional growth.

General University Policies

Human Relations

Notice of nondiscrimination. Applicants for admission and employment, students, parents, and employees are hereby notified that Wichita State University does not discriminate on the basis of race, color, national origin, sex, age, or physical disability in admission or access to, or treatment or employment in, its programs and activities. Any person having inquiries concerning Wichita State University's compliance with the regulations implementing Title VI, Title IX or Section 504 is directed to James J. Rhatigan, Vice President for Student Affairs and Dean of Students, 1845 Fairmount, Wichita, Kansas 67260-0008, (316) 689-3021. Dr. Rhatigan has been designated by Wichita State to coordinate the institution's efforts to comply with the regulations implementing Title VI, Title IX and Section 504. Any person also may contact the Assistant Secretary for Civil Rights, U.S. Department of Education, regarding the institution's compliance with these regulations.

Student Responsibility

Students at Wichita State University have the following responsibilities:

1. To consult their advisers on all matters pertaining to their academic careers, including changes in their programs.

2. To observe all regulations of their college and select courses according to the requirements of that college.

3. To attend all meetings of each class in which they are enrolled (instructors will announce at the beginning of the semester if they consider attendance in computing final grades).

4. To fulfill all requirements for graduation.

5. To be personally responsible for fulfilling all requirements and observing all regulations at Wichita State.

6. To answer promptly to all written notices from advisers, faculty, deans, and other University officers.

7. To file an Application for Degree card in compliance with stated deadlines.

8. To enroll in only those courses for which the stated prerequisite(s) (if there are any) have been satisfactorily completed. Failure to comply with this procedure may result in administrative withdrawal.

Students also should comply with the principles in the following statement, which was adopted by the Student Senate, the Faculty Senate, and the Administrative Council of the University:

Wichita State University reaffirms the principle of intellectual freedom in scholarly activity for University students, and it recognizes the full citizenship rights of students in inquiry, discussion, and such actions as they may choose to take on public issues.

The rights and freedoms of students involve concomitant responsibilities. Incumbent on all students, as on all citizens, is the responsibility to observe the University's rules of orderly procedures and the laws of the larger community of which the University is a part. In the matter of actions on public issues, to speak one's opinion, to petition, to distribute literature, to assemble peacefully and hold meetings, to use the persuasion of ideas and other actions within the bounds of orderly and lawful procedures are sanctioned by the University. But infringement on the rights of others, acts or threats of violence to people, destruction of property, disruption, or other interference with the normal functioning of the University and its personnel and other disorderly and unlawful acts will not be countenanced.

Within its sphere of responsibilities the University will afford students proper procedural safeguards to resolve matters in dispute. Those who willfully violate these University standards must expect to face disciplinary action on the part of the institution, which may include reprimand, probation, or suspension, consistent with campus provisions for due process.

Academic Honesty

Opportunities for learning at Wichita State University involve the students'

...
rights to express their views and to take reasoned exception to the views of faculty; to examine all questions felt to be appropriate to a course of study; to be protected from improper disclosure of their views and beliefs; to be examined in a fair and impartial manner; and to be treated with dignity and respect. Students are responsible, however, for learning the content of any course of study outlined by their instructors, regardless of any views or judgments privately held and for demonstrating their attainment in an honest manner.

Students who compromise the integrity of the classroom are subject to disciplinary action on the part of the University. Violations of classroom standards include:
1. Cheating in any form, whether in formal examinations or elsewhere.
2. Plagiarism, using the work of others as one's own without assigning proper credit to the source.
3. Misrepresentation of any work done in the classroom or in preparation for class.
4. Falsification, forgery, or alteration of any documents pertaining to academic records.
5. Disruptive behavior in a course of study or abusiveness toward faculty or fellow students.

A standard of honesty, fairly applied to all students, is essential to a learning environment. Students violating such standards must accept the consequences; penalties are assessed by appropriate classroom instructors or other designated people. Serious cases may result in discipline at the college or university level and may result in suspension or dismissal. Students accused of abridging a standard of honesty may protect themselves through established academic appeal procedures and are assured of due process and the right of appeal from accusations or penalties felt to be unjust.

Open Records

Students may inspect and review their educational records maintained by Wichita State. According to law, the University is allowed 45 days to respond to the requests, but typically less time is required.

Students wishing to challenge the accuracy of their records are entitled to a hearing, upon written request to the dean of the college in which they are enrolled. The hearing is arranged by the dean.

Students may also receive the names of people from outside the University who request access to their records and the reason for such requests. Similarly, students may also be informed of requests for records from individuals within the University who normally do not review students' education records.

Information in a student's records will not be released without his or her written permission.

Exceptions to these statements are noted in Public Law 93-380. A copy of the law is available to all students in the Division of Student Affairs, Grace Wilkie Hall.

Accident or Injury

The State of Kansas and Wichita State University do not insure against accidents or injury to students which may occur during University-sponsored activities on or off campus. The University will make every reasonable attempt to advise students concerning potential danger of accident or injury. Students are expected to act responsibly by taking necessary precautions to prevent accidents. Students are also advised to protect themselves from the financial burden of accident or injury through a personal insurance policy.

Courses

Courses carrying graduate credit are listed in the Graduate Bulletin. Only courses numbered 500 and above can carry graduate credit, and only for students previously admitted to the Graduate School. Courses numbered under 500 carry undergraduate credit only and may be taken as supporting or prerequisite courses, but are not counted toward an advanced degree and are not computed in a student's graduate grade point average. In some cases departments do not allow courses numbered 500 through 699, which carry graduate credit, to meet degree requirements and students should be aware of such restrictions before enrolling.

Courses numbered 500 to 699 are aimed primarily at juniors and seniors, but graduate students may also receive graduate credit for these courses. Courses numbered 700 to 799 are structured primarily for graduate students, but upper-division undergraduate students may be admitted if they meet course prerequisites. In such mixed classes a discernibly higher level of performance by graduate students is expected with the nature of this differential performance set by the professor. Graduate students enrolling in such classes automatically earn graduate credit unless the professor requests the Graduate School to have the enrollment designated on the transcript as "undergraduate credit only." Courses numbered 800 and above are restricted to graduate students only.

Courses numbered 700-899 are designed primarily for Graduate I students (students who ordinarily have not accumulated more than 30 hours in a graduate program). Courses numbered 900-999 are designed primarily for Graduate II students (those who ordinarily have completed more than 30 hours in a graduate program).

In special cases, courses in areas where advanced degree programs are not currently available may carry graduate credit and apply toward an advanced degree in a related field or simply count as graduate credit for some nondegree purpose. Any of these courses applied toward an advanced degree program must have the approval of the student's advisor and the chairperson of the department involved in advance of enrollment.

Graduate School Policies

Admission to Graduate Study

In order to receive graduate credit at Wichita State University, students must be admitted to some category of study in the Graduate School.

The primary admissions criterion is a bachelor's degree from a regionally accredited institution. The basis on which credits are awarded for the bachelor's degree must be consistent with the policies and procedures for the award of such credit at Wichita State.

Applicants with bachelor's degrees in programs in which credit was awarded for experiences which were outside the control of a regionally accredited educational institution, e.g., credit for life experience, may be viewed as inadequately prepared to undertake graduate study. In such instances, admission to the Graduate School may be denied or prerequisite course work assigned to fill the deficiencies.

Two admission statuses, degree and nondegree, are available in the Graduate School to accommodate qualified students desiring to pursue graduate degrees as well as those simply desiring to earn graduate credit for personal and professional reasons. To be considered for degree or nondegree graduate status, students must submit a completed Applica-
tion for Admission and appropriate transcripts (as described below) to:
Graduate School
107 Jardine Hall
Wichita State University
1845 Fairmount
Wichita, KS 67260-0004

Records required for admission evaluation should reach the Graduate School at least three weeks before registration for the term when admission is desired. Materials received after this date will be processed as the time of staff and faculty permits, but the Graduate School cannot guarantee that final action can be taken in time to allow enrollments for graduate credit. International applicants applying from their home country have earlier deadlines: March 31 for Fall and August 31 for Spring.

Because of faculty and facility limitations, there are restrictions on the number of students admitted to some graduate programs and these limits may prevent some students from being admitted although they may otherwise qualify. Since departments have enrollment limitations generally take action on new applicants in March for Fall admission, early application is recommended. Preference usually is given to degree program applicants.

An admission to the Graduate School remains valid only if students enroll and complete at least one class as graduate students within one calendar year of their admission date.

The Graduate School does not deal with teacher certification matters as these are handled by the College of Education Teacher Certification Service Office, 131 Corbin Education Center, (316) 689-3304.

Graduation Requirements

Several steps are required before a student receives a graduate degree from WSU. Although they are explained in more detail in other sections of the Bulletin, the following list summarizes the requirements:

- 1. Formal admission to the appropriate degree program.
- 3. Satisfactory completion of prerequisites indicated when admitted.
- 4. Satisfactory completion of tool or language requirements.
- 5. An Application for Degree submitted by the set deadline.
- 6. Removal of all incomplete grades by the deadline specified.

7. Completion of terminal program requirements such as thesis, dissertation, comprehensive examination, etc.
8. Submission of the bound thesis/dissertation or a bindery receipt by the deadline specified.
9. A cumulative graduate grade point average of at least 3.000 for all WSU courses on the Plan of Study (no grades below C) and for all graduate work taken at Wichita State University.

Graduate Degree Program Admission

General Information

Admission to a graduate degree program is based primarily upon an applicant's previous academic record; therefore, two official transcripts of all previous academic work must be submitted along with the Application for Admission to the Graduate School. Some departments/programs require higher grade point averages than the minimum Graduate School requirements listed below, and other admission credentials (reference letters, Graduate Record Examination(s), etc.) This is particularly true for the PhD programs. Individual department sections of the Bulletin should be consulted about such requirements.

Full Standing

Minimum Graduate School admission requirements for full standing are listed below.

For master's and specialist programs:
1. A bachelor's degree from a regionally accredited institution.
2. 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.
3. No more than nine hours of background deficiencies in the major field of graduate study desired.

For doctoral programs:
1. Previous degree(s) from regionally accredited institutions.
2. A grade point average of at least 3.000 in the last 60 hours or nearest two years when the bachelor's degree is the admissions credential. Applicant's with a master's degree or with completed graduate course work must have attained at least a 3.250 grade point average.
3. Scores on the General Aptitude Test of the Graduate Record Examination (within the last five years).

Conditional Status

Students who may have background deficiencies in excess of nine hours or who have not submitted required references, examinations, etc., but who otherwise have met the full-standing degree program requirements may be granted admission on a conditional basis. Students are allowed one semester to submit the remaining credentials and one year to remove background deficiencies. Transfer to an appropriate nondegree category will result if the necessary conditions are not satisfactorily met.

Probationary Status

Students who do not meet the minimum academic requirements for full standing degree program admission may be admitted on probation when reasonable evidence exists to indicate their ability to do satisfactory degree program work. Students must earn a 3.000 GPA after the first nine hours of graduate credit course work to be removed from probation.

Graduate Nondegree Admission

General Information

Persons who already possess a graduate degree, who do not want to seek a graduate degree at Wichita State University at this time, or who wish to take graduate courses for professional advancement or personal satisfaction, should apply for nondegree admission. Students originally admitted to a nondegree category may later request the department to consider a transfer to degree status, or reapply for admission if the degree program is in a different department. A maximum of 12 hours of graduate credit taken while in a nondegree category may be counted in a degree program, provided students have obtained the approval of their major departments and the graduate dean.

Category A

Students should apply for admission in this category if they meet the following requirements:
1. A bachelor's degree from a regionally accredited institution.
2. 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.

Some departments require higher grade point averages and other admission credentials. Individual department sections
of the Bulletin should be consulted about such requirements.

Applicants for category A must submit to the Graduate School a completed Application for Admission and two official transcripts of the work for either a previous graduate degree or for a bachelor's degree.

Admission to this category provides students the opportunity to take courses at Wichita State for which they have the prerequisites. Upon satisfactory completion of a course, credit is placed on a Wichita State graduate transcript. However, only credit earned in courses numbered 500 and above is counted as graduate credit work.

Students who do not meet the 2.750 grade point average requirements may be admitted to this category on probation if reasonable evidence exists to indicate their ability to perform satisfactorily in 800-level or above course work.

Category B

Students not seeking a graduate degree at Wichita State but who want to continue personal and professional development beyond the bachelor's level through enrollment in certain graduate level courses, including workshops, may be admitted to this nondegree status. Students admitted to this category are restricted to enrollment in courses numbered below 800 for which they have the prerequisites. Admission to category B requires submission to the Graduate School of a completed Application for Admission form and two official transcripts showing the award of a bachelor's degree from a regionally accredited institution. A copy of a currently valid teaching certificate may be submitted as an alternate supporting credential.

Credit earned in category B status will be placed on a Wichita State graduate transcript, with graduate credit being awarded for courses numbered 500 and above.

Guest Students

Graduate students in good standing at another accredited graduate school may be admitted to Wichita State as guest students, if they have their school's permission to take work at WSU for transfer back to their home institutions. Admission requires the submission of a completed Application for Admission and a signed letter from the graduate dean or the dean's representative at the home institution certifying the student's status there. Such admission is valid for only one semester. If enrollment is desired beyond one semester, the student must obtain regular admission.

Graduate Credit for Seniors (Senior Rule)

Seniors at Wichita State or other bachelor's-degree-granting institutions may qualify to take work for graduate credit under the Senior Rule. This opportunity applies to students who have an overall grade point average of 3.000 or above in their major field and in upper-division courses and who are within 10 hours of completing the bachelor's degree. Work must go beyond the requirements for the bachelor's degree, and the degree must be completed within the semester in which a student takes the graduate courses.

Students who wish to earn graduate credit under the Senior Rule must apply to the Graduate School for regular graduate admission and also complete a Senior Rule application form. Approval is needed from the student's major adviser, the department chairperson, or graduate coordinator for the department in which the work is to be taken, the undergraduate dean of the student's college and the dean of the Graduate School before any courses can be taken for graduate credit. In addition, students from other institutions must be admitted as undergraduates (possibly as guest students) through the University admissions office.

The completed Senior Rule application, application for admission to Graduate School, and supporting transcripts must be received in the Graduate School office no later than two weeks prior to the semester of intent.

International Students

A $25 nonrefundable application fee (subject to change) is required of international students, except those entering the Graduate School directly after attending Wichita State as undergraduates.

In addition to Graduate School and departmental admission requirements, international students must present a completed official Wichita State Graduate School Statement of Financial Support before necessary visa forms can be issued. International students also must attain a minimum score of 550 on the Test of English as a Foreign Language (TOEFL) taken within the last two years, unless they have attended another United States university in academic courses for a minimum of one year. Some departments require higher TOEFL scores.

All academic credentials must be official and translated into English.

International students who qualify for admission to the Graduate School may apply to their department chairperson or the dean of their college for information on graduate fellowships and assistantships. International students must enroll as a full-time student (at least nine hours of graduate credit course work) each semester. Enrollment during the first semester must be in the program to which the student is admitted unless written permission to gain admission and enroll in a different program is obtained from the original department.

International students presently in the United States on a student visa obtained by admission to another U.S. university will not be considered for admission to Wichita State until they have attended the institution issuing their original I-20 for at least one semester. Exceptions to this policy require the concurrence, in writing, of the institution issuing the original I-20.

International students requiring student visas are not eligible for nondegree admission status.

Former WSU Graduate Students

Students who have completed graduate course work at Wichita State University but who do not enroll for more than 12 months are placed in an inactive status on the registrar's computer data base. To enroll again, such students need to write or call the Graduate School office and ask to have their records reactivated. Such notification needs to be done at least one month in advance of any planned enrollment. Because of changes in program requirements, periods of nonenrollment may result in the need to complete an application for readmission to the program. Degree-seeking graduate students are expected to make progress toward their degree in a timely manner (six year time limit for master's and specialist degrees; six to nine years for doctoral degrees). Some departments take action to dismiss students who absent themselves for periods of a year or more.

Students who complete graduate degrees at Wichita State University are transferred to nondegree, category A, status in the academic field of their graduate degree which allows continued enrollment for graduate credit at WSU. Should such students desire to undertake a new academic program or change advising areas, a new application for admission to the desired area of work in the Graduate
School must be filed with the Graduate School office. New transcripts are not needed in this case.

**Senior Citizen Enrollment**

People wishing to enroll under the Senior Citizens Program in courses numbered 800 and above must first obtain the written permission of the instructor.

**Independent/Directed Study Courses**

A primary goal of the Graduate School is to encourage independent scholarship. Thus, graduate students have many opportunities to engage in self-initiated independent study under the supervision of an individual member of the graduate faculty. In addition to traditional titles, such as thesis, research project, internship, and practicum, various departments use independent study, special problems, directed readings, individual projects, directed study, etc., to identify opportunities for individual study. The following requirements govern enrollment in independent study offerings:

1. Consent of the instructor must be obtained before enrollment.
2. The content of the study should not be the same as that covered in a regular course (exceptions to this requirement must have the approval of the graduate dean before enrollment).
3. Although scheduled on an arranged basis, there must be a sufficient number of contact hours between the student and supervising instructor during the duration of the independent study to ensure consistency with the amount of graduate credit earned in regular course offerings.
4. No more than six hours of independent study course work (excluding dissertation, thesis, and other independent study activities that are terminal requirements for a degree) can be used in a degree program.
5. Each student enrolled in an independent study offering is required to submit an abstract of the project to the supervising instructor at the time the product of the independent study is submitted for evaluation (excluding thesis/dissertation, research projects, and other terminal projects required for a degree). The instructor will submit the abstract to the Graduate School for final action.

Some departments have additional departmental requirements that must be met before enrolling in independent study courses. Students should consult the appropriate departmental personnel before enrolling.

**Cooperative Education Program**

Cooperative Education is an academic program for undergraduate and graduate students who wish to combine classroom studies with academically related employment by being placed in paid internships closely related to their academic majors. Cooperative Education places students locally and nationally.

Enrollment in cooperative education for graduate credit can be made only through those departments who have approved courses numbered 781 or 981, titled Cooperative Education. No other course titles such as independent study, special topics, etc. can be used for cooperative education enrollment.

Graduate students desiring to participate in the Cooperative Education program should first consult with their major department and the Graduate School. The Cooperative Education office is located in 125 McKinley Hall (316) 689-3688.

**Advisers**

Graduate students admitted in a degree program category are assigned faculty advisers when admitted to the Graduate School. Course work taken without the adviser’s expressed approval is not automatically applicable toward a degree.

Students in nondegree status in designated departments are also assigned faculty advisers for consultation purposes. Students should consult their advisers for information on course prerequisites, content, and similar matters.

Students admitted to nondegree undesignated status are not assigned faculty advisers and should be aware of this limitation when enrolling.

Advisers assigned at the time of admission to a doctoral program will assist the student in completing initial tasks such as enrollment, coordination of examinations, submission of a Plan of Study, and the formation of a Supervisory Committee. Depending on individual department procedures, the adviser may chair an Advisory Committee which also will be involved in the advising activities above. It also is possible for the adviser to be named as Chairperson of the Supervisory or Dissertation Committee.

**Enrollment, Drops, and Adds**

Procedures for enrollment are established by the registrar. Graduate students must enroll according to the procedures published in the Schedule of Courses for any given term. Adherence to the enrollment procedures will minimize problems of unavailable records and other delays.

Students who have not enrolled for two or more semesters prior to a planned new enrollment should call the Graduate School to request preparation of enrollment materials and to clear any problems relating to their planned enrollment.

Once a student has enrolled and paid, classes can be changed only by filing a Drop and/or Add Form with the necessary signatures. Changes of sections also require such action. If these forms are not submitted, an F grade could be recorded for failure to attend the class shown on the original enrollment records.

Fees are charged for late enrollments and drops. Only partial refunds are made after certain cutoff dates. Enrollments or adds normally will not be approved after the 20th class day. Drops of classes with a W grade are also subject to a time limit established by the registrar.

The Graduate School, (316) 689-3095, has more information about deadlines of these items.

**S/U and Audit Enrollments**

Certain approved courses numbered 500 and above that carry graduate credit for a student are graded S/U (satisfactory/unsatisfactory) for all students enrolled. Such courses are identified in the Schedule of Courses, or students enrolling in special offerings for graduate credit will be informed of S/U grading by the instructor if this system is to be used. No more than six hours of work graded S may be used toward the requirements for a graduate degree. Students wishing to transfer graduate course work graded S/U to a degree program at another institution should inquire of that institution’s willingness to accept credit graded in this manner before enrolling.

Graduate students may take any course for which they have the prerequisites and which is open to them on the basis of their admission category on an audit (no credit) basis. The tuition and fees are no different for auditing courses than for taking them for credit, but a student’s load (total credit hours) does not include audit enrollments. Courses taken on the audit basis may not be repeated for credit. Use of the audit basis for a course must be declared at the time of enrollment.

**Administrative Withdrawal**

Administrative withdrawal may be initiated by the graduate dean for the following reasons:

1. The student’s class attendance is so irregular that in the instructor’s opinion...
full benefit cannot be derived from the course.

2. The student fails to withdraw from one or more classes by the official procedure given in Wichita State University Schedule of Courses.

3. The student does not meet the conditions for enrollment in courses numbered 800 and above.

4. The student's behavior is prejudicial to Wichita State.

Grades, Probation, and Dismissal

Course work for graduate credit is normally graded A, B, C, D, or F (see exceptions above). Faculty have the option of assigning an I (incomplete) if they feel that sufficient justification exists for the student's failure to complete the course.

Incomplete for regular courses (excluding research, dissertation, thesis, etc.) must be removed by the end of the next semester in which the student enrolls, summer excluded, or the grade of I will remain. If the preceding time limit is not met and students desire credit, they must reenroll in the course. If students reenroll in a course for which they received the grade of I, the grade is changed to a W for the original enrollment when the grade earned during the repeat enrollment is assigned. The grade earned during the repeat enrollment becomes the grade of record. Faculty members may define other conditions for the removal of incomplete grades within the general framework indicated here.

Graduate credit courses in which grades of C or above are earned cannot be repeated. Grades below C may not be used to satisfy degree requirements, but such courses may be repeated. The grades of all repeated courses that are started six years or less before the end of the semester within which the degree work is completed are averaged with the original grades to determine a student's grade point average.

The graduate grade point average includes only those courses taken at WSU for which graduate credit is earned and for which a regular letter grade (A, B, C, etc.) is assigned. Courses transferred from another institution and graduate credit courses graded S (satisfactory) do not affect the graduate grade point average.

Students admitted to full standing in a degree program, or nondegree category A, will be placed on academic probation if their graduate grade point average falls below 3.000. Students admitted on probation are automatically placed in full standing if they attain a cumulative grade point average of at least 3.000 after the completion of nine hours of graduate credit course work. Students placed on probation after admission are automatically returned to full standing if they attain a cumulative grade point average of at least 3.000 within nine additional hours of graduate credit course work.

Students may be dismissed from their degree program or nondegree category if they fail to attain a cumulative grade point average of at least 3.000 upon the completion of nine graduate credits after admission on probation or placement on probation after admission. Students in any category may be dismissed from the Graduate School if they fail to maintain a grade point average of at least 2.000 in all work taken (including undergraduate courses) after admission.

Students also may be dismissed from a graduate degree program if, in the opinion of the graduate faculty offering the program, they are unable to carry on advanced work or make satisfactory progress toward the degree. Students dismissed for this reason may be transferred to a nondegree category.

Exceptions

Departures from the rules and regulations stated in the Graduate Bulletin require the filing and approval of a Request for Exception. Such requests must have the approvals indicated on the request form and must state a logical and coherent manner a rational basis for the requested exception. Forms for such requests are available from the Graduate School.

Unusual and/or substantial deviations from stated rules and regulations require action by the Graduate Council and may involve delays of several weeks.

Load Definitions

At least nine hours of graduate credit course work is defined as full-time graduate enrollment during the fall or spring semester. During the Summer Session, a minimum of six hours is considered full-time graduate enrollment. For graduate assistants working 20 hours per week, six hours constitute a minimum full-time enrollment.

Students enrolling in all or a majority of courses that carry undergraduate credit only must meet the undergraduate requirement for certification as a full-time student (12 hours).

The normal load for graduate students is 12 hours of graduate credit during the fall or spring semester. More hours may be taken with the adviser's approval, but graduate students may not enroll for more than 16 hours per semester (doctoral dissertation credit excluded), or 10 hours during an eight-week Summer Session. Students may petition the Graduate School before enrollment for exceptions to this policy.

The course loads of students with teaching or research assistantships are normally reduced in recognition of the work they perform. While the Graduate School sets no official maximum number of hours, other than the 16-hour limit, students holding assistantships should work with their advisers to arrive at a load appropriate to their situations.

Special consideration for thesis and research assistantships may be obtained by petitioning the Graduate School.

Faculty Restrictions

Faculty members of Wichita State University who hold the rank of assistant professor or higher cannot earn undergraduate degrees from Wichita State except for unassigned faculty (not attached to a particular college) or faculty members granted specific approval by the Graduate Council. Full-time faculty members may not pursue more than 6 hours of graduate credit per semester.

Degree Program Regulations

To pursue a graduate degree at Wichita State, students must be admitted to the specific program for which they are seeking a degree. Students may not be admitted to more than one graduate degree program at a time.

Upon the advice and consent of the major department, a maximum of six semester hours of work in one earned master's degree program may be applied to a second master's degree. Such hours must meet the time limit requirement.

Credits Required

All master's degrees require a minimum of 30 credit hours of graduate credit work, including 18 hours in courses numbered 700 and above, excluding workshops. Some programs require more than 30 credit hours, in which cases at least 60 percent of the courses must be numbered
in the 700 level or above, excluding workshops. The total number of hours for the doctoral degree varies with the department offering the program, including the division between course work and dissertation hours. At least 60 percent of the hours beyond the master's degree must be in courses numbered 800 and above. Specific program requirements are listed in the individual department's section of the Graduate Bulletin.

Plan of Study
In order to define officially a program of study for a graduate degree, students must submit in triplicate the Plan of Study form leading to admission to candidacy for the degree no later than one month following the completion of 12 semester hours of graduate credit or the semester prior to the semester of graduation, whichever comes first. For doctoral students, approval of a formal Plan of Study by the Dean of the Graduate School determines the requirements, rules, and regulations which must be successfully met to complete the degree. It is important, therefore, that the Plan of Study be submitted as soon as possible but no later than the end of the semester in which qualifying examinations are completed.

Students must meet the program requirements in effect at the time the Plan of Study is officially approved. The process of filing an acceptable Plan of Study is not completed until the student and adviser have received approved copies of the plan from the Graduate School. If these copies have not been received approximately three weeks following submission, students should check with the Graduate School office.

A Plan of Study is developed in conjunction with the adviser and signed by the candidate, the adviser (and advisory committee members, if applicable), the chairperson of the major department, and the dean of the Graduate School. All academic work completed and planned for the degree must be included in the Plan of Study at the time of submission.

Students may make changes of up to three courses in the Plan of Study that are necessary because of enrollment problems or other circumstances by submitting the Revision to Plan of Study form. More extensive changes may be accomplished by filing a new Plan of Study marked "revised plan."

Failure to meet the deadline for filing an acceptable Plan of Study may result in a delay in graduation or loss of credit planned for use in the program.

Language or Tool Requirements
The Graduate School has no overall language or tool requirements, although such requirements have been established by some departments. Students should consult an individual department's section of the Graduate Bulletin for information regarding such requirements.

Any tool subjects (e.g., foreign language, computer programming, statistics, etc.) required by the major department must be identified in the student's Plan of Study. The completion of this tool is not required prior to submission of the Plan of Study but is required prior to graduation.

Transfer of Credit
From Another University
Graduate credit work at another university is not transferred and entered on a Wichita State transcript except in degree programs and only then after completion of all work for the degree, as defined on an approved Plan of Study. Students may transfer, with departmental approval, graduate credit from an accredited graduate school under the following conditions:

1. The credit-offering institution is accredited by the cognizant regional accrediting association to offer graduate degree programs appropriate to the level of credit to be transferred.
2. The work is approved by the dean of the Graduate School.
3. The work is an integral part of a program planned by the candidate and the adviser and listed on an approved Plan of Study.
4. Graduate credit cannot be earned under a credit by examination program.
5. Correspondence courses cannot be accepted for graduate credit.

Degree Card Filing
An Application for Degree card must be filed with the Graduate School within three weeks (15 class days) after the beginning of any fall or spring semester in which students plan to finish all degree requirements. Students planning to graduate at the end of the Summer Session must file an Application for Degree within one week (five class days) after the beginning of the regular eight-week session even if they plan to enroll for the second four weeks only. In the latter case the degree card must be filed within the first week with an indication of intent to enroll for the second four weeks. If, after a student files a degree card, the degree is not completed, a new card must be filed within the time frame just described for the semester in which

transcript containing the requested transfer work must be on file in the Graduate School. If such work is shown on the transcripts provided in support of the original admission to the Graduate School, no new record need be provided. Approval by the major department is necessary to ensure that the course work has been accepted as an integral part of the candidate's program.

5. Courses considered for transfer must have been completed at an accredited graduate school and must carry a minimum grade of B.
6. Graduate credit earned through correspondence courses cannot be used to meet degree requirements.
7. Transfer credit that is accepted must have been in courses started six years or less before the semester in which the degree work is completed.

Extension, Workshop, and Correspondence Credit
and Credit by Examination
Workshops and extension graduate credit courses may be accepted for graduate credit as a part of a graduate degree program under the following conditions:

1. The work is approved by the major department.
2. The work is approved by the dean of the Graduate School.
3. The work is an integral part of a program planned by the candidate and the adviser.
4. Graduate credit cannot be earned under a credit by examination program.
5. Correspondence courses cannot be accepted for graduate credit.
requirements for the degree are again expected to be completed.

Failure to meet these deadlines will result in a delay in graduation and in the awarding of the diploma. In these cases, if all work is completed and reported to the Graduate School, students need not enroll for the following semester.

Time Limits
Courses started more than six years before the semester in which the master’s degree work is completed may not be used as part of a degree program. For doctoral programs requiring a master’s degree for admission, the doctoral must be completed within six years from the effective date of admission. In those programs permitting admission directly after the bachelor’s degree, the doctoral must be completed within nine years after the date of admission.

In some cases where the time limits are exceeded courses may be validated. To have courses validated, students must petition the Graduate School and pass a special written examination with a grade of B or better. Transfer courses and work that originally received a grade of C may not be validated. Courses completed 10 or more years before the degree is granted, even if previously validated, may not be used to meet degree requirements.

Residency
The doctoral student is required to spend at least two contiguous semesters (summers excluded) as a full-time resident student.

Thesis or Research Credit
When a thesis is part of a student’s master’s degree program, and for all doctoral students, thesis or dissertation or research project credit must show on their graduate transcripts. The transcript will normally carry the grade of I until the thesis or dissertation is completed and students have met the requirements of the supervisory committee and the Graduate School. An S (satisfactory) or grade of B or better is required for an acceptable thesis/dissertation. Thesis or dissertation hours in excess of the minimum required for the degree will be graded S.

Students writing a thesis or dissertation or engaged in research must be enrolled in courses entitled “Thesis,” “Dissertation,” or “Research” each semester in which they receive advice, counseling, or research direction from their advisors. This includes the semester of graduation unless all degree requirements are met prior to the first day of classes of the semester of graduation. Enrollment is for the number of hours that accurately reflects demands of the students on University faculty and facilities.

Thesis Preparation
Three copies of the thesis/dissertation must be bound on white 8 1/2 x 11 inch paper. All copies must be on 20-24 weight bond with a minimum rag content of 25 percent. The Graduate School will transmit two copies to the University Library. The third bound copy will be presented by the student to the academic department that supervised the work.

For additional information about the preparation of the thesis, the student is referred to the Thesis Preparation and Graduation Procedures Manual, produced by the Graduate School, which can be purchased in the WSU Bookstore.

Examinations, Committee Structure
Preliminary examinations are administered by several departments to determine students’ qualifications for further graduate study. Qualifying and/or comprehensive examinations are required in all doctoral programs. Refer to the appropriate department’s section of the Bulletin or consult with the department for additional information about these examinations. Most departments also require written or oral comprehensive examinations. Committees for these examinations are recommended by the major department and approved by the dean of the Graduate School. Each committee must include at least three members chosen from the graduate faculty. Thesis committees include a minimum of three and a maximum of five voting members. Voting members are full or associate graduate faculty or people from outside the faculty judged to have exceptional competence in the field of research covered in the thesis and who have been approved by the dean of the Graduate School. The chairperson of the examination committee must be a full graduate faculty member or an associate member with temporary authorization to chair the committee. A majority of the voting members must be from the major department. One voting member must be from an academic department outside the major department who is recommended by the student’s adviser and approved by the dean of the Graduate School. In doctoral programs the Supervisory (Dissertation) Committee is composed of a minimum of five graduate faculty, with at least four having Full Membership including the chairperson who also must have authorization to chair doctoral committees. At least one member, the graduate dean’s representative, must be outside the student’s department. In addition to guiding the student to successful completion of the dissertation, this committee conducts the final oral examination.

In the above examinations the candidate passes if no more than one negative vote is cast.

Commencement
One commencement is held each year in May at Wichita State. Students completing degree requirements during the Summer Session or the fall semester preceding Commencement may obtain their diplomas from the registrar’s office or request that their diplomas be mailed. These students may attend Commencement exercises the following May, but attendance is not required. Each graduate’s name appears in the Commencement program, with the completion date of the award of the degree.

Financial Information
Basic Fees
The current fees, listed below for 1994-95, are subject to change by the action of the Kansas Board of Regents or the state legislature.

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<th>Each semester and Summer Session</th>
<th>Non-Resident</th>
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<tbody>
<tr>
<td></td>
<td>Resident</td>
<td>Flat fee</td>
</tr>
<tr>
<td>1 through 11 hours — per credit hour</td>
<td>97.15</td>
<td>257.05</td>
</tr>
<tr>
<td>12 hours and above — flat fee</td>
<td>1,165.80</td>
<td>3,444.60</td>
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* Student fees of $14.65 per credit hour are included in these rates. Media courses are included in the 12-hour flat fee calculation at the above rates. However, off-campus courses and workshops are not included and fees for these courses are in addition to the 12-hour flat fee calculation.

The student fees, required of all students enrolled on Wichita State campus during the regular semesters and Summer Session, are distributed to pay for Educational Opportunity Fund, parking, Campus Activities Center, athletics, academic and service buildings, Heskett Center, student health services, forensics, Student Government Association, University Forum Board, student publications, concerts, drama, and similar items.
Special Fees and Refunds
Prior to each semester, the registrar establishes enrollment dates. Late registration is a special service resulting in extra costs for special staff and facilities. Students who register late are assessed late registration fees as published in the Schedule of Courses.

Students who drop courses are assessed one transaction fee for all courses dropped at the same time. This fee recognizes that in many instances students have occupied space in class which was not available to other students and for the extra cost of staff and facilities to handle the transaction. The amount of the fee is published in the Schedule of Courses.

Refunds of tuition fees will be granted for withdrawals in accordance with dates and regulations published in the Schedule of Courses for the semester.

Fee Waiver Policy
The dean of the student’s college, the dean’s designee, or the Associate Vice President for Enrollment Services may authorize a waiver of special fees and/or nonrefundable tuition fees in cases where a schedule change or withdrawal is required because of University regulations, clerical errors, misadvising, class schedule change by the University, or other exceptional circumstances beyond the control of the student and determined valid by the college dean or designee. To petition for a waiver, students should request a petition form from the dean’s office of their college and return the completed petition form to the dean’s office for consideration. Graduate students should petition the Graduate School dean’s office. The student is notified of the action taken on the petition. If approved, the student should submit the petition to the controller’s office with enrollment, schedule change, or withdrawal forms.

Graduate Assistantships, Fellowships, Scholarships, and Loans

Assistantships
Each year Wichita State awards a number of assistantships for advanced study. Grants are made in most departments offering advanced degrees. Graduate assistantships provide for cash stipends up to approximately $8,500. A graduate teaching assistantship may qualify the recipient for up to a 100 percent waiver of tuition. Potential applicants for graduate teaching assistantships who are non-native speakers of English must first attain a score of 240 or above on the Test of Spoken English (TSE). The department chairperson or graduate coordinator should be contacted for further information.

Assistantships are awarded primarily on the basis of a student’s academic record and demonstrated teaching, research, and leadership abilities, together with any other available supporting evidence. Students on academic probation and Senior Rule students are not normally considered for assistantship awards. Recipients of graduate assistantships may not work more than a total of twenty hours per week and may not hold other remunerative employment without the written approval of the department chairperson and Dean of the Graduate School.

Carl Fahrbach Memorial Graduate Assistantship. A memorial to Dr. Carl G. Fahrbach, former dean of admissions and records, this assistantship is awarded to a full-time graduate student in the area of counseling and school psychology in the Department of Counseling, Educational, and School Psychology in the College of Education. It is awarded for one academic year and is renewable upon the recommendation of an advisory committee.

Public Administration Affairs Assistantships. Each year Wichita State awards, through the Public Administration Program Committee, a number of graduate assistantships for advanced study in public administration providing for cash stipends of approximately $6,000.

Wichita State University offers several scholarships to students enrolled in advanced degree programs: the Andrea Uleberg Scholarship is available to students in counseling and school psychology; the Herbert Hannan Scholarship is available to students in educational administration; and the Grand Army of the Republic Scholarship and the Sam and Rosemary Sherr Scholarship are available to students in communicative disorders and sciences.

Fellowships and Scholarships
Wichita State awards fellowships and scholarships to graduate students, as described below.

Doctoral Fellowship Awards. Fellowships are awarded to a limited number of graduate students who are admitted to a program of graduate study leading to a doctoral degree and who are in good academic standing. Awards are made primarily on the basis of the academic achievement and potential of the student as a candidate for a doctoral degree. Credentials, such as transcripts of all previous academic work, scores on national or local examinations, experience related to the field of study, and evaluations by former teachers, advisers, or employers, are used in determining awards. Selections are made on a competitive basis without regard to race, creed, sex, or national origin and are generally announced by April 15 for the following fall. Recipients of doctoral fellowships may not hold employment without the written consent of the department chairperson and the Dean of the Graduate School.

James Chubb Memorial Fellowship. Established in 1971, the fellowship is awarded to a graduate student in the Department of Economics.

The Hugo Wall Fellowships. Established in 1973, these are awarded to outstanding students with an urban affairs or public administration background seeking the Master of Public Administration degree. The fellowships honor the contribution made to public administration by the late Professor Hugo Wall. Applications must be filed with the Public Administration Program coordinator, Wichita State University, Wichita, Kansas 67260-0081, by March 1 for the following academic year.

The College of Education offers several scholarships to students enrolled in advanced degree programs: the Andrea Uleberg Scholarship is available to students in counseling and school psychology; the Herbert Hannan Scholarship is available to students in educational administration; and the Grand Army of the Republic Scholarship and the Sam and Rosemary Sherr Scholarship are available to students in communicative disorders and sciences.

The WSU Endowment Association and City of Wichita Assistantships. In addition to the regular teaching and research awards, a number of graduate assistantships are provided by Wichita State University Endowment Association and from the City of Wichita and Sedgwick County mill levy funds. These awards require full-time study or a combination of research assistance and study equivalent to full-time study. The awards are made in graduate program areas judged to have a special need for graduate student support and are based primarily upon a student’s academic record, experience, and other available supporting evidence. All such awards are made by the graduate dean upon recommendation of the selected departmental chairpersons. Inquiries about these awards, which include both master’s- and doctoral-level students, should be made to the Dean of Graduate Studies, 107 Jardine Hall, Wichita State University, 1845 Fairmount, Wichita, Kansas 67260-0004.

Educational Opportunity Fund. Funds have been provided by the Student Government Association for needy, part-time students. Cash awards of $350 are made on a one-time basis. Applications are due December 23 (spring semester) and August (fall). Applications may be
obtained at the Graduate School office. A financial statement form is part of the application. The completed form is evaluated by the financial assistance office. For information and/or application, contact the Graduate School office.

Loans
Wichita State grants loans to graduate students as described below.

Delano Muggard, Jr., Graduate Student Loan Fund. Funds have been provided through Wichita State Endowment Association for loans to encourage graduate student research. The loans are “forgivable” if certain criteria governing the research effort are met. Application deadlines are October 1 (fall semester) and March 1 (spring). Interested students should contact the Graduate School office for details.

Graduate Student Services
Structure
The Vice President for Student Affairs and Dean of Students is responsible for the coordination and supervision of the Division of Student Affairs. Issues involving student life, development, programs, problems, and activities on the Wichita State University campus are addressed by the staff of the division.

The Office of Campus Life (Room 105, Grace Wilkie Hall) is responsible for the residence halls, Resource Center for Independence, fraternities and sororities, student organizations and student involvement programs, the child development center, women’s activities, international programs, career services, student health, informed sources, counseling students with problems or concerns, and encouraging scholastic achievement.

The dean of University College is responsible for the programs and policies of University College. (See the University College section of the Undergraduate Catalog.)

An assistant vice president is responsible for Operation Success, Project Discovery, and Upward Bound, the federal TRIO programs. (See the Special Programs section of the Catalog for a more complete description of these programs.)

The Office of Enrollment Services, which includes Undergraduate Admissions, International Student Admissions, the Intensive English Language Center, the Office of Student Financial Planning and Assistance, and the Registrar’s Office, also is part of the Division of Student Affairs.

Career Services
The Career Services office provides services to students and alumni/alumnae seeking career advice or employment-related assistance.

Individual career counseling is available to assist students and alumni/alumnae with planning and decision making. Assessment instruments, including SIGI (a computer guidance system) are offered for self-assessment. Workshops, presentations, and classroom instruction are offered to enable people to learn about the responsibilities of various career fields, to prepare job resumes and letters of application, to conduct effective employment interviews, and to make informed decisions.

Occupational and career information, employer directories, information on employment trends, employer recruiting literature, annual salary survey reports and information on graduate and professional school opportunities are available in the Career Resource Center.

The Center also houses the Computerized Job Search Lab, a system of Macintosh computers and programs to help students prepare job search documents such as resumes and cover letters. 1stPlace!, a computerized development and referral service, is available to all students who register with Career Services.

Degree candidate and alumni/alumnae placement services include direct referral to career employment vacancies; on-campus interviews with employer representatives; and an employment listing bulletin.

Placement services also include part-time and summer employment opportunities.

Counseling and Testing
The Counseling and Testing Center provides psychological services and counseling for personal and career/life planning issues. Professional counseling is available on a cost-shared basis to all members of the University community—students, their families, faculty, and staff. Individual, couple, family, and group counseling are aspects of the professional counseling services. Testing services also are part of the center’s function. The credit by exam program and the National Testing program are administered directly by the Counseling and Testing Center. The National Testing program includes certification tests for community professionals, CLEP tests, and entrance exams for colleges and graduate schools.

Housing
Housing and food service are provided for graduate students in Fairmount Towers, a 600-student residence hall complex. Accommodations include four-person suites with shared bath. Rooms are furnished with ample study space and personal storage.

Requests for housing information should be sent to:
Director of Housing
Wichita State University
1845 Fairmount
Wichita, Kansas 67260-0141

Wichita State University reserves the right to make policy adjustments where the situation demands and to change the residence of any student or deny or cancel residence accommodations of any student in cases where such action is deemed desirable.

Office of International Programs
International Programs, 303 Grace Wilkie Hall, serves the special needs of approximately 1,500 international students from more than 80 countries enrolled at Wichita State. (For international student admission requirements, see the Admission to Wichita State section of the Catalog.) An orientation program especially designed for newly arriving foreign students prepares them for entrance into the American academic systems and way of life.

International Programs also sponsors the Friendship Family Program, the Global Education Program, and various other activities that promote interaction between American and foreign students.

In addition, the International Program houses a Study Abroad Center which provides information to American students on study, work, and travel opportunities abroad. Information concerning Fulbright-Hays grants may be obtained from this center.

Resource Center for Independence
Serving Students with Disabilities
The Resource Center for Independence (RCI) provides supportive services for students who experience disabilities. Students qualified for this service can receive a handbook of services by contacting the office:

Resource Center for Independence
Wichita State University
1845 Fairmount
Wichita, Kansas 67260-0132
(316) 689-3309

Services are designed on an individual basis and may include the following: note
taking, assistance to class, library assistance, test proctors, study partners, assistance typing papers, and brailing notes. Some auxiliary aids are available for students to use. Textbooks also can be recorded on tape when requested.

The RCI encourages students to be as independent as possible on campus and to use those services which help maximize learning. Meetings with the director or other staff are available Monday through Friday, 8 a.m.-5 p.m.

Student Health Services and Student Health Insurance
The Student Health Services in 209 Ahlberg Hall provides ambulatory health care for students with health concerns, medical problems, illnesses, and injuries. Clinic services and health education are provided by a staff of professional nurses and community physicians. The services of registered nurses and nurse practitioners are available during office hours and physicians may be seen by appointment during their scheduled clinic hours. Physicians specializing in ear, nose, and throat; dermatology; gynecology; internal medicine; orthopedics; surgery; and family practice are available.

Special services of immunizations, anonymous HIV testing, tuberculin skin testing, family planning information, physical examinations required by academic programs, nutrition and diet counseling, and health screening are offered.

A group plan for accident and sickness insurance coverage for students and dependents is available. Opportunities to enroll in the program are offered at the beginning of each regular semester. Information is available at the Student Health Services and the Office of Campus Life.

Student Involvement Programs
The Office of Student Involvement Programs, located in Room 105, Grace Wilkie Hall (689-3022), exists to serve the needs of WSU’s student organizations and individual students in the areas of leadership and involvement. The mission of the office is to encourage WSU students to become involved in campus life and community service and to provide WSU students with the skills and training necessary to become effective leaders. A combination of programs, services, and consultation are offered to accomplish this mission. Services and programs currently offered include a leadership library, student organization needs assessment, student involvement preference surveys, workshops and conferences on topics related to leadership, a student involvement and leadership speakers bureau, a student organization handbook, and an ongoing community service program. Additionally, personnel are available to provide specialized training and consultation to students and student organizations upon request. Many of these programs and services are delivered through the Leadership Council, which is made up of student volunteers with an interest in leadership and a commitment to helping their peers.

All students are encouraged to use the services and programs offered through this office where they can find "what they need to succeed."

University Child Development Center
The University Child Development Center, located in a facility which opened in January 1991, is a licensed school for children of WSU students. Certified preschool teachers and part-time aides supervise activities which include art, language, music, science, numbers, and literature. The school is available from 7:30 a.m. to 5:30 p.m. Monday through Friday for children six weeks to six years old. Each child must stay for a minimum of two hours per day. The program permits children to attend preschool while their parents are in class. It is available to the greater community as well.

Research Support
Center for Economic Development and Business Research
The Center for Economic Development and Business Research is a service of the W. Frank Barton School of Business, engages in business and economic research for a wide variety of clients in both private and public sectors. The center collects, analyzes, and disseminates information to support activities of government, education, business, and economic development organizations.

The center maintains a comprehensive database of economic indicators including retail sales, personal income, employment, construction, and census data. Activities focus on issues related to the economic health of the region. The center publishes Business & Economic Report quarterly. A supplemental monthly also is published called Kansas Economic Indicators.

Center for Women’s Studies
The Center for Women’s Studies coordinates scholarly and curricular activities related to the study of gender and culture. Although within Fairmount College of Liberal Arts and Sciences, the center participates in course offerings, research projects and other educational activities with many other academic units both within and beyond Fairmount College. The center is responsible for administering the BA in women’s studies, as well as the minor, and supervises the work of students pursuing a concentration in women’s studies in various undergraduate and graduate areas. In addition, the center serves as an informational resource for University students and faculty, as well as for the greater Wichita community.

Hugo Wall School of Urban and Public Affairs
The Hugo Wall School of Urban and Public Affairs was created in 1993 to enhance the work of the Center for Urban Studies which had been operating since 1955. The School is a leading contributor to the urban mission of Wichita State University as articulated by the Board of Regents.

The School conducts instruction, research, and service programs, integrating these three essential University functions in responding to the needs of students and the urban environment. Academic programs in administration of justice, gerontology, minority studies, public administration, and social work make up the academic core of the Hugo Wall School. The School’s service programs include seminars for area city and county managers, professional development for area public managerial personnel, certification training for the city clerks and municipal finance officers of Kansas, and municipal leadership workshops for local elected officials. A recent survey of the law enforcement needs of Sedgwick County will result in a wide range of training programs. In addition, WSU is working with the Kansas Department of Social and Rehabilitation Services to develop a training program for social service providers.

The newest features of the School’s research and community service programs are the Kansas Public Finance Center and the Institute for Research on Communities and Crime. In addition, the faculty and staff of the School are engaged in a wide range of research on state and
local government issues, including a statewide assessment for recreational activities for middle school children, an assessment of the impact of reducing the motor vehicle tax, and a needs assessment of the frail elderly.

Kansas Public Finance Center
The mission of the Kansas Public Finance Center is to develop and help implement public strategies that will promote economic vitality in Kansas and to advance the study of applied public scholarly research on the theory and practice of public finance, including public budgeting, financial management and economic development; to strengthen the ability of WSU faculty to provide specific advice to private and public policy-makers about economic vitality and public finance; and to develop and disseminate financial analysis methodologies and techniques appropriate for the public sector based, in part, on private sector practices.

Institute for Research in Communities and Crime
The Institute for Research in Communities and Crime was established in 1994 to research, design, and promote innovations and to facilitate implementation of comprehensive models for strategic community betterment and change. It operates under the assumption that long-term gains for America’s communities necessarily must address the root causes of crime.

The Institute joins theory and practice through interaction between professionals and researching academicians to innovate real world solutions; combines perspectives from multiple disciplines and practices to develop comprehensive working models and intervention strategies; provides a clearinghouse for immediate sharing and dissemination of models and innovations which may hold promise for other communities throughout the nation; and facilitates implementation efforts and continues to monitor and modify policy adjustments because success is dependent upon accurate tailoring of a model to the individual needs of a community.

National Institute for Aviation Research
The National Institute for Aviation Research, a state-supported KTEC Center of Excellence, conducts research projects for government and industry, and provides access to research facilities by faculty and students. Institute laboratories are regularly used for demonstrations in support of the academic programs of the College of Engineering and Fairmount College of Arts and Sciences.

The Institute conducts research in the basic areas of aviation, with a focus on aerodynamics, composites, crash-worthiness of aircraft structures, structures, propulsion, flight simulation, advanced materials, avionics, human factors, detecting, and aviation software reliability.

The Center for Technology Application (CTA) provides support to manufacturers in the application of technologies that include Computer Integrated Manufacturing (CIM), Computer Aided Design (CAD), and Quality. The CTA also operates the Wichita Field Office of the Mid-America Manufacturing Technology Center (MAMTC), a state and federally supported technology transfer program intended to assist small and medium size manufacturers in becoming and remaining competitive.

Rehabilitation Engineering Center
The objective of the Rehabilitation Engineering Center in the WSU College of Engineering is to use technology to improve the vocational prospects of the severely disabled.

A qualified engineering staff, along with a rehabilitation laboratory, technicians, and a well-equipped shop facility, provide the means to accomplish the center’s goals. A federally sponsored rehabilitation grant allows faculty and staff to participate actively in this research.

Research Administration
The Office of Research Administration assists the faculty in developing sponsored research, training, and other service proposals. The office collects, maintains, and provides information regarding the programs, interests, and needs of governments, private foundations, and businesses; coordinates the preparation and submission of project proposals; and handles the general administration and reporting of sponsored grants and contracts.

Small Business Development Center
The Small Business Development Center (SBDC), part of the Barton School of Business, was established in October 1983. The SBDC provides free one-on-one management assistance, resource referrals and business information, and low cost training to small business owners, including potential business owners and inventors. The WSU SBDC serves 16 counties of south-central Kansas.

The state director of all Kansas SBDCs (KSBDC) also is part of the Barton School of Business and is collocated with the WSU SBDC. The state director oversees 10 regional and 16 associate SBDCs located at academic institutions throughout the state.

Small Business Institute
The Small Business Institute is housed within the Barton School of Business. Its purpose is to bring together the student’s knowledge and the small business person’s experience for the benefit of both. Such interaction rounds out the senior and graduate student’s education with practical experience while offering assistance to small businesses in the community.

Social Science Research Laboratory
The Social Science Research Laboratory houses 19 terminals, an NCS optical bubble scanner, two line printers connected to the WSU mainframes, and TWSU BBS (The Wichita State University Bulletin Board System).

The lab offers several services:
Test Grading Services. They grade exams for instructors who wish to use bubble sheets as answer sheets for their exams. Differential item weighting and up to three different forms of the test are supported. Results for each student, including the items each student missed, a raw score, a percent score, and other statistics, are generated for the instructor. Additionally, a complete item analysis and overall statistical information about the exam are available for the instructor.
Other Scanning Services. They also provide service and consultation for those using bubble sheets for data collection in their research projects.
SPTE. The lab organizes, administers, and scores the Student Perception of Teaching Effectiveness. The instructor is provided a profile of students’ perceptions of their teaching skills. Upon request, consultation is offered regarding the profile analysis.
Terminals. The terminals are available for both student and faculty use.
TWSU BBS. This computer bulletin board is for WSU faculty, staff, students, and anyone else interested in bulletin boards. The purpose of TWSU BBS, among other things, is to provide information about Wichita State University, including schedules, the University
Calendar, special events, and other information; (b) direct people to individuals who can answer questions about WSU; (c) provide shareware and public domain software; and (d) provide a wide variety of network conferences and other e-mail services.

University Gerontology Center
The University Gerontology Center develops and coordinates gerontology-related activities and programming at Wichita State, including research, service, and Academic Outreach. The center serves as a resource center and information clearinghouse to assist community agencies and organizations in planning and developing services for older people.

University Press of Kansas
The University Press is operated jointly by six state Kansas universities: the University of Kansas, Kansas State University, Wichita State University, Emporia State University, Fort Hays State University, and Pittsburg State University. Founded July 1, 1967, it was the first university press in the United States to function on a statewide level under specific sponsorship of all of the state's universities. Offices are located on the campus of the University of Kansas in Room 303, Carruth-O'Leary Hall.

Walter H. Beech and Supersonic Wind Tunnels; Water Tunnel
Various aerodynamic test facilities are available at Wichita State for faculty and student use. The Walter H. Beech Wind Tunnel is a 160 mph closed-return tunnel with a 7-by-10 foot test section.

A 3-by-4 foot subsonic wind tunnel features a laser velocimetry system for flow measurement. A digital data acquisition and reduction system accompanies a six-component sting balance for force and pressure measurements.

Two supersonic wind tunnels, capable of producing wind velocities of two to four times the speed of sound, are available. A 2-by-3 foot water tunnel is excellent for flow visualization. Dye filaments are introduced into the water, and flow patterns are recorded using photographic and video equipment.

WSU Center for Energy Studies
The WSU Center for Energy Studies conducts energy-related research with emphasis on applications within the state of Kansas. Currently, the major focus of the research conducted in the center is related to various aspects of electric power and energy. However, research related to alternate and fossil energy sources is also within the scope of the center's activities. The industry-supported Power Electronics and Power Quality Research Laboratory is also a part of the Center for Energy Studies. The center is housed in the WSU Department of Electrical Engineering.

Special Academic Programs
Academic Outreach
The Division of Academic Outreach provides support to Graduate Programs by working with the Graduate School and academic units to make course work and programs available in Outreach locations; by providing mail-in or on-site admission, registration, and fee payment for graduate students enrolling in those classes; and by making graduate program information available to the general public through the Division on-site visits to area businesses and industries.

In addition, by having the responsibility for administrative workshops both on and off-campus, the Division encourages academic units to program professional development short courses and workshops for a wide variety of professionals in the area. Creative grant funding is provided, when available, for units who identify a specific educational need for a particular population.

Center for Entrepreneurship
The Center for Entrepreneurship, housed in Devlin Hall, is part of the W. Frank Barton School of Business. It encourages entrepreneurial thinking and activities through quality education, research, and community involvement to better serve customers and stakeholders. The center provides a comprehensive curriculum in entrepreneurial studies from freshman through graduate level.

Recently recognized as one of the "25 Best Business Schools for Entrepreneurs" by Success magazine, September 1994, the Center for Entrepreneurship offers a Bachelor of Business Administration in Entrepreneurship through the W. Frank Barton School of Business. The entrepreneurship major provides special training for students who may wish to start or buy a business or grow an existing business. It is also useful for those who expect to become involved with a family owned business or those who desire to take part in new business development or other activities within larger organizations. In addition, graduate students may select entrepreneurship courses in both the MBA and Master of Science in Business degree programs.

Seminars and workshops are offered for those interested in entrepreneurship. The most popular workshop, "Entrepreneurship: Your Future in Business," has received international recognition. For high school juniors and seniors, there is a one-week summer workshop, "Entrepreneurship Camp." FastTrac II, a new comprehensive and contemporary educationally based program, is designed to help entrepreneurs develop the skills they need to grow their businesses.

Additional programs include a visiting lecture series, a resource center, scholarships, a biography series, and two WSU student organizations.

Center for Management Development
The Center for Management Development (CMD), through the Barton School of Business, offers noncredit management development seminars to Wichita and the surrounding area.

The CMD seminars and workshops have been acclaimed for their usefulness to practicing business people and other professionals in a wide variety of organizations. The center offers a broad range of management education and development opportunities to the growth-oriented supervisor, manager, or professional specialist in business, industry, government, and other public or private organizations.

Cooperative Education Program
The Cooperative Education program is a University-wide, centrally administered academic program providing students the opportunity to integrate formal course work with periods of relevant off-campus employment. More information is available in the Admission section of the Bulletin.

French Student Exchange Program
WSU is among the 100 colleges and universities in the United States that participate in the annual student exchange organized by the French Ministry of Education. One individual from WSU spends the academic year in France as a salaried assistant in English, and a student from France is attached to the WSU Department of Modern and Classical Languages and Literatures as a salaried assistant in
French Majors and minors in French who have graduated within one year prior to departure date are eligible to apply.

Special Facilities
Instructional facilities on the 330-acre Wichita State campus are used for educational purposes more hours per day than at any other Kansas college or university. Many of the University's special facilities are described on the following pages.

Ablah Library
Through a wide range of materials, services, and facilities, the University Libraries support teaching and research at WSU. The growing collections of more than three million items include books and periodicals, microforms, government documents, corporate annual reports, scores, videotapes, audio recordings, and CD-ROMS. In 1991, Ablah Library became an official United States Patent and Trademark Depository Library, the only such depository in Kansas.

Library facilities include an open stack arrangement, seating for more than 800 people, group and faculty study carrels, electronic carrels containing listening and viewing equipment, microform reading and printing equipment, photocopiers, and typewriters. Additionally, computer terminals and printers are provided to access the library's on-line catalog and CD-ROM databases.

The University's libraries offer a variety of services. Extensive hours provide students many opportunities for study and research, including dial-in access to the on-line catalog. Reference librarians are available to help students and faculty locate information and use the computerized systems. These librarians also perform literature searches in numerous remote computerized databases. When materials are not owned, interlibrary loan services will locate and borrow materials from other institutions.

The Department of Special Collections houses the University Archives, rare books, historical Kansas maps, and a rapidly growing manuscript collection of more than 700,000 documents. This collection includes papers of the abolitionist William Lloyd Garrison, the Kantor Collection of the Civil War Sanitary Commission, and local history collections.

Cable Television
Wichita State University operates Channel 13 on Wichita's cable television system and WINDOWS on suburban cable systems. Both program services feature adult-oriented educational, cultural, and informational programming. This programming includes 18 to 22 television courses per semester offered for academic credit by the various colleges at WSU. Channel 13 and WINDOWS also produce programs featuring distinguished guest speakers, fine arts performances, and other campus events. WSU 13 is affiliated with The Learning Channel. In addition to full-time staff, 15 students are involved in the operation of the channel and the production of programs. Facilities are located in the Media Resources Center.

Campus Activities Center
The Campus Activities Center (CAC) is the community center for Wichita State University. Through its facilities and services, the student union serves students, faculty, staff, alumni, and guests of the University.

The CAC has several dining areas to provide a variety of atmospheres and menus as well as a catering department to meet special needs; the University Bookstore which stocks textbooks, supplies, and gifts; a recreation center for leisure use that includes video games, bowling, billiards, and a barber/beauty shop; a theater; and a variety of rooms that can be scheduled for meetings, special events, and conferences.

The reservations office schedules the use of all facilities in the center as well as most University facilities for out-of-classroom use. Through the Student Activities Council, students are provided an opportunity to learn and develop leadership skills while planning a variety of programs for the campus. The CAC is also home for the Student Government Association, Student Ombudsman, Ecumenical Christian Ministries, and Informed Sources, a student-run campus information center.

The CAC is supported through student fees and revenues generated from within the operation.

Computer Laboratory Facilities
The Department of Electrical Engineering in the College of Engineering has several computer laboratories. One of these is a student laboratory consisting of 10 80386 based microcomputers with 4M bytes of memory all networked using a NOVELL Ethernet local area network. This laboratory is used primarily for graphics-based applications such as PSpice, PC-DSP, MathCad, and other signal processing software and operates in a Windows 3 and MS-DOS 5 environment. Printers capable of printing a graphical display are available on the network for student use with this software. The applications of these software packages are integrated into various courses offered to both undergraduate and graduate students in Electrical Engineering.

A second laboratory containing 8086 and 80286 based microcomputers is available to students for word processing and spread sheet applications. These are also on the local area network and are used by students for report writing, tabular, and graphical display of laboratory data, and minor analysis of systems.

A special purpose laboratory equipped with two AT&T 6386 workstations, three SPARC SUN workstations, two laser printers, and special sampling hardware and software is available to Electrical Engineering students studying signal processing and digital design and simulation. These systems operate in the UNIX or Windows 3 MS-DOS 5 Environment.

The Embedded Systems laboratory has three AT&T 6386 multi-user workstations, a Motorola VME 1131 UNIX development system and various microprocessors and microcontroller development systems for embedded systems research and design.

The Digital Systems laboratory is equipped with microprocessor development equipment and the software required to cross-assemble and to do in-circuit emulation.

Computing Center
The University Computing and Telecommunications Center serves the students, faculty, and staff of the University by providing contemporary computing and telecommunications facilities for instruction, laboratory research, sponsored programs, administrative data processing, and public service. These services include systems analysis and design, custom programming, interactive time-sharing, modem pooling, networking, access to national (BITNET) and international (INTERNET) networks, batch and remote printing computer operations, and on-line administrative data bases. End-user assistance is available for both microcomputer and mainframe computing.

In 1992, the new Science Laboratory and Classroom building was completed. This new building provides state-of-the-art facilities for computing at Wichita State University.
The central computing facility, located in the north portion of the new building, occupies three floors, two of which are accessible to the public. The first floor houses the open labs (for both mainframe and microcomputing), the print room, dispatch window, user services, and the Academic Support areas. The hours for the computer labs are: Monday-Thursday from 7 a.m.-midnight, Friday from 7 a.m.-6 p.m., Saturday from 10 a.m.-8 p.m., and Sunday from 1-8 p.m. The second floor contains the administrative offices, microcomputer repair and microcomputer networking and software offices, as well as a faculty and staff microcomputer classroom. The third floor is devoted entirely to housing the actual computer systems and technical support offices.

The computing facilities have been upgraded and now consist of one IBM ES9121 Model 440 mainframe computer, and a DEC VAX/4000 Model 500. The IBM mainframe has 256 million characters of main memory and more than 100 billion bytes of auxiliary disk storage. The new VAX equipment will provide 23 Vups of computing power, with 192 million characters of main memory, 15 GB of disk storage and a 7 cartridge tape magazine with 18 GB capacity.

The campus network supports Ethernet, SNA, and asynchronous communications with more than 3,000 microcomputers and nearly 400 CRT terminals providing interactive computing for campus classrooms, laboratories, and offices. The terminals are available for use with the academic time-sharing systems VM/CMS and DEC/VMS and the administrative terminal system (CICS). Students can access the computing resources by using any of the campus computing labs located throughout the campus (as well as the ones located on the first floor of the computing center complex) designated for student use. Students also may access the campus network by using a telephone modem and dialing the campus data switch. Instructions and software for accessing the computing resources are available for a nominal fee in the campus bookstore. Information papers describing the facilities and the software supported by central computing are available in Room 120.

Harvey D. Grace Memorial Chapel Harvey D. Grace Memorial Chapel, located in the heart of the campus near Morrison Hall and the Campus Activities Center, was built in 1963 and dedicated to serve all creeds and races. The chapel is available to students for group or individual worship and meditation.

Heskett Center The $10 million multipurpose, dance, physical education, and recreation complex opened in the spring of 1983. It is named after H.D. Heskett, a 1935 alumnus and benefactor of WSU.

The 166,000 square foot complex contains instructional, research, and recreational areas as well as the equipment necessary to support activities. Activity areas consist of a weight room, combatives room, 25-meter indoor swimming pool with separate diving well, eight handball-racquetball courts, and a 200-meter indoor jogging track which surrounds five basketball courts. The outdoor area contains a six-court lighted tennis complex and four large lighted play fields.

These activity areas are designed to facilitate an extensive campus recreation program.

KMUW Radio Station KMUW Radio broadcasts at 89.1 FM. The 100,000-watt station is one of more than 400 member stations of the National Public Radio (NPR) network. KMUW's mission is to provide high quality cultural and informational broadcast services to the greater Wichita area as part of the University's urban mission of community service. KMUW also provides training and professional experience for WSU students.

Marcus Center for Continuing Education Many educational services are offered through the Marcus Center for Continuing Education, an adult education facility at 4201 East 21st Street. Specialized courses for business and industry, governmental agencies and the professions; special conferences for the general public; and a wide variety of personal enrichment programs are offered in the center. The center also is available as a rental facility.

Media Resources Center The Media Resources Center (MRC) is a comprehensive media and video communications organization serving the instructional, research, and service aspects of Wichita State. The center is housed in a 20,000 square foot, state-of-the-art facility, and operates WSU Channel 13, the University's cable television station.

Facilities and resources include a professional television studio, an electronic classroom, seven satellite downlinks, the campus cable TV network, a fully equipped mobile television production facility, complete photographic darkroom laboratories, and a graphic design studio. The MRC provides the University with video teleconference reception and transmission capabilities.

A wide array of media equipment systems is available for classroom use by students and faculty. These include video recording systems and projection equipment. A collection of 1,000 videotapes is available as well.

Learning Resource Center Wichita State offers a variety of services to students through the programs of the Learning Resource Center. Courses are offered to help students improve their reading and study skills. Complete descriptions of courses offered at the center are included in the University College section of the Undergraduate Catalog.

In addition to formal course work, other study skills workshops are made available to students enrolled at Wichita State.

Satellite Television Reception Seven satellite television antennas are used to receive video and audio signals from communications satellites serving North America. Satellite television resources provide students studying foreign languages with television programs produced for French and Spanish speaking audiences, furnish programming for WSU's cable television station, and enable the University to participate in national video teleconferences. Receiving antennas are located to the southeast of the Media Resources Center.

Speech-Language-Hearing Clinic Wichita State University Speech-Language-Hearing Clinic, 104 Hubbard Hall, provides diagnosis and treatment of speech, language, and hearing problems, including hearing aid fittings. Services are available on a fee-for-service basis to people in Wichita and the surrounding communities and to University students, staff, and faculty. The clinic is open 8 a.m.-5 p.m. Monday through Friday for scheduled appointments (689-3289) and also on arranged evenings for stuttering and other support group meetings. Upper division students, graduate students, clinic—
cial staff, and faculty in the Department of Communicative Disorders and Sciences provide services. All work is provided or supervised by departmental staff and faculty who hold appropriate licensure and certification.

Sports and Recreation

Sports and recreation facilities for students at Wichita State include a regulation 18-hole golf course; the 10,656-seat Henry Levitt Arena which is used for intercollegiate basketball games and major entertainment events; Cessna Stadium, a 31,000-seat stadium; and the 5,665 seat Eck Stadium-Tyler Field, home to the Shocker baseball program, which ranks among the finest college baseball facilities in the country.

Wichita State is a member of the Missouri Valley Conference and consistently ranks nationally in baseball and bowling.

The campus recreation program—featuring the multipurpose complex, the Heskett Center—is designed to provide activities for all students, faculty, and staff. In addition to intramurals and open recreation time, offerings include sport clubs; special events; programs and excursions for children of WSU students, faculty, and staff; a family program; mini-classes and workshops; outdoor recreation, and aquatics.

Edwin A. Ulrich Museum of Art

The Edwin A. Ulrich Museum of Art is recognized among university museums for its outdoor sculpture collection and for the quality of its exhibition program. The museum is named in honor of Edwin A. Ulrich, a retired businessman who contributed funds to the University designated for the construction of the museum building. Ulrich also gave a collection of artwork by the American marine painter, Frederick Judd Waugh (1861-1940).

The museum opened in 1974 and over the years has developed an active exhibition program. As a visual laboratory for the students of the University as well as the community, the exhibition program presents a blend of traditional artwork, with more experimental work. Exhibitions have featured artists such as David Hockney, Romare Bearden, Morris Louis, Isabel Bishop, David Salle, Sally Skoglund, Jesus Moroles, Faith Ringgold, and Elizabeth Murray, along with collections of electroni c and neon artists and Kansas naive artists. In cooperation with the faculty of the College of Fine Arts the museum is the setting for concerts, lectures, and demonstrations by visiting artists as well as WSU faculty.

The art collection, owned by Wichita State University Endowment Association and managed by the professional staff of the museum, now numbers more than 8,000 objects. Nineteenth and 20th century European and American arts, paintings, drawings, sculpture, and prints form the core of the collection. The museum organizes traveling exhibitions of work from the collection. Sole exhibitions by Frederick Waugh, Gordon Parks, and Ernest Trova, and theme exhibitions such as Twentieth Century American sculpture have traveled to museums both in this country and abroad.

A major aspect of the collection is the 53 piece outdoor installation of the Martin H. Bush Sculpture Collection, named in honor of the founding director of the museum. The collection contains a cross-section of 20th century sculptures by artists such as Auguste Rodin, Henry Moore, Louise Nevelson, George Rickey, Lynn Chadwick, and Luis Jimenez, among others. The centerpiece of this outdoor collection is the mural, Personnages Oiseaux, by the Spanish artist Joan Miró, located on the face of the museum building. Consisting of nearly one million pieces of Venetian glass and marble, the mural depicts whimsical bird characters that inhabit the imagination of the artist.

Wichita Radio Reading Service

A sub-carrier of KMUW, the Wichita Radio Reading Service programs readings of printed material to more than 2,000 print-disabled individuals. One hundred volunteers supply the readings, with additional programming from the In-Touch Network and National Public Radio.

Wiedemann Hall

Wiedemann Hall houses the first organ built in North America by the world-renowned firm of Marcussen and Son, Denmark. The hall, which was dedicated in 1986, is the ideal acoustical setting for the organ. In addition to the hall’s main auditorium, the building has four faculty offices; an organ studio; and rooms to accommodate announcing, recording, and televising.

The building is named for the late community philanthropist and music-lover Gladys H.G. Wiedemann who in 1983, as president of the K.T. Wiedemann Foundation, Inc., donated the great Marcussen organ.

Bloomfield Foyer, a gift of the Sam and Rie Bloomfield Foundation, Inc., graces the entrance to Wiedemann Hall.
W. Frank Barton School of Business

Offices: 100 Clinton Hall
Gerald H. Graham, dean
Nancy A. Bereman, associate dean
Donald G. Christensen, director, graduate studies in business

School of Accountancy, (316) 689-3215—James W. Deskins, director

Departments
Economics, (316) 689-3220—Randall B. Haydon, chairperson
Finance, Real Estate, and Decision Sciences, (316) 689-3219—Richard B. LeCompte, chairperson
Management, (316) 689-3214—John A. Belt, chairperson

Marketing and Entrepreneurship, (316) 689-3367—Robert H. Ross, chairperson

Graduate Faculty
School of Accountancy
Professors: James W. Deskins (director), Michael F. Foran, Bill D. Jarnagin, Phillip T. May
Associate Professors: Linda F. Christensen, Nancy J. Foran, Linda C. Mitchusson, Douglas Sharp
Assistant Professor: Jeffrey J. Bryant

Economics
Professors: Dong W. Cho, Randall B. Haydon (chairperson), Martin M. Perline, Jimmy M. Skaggs, Samuel C. Webb
Associate Professors: James E. Clark, Dennis C. Duell, Philip L. Hersch, Maurice Pfanneshiel, William T. Terrell
Assistant Professor: Jen-Chi Cheng

Finance, Real Estate, and Decision Sciences
Endowed Professor: Donald R. Levi (Professor of Real Estate, occupies the Kansas Chair in Real Estate and Land Use Economics)
Professor: Dwight D. Murphrey
Associate Professors: Moriah M. Bateman, Donald G. Christensen (director, graduate studies in business), Mohammed Dadashzadeh, Mark G. Dotzour, Richard B. LeCompte (chairperson), Carl C. Nielsen, Awanti P. Sethi
Assistant Professors: Cheri Elling, Manoj Gupta

Management
Endowed Professor: Gerald H. Graham (R.P. Clinton Distinguished Professor of Management, occupies the R.P. Clinton

Endowed Chair of Management; dean, Barton School of Business)
Professors: Dhanna deSilva, Kamal Fatehi-Sedeh, Cynthia Lengnick-Hall
Associate Professors: John A. Belt (chairperson), Nancy A. Bereman (associate dean, Barton School of Business), Mark Lengnick-Hall
Assistant Professors: Margaret Duvall, Martha Sanders, W. Dean Vickery, James A. Wolff

Marketing and Entrepreneurship
Associate Professors: Phillips W. Goodell, Donald W. Hackett (director, Center for Entrepreneurship), Dean E. Headley, Frederic B. Kraft, Charles L. Martin, Robert H. Ross (chairperson)
Assistant Professors: Vincentia Claycomb, Sandra Honig-Haftel

The mission of Wichita State University's W. Frank Barton School of Business is to advance the practice of business in the context of its metropolitan environment. To accomplish this, the Barton School must be a leader in the development and distribution of knowledge and skills valued by business and disseminated to and through students, practitioners, and academicians. In addition, the Barton School recognizes its responsibility in contributing to the economic development of Wichita and the surrounding area through teaching, research, and outreach activities by its faculty and centers.

This mission is influenced by the location of the college in the largest economic and cultural center in the state of Kansas. As an integral part of the state's designated urban university, the faculty of the Barton School of Business is committed to programs and activities that will help sustain the contribution that this urban center makes to the economic, professional, and cultural health of the state and nation.

Graduate degree programs in the school lead to the Master of Business Administration (MBA), Master of Professional Accountancy (MPA), Master of Science (MS) in business, and the Master of Arts (MA) in economics.

Master of Professional Accountancy
The Master of Professional Accountancy program at Wichita State University is designed to prepare qualified candidates for careers as professional accountants in public practice, industry, government, and nonprofit organizations. The program is based on strong preparation in general education courses with special emphases on communication skills, mathematics, and economics, and includes a broad exposure to the different aspects of business and management.

The program requires a minimum of five years of full-time collegiate study, when beginning as a freshman. Students who decide to enter the program later in their academic careers should consult with the assistant director of the School of Accountancy to learn the approximate length of time it would take to earn the degree. For example, if your bachelor's degree is in accounting, then basically you would have one more year of study to obtain the MPA degree.

Admission Requirements
Admission to the MPA professional curriculum is available to (1) qualified students who have not yet completed a bachelor's degree, and (2) qualified students who have completed a bachelor's degree (not necessarily in business or accounting) from an accredited college or university.

Full admission to the MPA professional curriculum, for students who have not yet completed a bachelor's degree, requires:
1. Completion of the preprofessional curriculum described below.
2. A minimum grade point average of 2.750 on all courses identified as Barton School of Business core courses.
3. A minimum grade point average of 3.000 on the following courses: Acc. 310, 320, 410, and 430.
4. A total of 1,100 points based on the formula of 200 times the overall grade point average on the last 60 hours plus the GMAT score.

Students who meet all the requirements above, except for a grade point average of 2.750 on all courses identified as Barton School of Business core courses, may be admitted on a conditional basis. These nine hours must be completed in the first semester following conditional admission or as soon thereafter as course scheduling permits.

Students holding a bachelor's degree in any field (not necessarily business or accounting) from a regionally accredited institution may be admitted to the School of Accountancy if they meet the minimum scholastic requirements (a total of
1,100 points based on the formula of 200 times the overall grade point average on the last 60 hours plus the GMAT score. They will be expected to take courses covering any portion of the preprofessional curriculum for which they have not had an equivalency as soon as practicable.

Probationary Admission—All Students
Students who do not meet the minimum GMAT and/or grade point requirements may be admitted to probationary status by the director on the basis of sufficient evidence that they can satisfactorily complete the MPA program requirements and have the potential for a successful career in professional accounting.

Degree Requirements—Students Not Possessing a Bachelor's Degree at Time of Admission

Preprofessional Curriculum
Students pursuing the Master of Professional Accountancy (MPA) are required to meet specified requirements for admission to the School of Accountancy. During the candidate's undergraduate work, the following requirements must be met:

1. The candidate must complete the general education requirements for Wichita State University, plus additional non-business courses for 62 semester hours. The following courses are specifically required by the School of Accountancy and may be counted within this 62-hour total:

<table>
<thead>
<tr>
<th>Courses</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Econ. 201Q and 202Q, Principles of Economics I and II</td>
<td>6</td>
</tr>
<tr>
<td>Upper-division economics course</td>
<td>3</td>
</tr>
<tr>
<td>Comm. 111, Basic Public Speaking</td>
<td>3</td>
</tr>
<tr>
<td>Eng. 210, Composition: Business, Professional, and Technical Writing</td>
<td>3</td>
</tr>
<tr>
<td>Eng 685Q, Advanced Composition</td>
<td>3</td>
</tr>
<tr>
<td>Math. 111, College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>Math. 144, Business Calculus</td>
<td>3</td>
</tr>
<tr>
<td>Phil. 144Q, Moral Issues</td>
<td>3</td>
</tr>
</tbody>
</table>

* Admission requirements for the CPA exam in Kansas specify a course in intermediate economic theory or a course emphasizing the monetary system.

2. The candidate must complete a minimum of 25 hours of the following Barton School of Business core requirements:

<table>
<thead>
<tr>
<th>Courses</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acct. 210, Financial Accounting I</td>
<td>3</td>
</tr>
<tr>
<td>Acct. 220, Managerial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>Acct. 260, Introduction to Information Processing Systems</td>
<td>3</td>
</tr>
<tr>
<td>DS 350, Introduction to Production Management</td>
<td>3</td>
</tr>
<tr>
<td>DS 495, Management Information Systems</td>
<td>3</td>
</tr>
</tbody>
</table>

Econ. 231, Introductory Business Statistics | 4 |
Fin. 340, Finance | 3 |
Mgmt. 360, Concepts of Administration | 3 |
Mgmt. 430, Business and Society | 3 |
Mkt. 300, Marketing | 3 |

3. The candidate must complete the following courses required by the School of Accountancy:

<table>
<thead>
<tr>
<th>Courses</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preprofessional Accounting Core</td>
<td></td>
</tr>
<tr>
<td>Acct. 310 and 410, Financial Accounting II and III</td>
<td>6</td>
</tr>
<tr>
<td>Acct. 320, Managerial Accounting II</td>
<td>3</td>
</tr>
<tr>
<td>Acct. 430, Taxation I</td>
<td>3</td>
</tr>
</tbody>
</table>

During the semester in which the preprofessional curriculum will be completed, the candidate for the MPA must apply for admission to the Graduate School. The GMAT should be taken during, or just prior to, this semester.

A bachelor's degree will be awarded at the time of conferring the MPA degree.

Professional Curriculum
Candidates in the professional curriculum who have completed the minimum preprofessional curriculum outlined above, must complete 36 credit hours in the following courses while maintaining an overall grade point average of 3.000 or better.

<table>
<thead>
<tr>
<th>Courses</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional Accounting Core</td>
<td></td>
</tr>
<tr>
<td>Acct. 510, Financial Accounting IV</td>
<td>3</td>
</tr>
<tr>
<td>Acct. 560, Accounting Information Systems I</td>
<td>3</td>
</tr>
<tr>
<td>Acct. 640, Auditing I</td>
<td>4</td>
</tr>
<tr>
<td>Acct. 890, Professional Seminar</td>
<td>1</td>
</tr>
<tr>
<td>Accounting electives (800 level)</td>
<td>15</td>
</tr>
<tr>
<td>B. Law 435 and 436, Law of Associations I and II</td>
<td>6</td>
</tr>
<tr>
<td>DS 871, Multivariate Statistical Methods or approved equivalent</td>
<td>3</td>
</tr>
<tr>
<td>Mgmt. 862, Organizational Behavior or approved equivalent</td>
<td>3</td>
</tr>
<tr>
<td>Mgmt. 885, Administrative Policy</td>
<td>3</td>
</tr>
<tr>
<td>Remaining Barton School of Business core requirements *</td>
<td>6</td>
</tr>
<tr>
<td>Other electives **</td>
<td>9</td>
</tr>
</tbody>
</table>

As a minimum, the candidate's program must include 30 graduate-level hours, including 15 hours of accounting courses numbered 800 or above and a total of 20 semester hours of courses numbered 800 or above—excluding any courses which represent business common body of knowledge.

* See list of courses under Preprofessional Curriculum. Core courses taken after admission to the MPA program must be graduate-level equivalent courses.

** Electives must be selected to conform with AACSB standards for master's in accounting programs. See the assistant director of the School of Accountancy for assistance in making selections.

Degree Requirements—Students Possessing a Bachelor's Degree at Time of Admission

Total degree requirements for students granted admission after completion of a bachelor's degree will vary and depend upon the specific course content of the undergraduate degree program. As a minimum, the candidate's program must total 30 graduate-level credit hours beyond the bachelor's degree, including 15 semester hours of accounting courses numbered 800 or above and a total of 20 semester hours in courses numbered 800 or above.

The following courses, or their graduate equivalents, must be included as part of the student's degree program if not covered in the student's bachelor's degree:

<table>
<thead>
<tr>
<th>Courses</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acct. 220 and 320, Managerial Accounting</td>
<td>6</td>
</tr>
<tr>
<td>Acct. 640, Auditing I</td>
<td>4</td>
</tr>
<tr>
<td>B. Law 435 and 436, Law of Associations I and II</td>
<td>6</td>
</tr>
<tr>
<td>Econ. 231, Introductory Business Statistics</td>
<td>4</td>
</tr>
<tr>
<td>Eng. 210, Composition: Business, Professional, and Technical Writing</td>
<td>3</td>
</tr>
<tr>
<td>Eng. 685Q, Advanced Composition</td>
<td>3</td>
</tr>
<tr>
<td>Math. 111, College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>Math. 144, Business Calculus</td>
<td>3</td>
</tr>
<tr>
<td>Phil. 144Q, Moral Issues</td>
<td>3</td>
</tr>
</tbody>
</table>

* Bachelor's degree holders may substitute Acct. 800 for Acct. 210 and 310 if they earn a grade of B or better in Acct. 800.

The following Barton School of Business graduate-level core courses must be completed if the candidate's undergraduate program does not include equivalent work with a grade of C or better:

<table>
<thead>
<tr>
<th>Courses</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DS 850, Introduction to Production Management</td>
<td>3</td>
</tr>
<tr>
<td>DS 874, Management Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 800, Analysis of Economic Theory</td>
<td>3</td>
</tr>
<tr>
<td>Fin. 840, Finance</td>
<td>3</td>
</tr>
<tr>
<td>Mgmt. 860, Concepts of Administration</td>
<td>3</td>
</tr>
<tr>
<td>Mgmt. 885, Advanced Strategic Management</td>
<td>3</td>
</tr>
<tr>
<td>Mkt. 800, Marketing</td>
<td>3</td>
</tr>
</tbody>
</table>
Master of Business Administration

The Barton School of Business offers the Master of Business Administration (MBA) through faculty in the accounting; economics; finance, real estate, and decision sciences; management; and marketing and entrepreneurship departments; as well as in other colleges of the University. The MBA program is designed to prepare men and women for responsible positions of professional leadership in business, government, health-related organizations, and other institutions. The program concentrates on general management, with particular attention given to developing within the student an understanding of the organization as an integrated system. Areas of emphasis may be developed in a variety of subjects as explained later.

The total hours required of students and the level at which they begin participation in the MBA program depend on their academic preparation. The total number of hours required for completion of an MBA ranges from 30 to 64.

Admission Requirements

Admission to the MBA program is granted to students who show high promise of success in postgraduate business study and who hold bachelor's degrees from regionally accredited institutions. Previous academic training in business is not required for admission to the MBA program. Students may have backgrounds in such diverse fields as engineering, liberal arts, education, and health related areas. The specific content of a student's previous education is less important than the evidence that the student has sound scholarship, strong personal motivation, and the ability to develop skills necessary to assume positions of leadership.

Although various criteria are considered in granting admission, special attention is given to the applicants' grade point averages on academic work completed and to their scores on the Graduate Management Admission Test (GMAT). To be admitted, applicants must have 1,050 points based on the formula: 200 times a student's overall grade point average, plus the GMAT score; or 1,100 points based on 200 times the grade point average on the last 60 hours of graduate and undergraduate work completed, plus the GMAT score.

Students who do not meet the above criteria may be considered for admission through an exceptions process. Information on this process may be obtained from the Graduate Studies in Business office.

International students also are required to have a minimum score of 550 on the Test of English as a Foreign Language.

Degree Requirements

Advanced Standing: Students with strong backgrounds in mathematics and business administration may be granted advanced standing in the MBA program through equivalent credit for background fundamental courses for which a minimum grade of C was received in an undergraduate program. Most students entitled to such credit hold bachelor's degrees in business administration from accredited institutions. Students may be granted equivalent credit for any or all of the background fundamental courses, depending on the depth of their undergraduate or previous graduate preparation. The MBA program may consist of as few as 30 hours for students who have no deficiencies in prerequisites and who receive equivalent credit for all of the background fundamentals.

Students Not Receiving Advanced Standing: Students with bachelor's degrees in nonbusiness fields usually will not have backgrounds warranting the granting of advanced standing through equivalency credit. There are some exceptions. Some students, for example, may have had enough work in economics or statistics to be granted credit for these courses. Determination regarding equivalency credit will be made following admission to the program.

MBA Course Requirements

*Prerequisites

**Background Fundamental Courses

Mgmt. 860, Management

Required Courses

Math. 111, College Algebra ...................... 3

Acct. 260 or equivalent, for intermediate economic theory or a course emphasizing the monetary system.

Mgmt. 862, Organizational Behavior ......3

Fin. 840, Financial Systems ..................... 3

Other graduate electives selected with consent of MPA adviser ** 9

Econ. 840, Managerial Accounting .......... 3

Econ. 850, Managerial Finance ................. 3

Mgmt. 803, Business Decision Making and Analysis (taken within first two semesters of admission) .......... 3

Mgmt. 862, Organizational Behavior .......... 3

Mgmt. 885, Advanced Strategic Management (taken during last semester) ............. 3

Electives

Acct. 801, Managerial Accounting .......... 3

Econ. 840, Managerial Economics .......... 3

Fin. 850, Managerial Finance ................. 3

Mgmt. 803, Business Decision Making and Analysis (taken within first two semesters of admission) .......... 3

Mkt. 801, Marketing Management .......... 3

Required Courses

Mgmt. 860, Management

Electives

Mkt. 800, Marketing Systems .......... 3

Econ. 800, Analysis of Economic Theory .......... 3

Mgmt. 865, Management of Organizations .... 3

Mkt. 800, Marketing Systems .......... 3

Econ. 840, Managerial Economics .......... 3

Fin. 850, Managerial Finance ................. 3

Mgmt. 803, Business Decision Making and Analysis (taken within first two semesters of admission) .......... 3

Mkt. 801, Marketing Management .......... 3

Mgmt. 862, Organizational Behavior .......... 3

Mgmt. 885, Advanced Strategic Management (taken during last semester) ............. 3

Avtopticals

1. A candidate's individual Plan of Study must be approved by the director or associate director. This plan must be filed within a month of the completion of 12 hours of graduate work.

2. All candidates must complete 27 hours of undergraduate courses including: Acct. 801, Econ. 804, Fin. 850, Mgmt. 803, Mgmt. 862, Mgmt. 885, Mkt. 801 and six hours of electives. The additional three hours of electives may be at either the 800 level or the 600 level.

3. General topic interest areas offered in the Barton School of Business include: accounting, business environment (including international management, business law, labor relations, environmental protection, urban economics, business economics, and economic development), entrepreneurship, finance, managerial economics, marketing, operations.
analysis and production management, organizational behavior, and human resource management.

Master of Science in Business
The Master of Science in Business is oriented toward developing students' specializations in business administration, as well as refining their research capabilities. Students must plan their programs, with the approval of their advisers, to include specialization in one of six areas: finance, management, marketing, human resource management, decision sciences, or real estate. Two options are available under the MS program in business; Option A requires the presentation of a thesis, Option B requires a special project.

Admission Requirements
Admission is determined by a number of factors, including the applicant's grade point average at the undergraduate level and score on the Graduate Management Admission Test (GMAT). General minimum requirements for admission are:

1. A bachelor's degree from a regionally accredited university.
2. A total of 1,050 points based on the formula: 200 times the student's overall grade point average plus the GMAT score; or 1,100 points based on 200 times the grade point average on the last 60 hours of graduate and undergraduate work completed, plus the GMAT score.

International students also are required to have a minimum score of 550 on the Test of English as a Foreign Language.

Degree Requirements
Students admitted to the MS in Business program must complete the same set of prerequisites and background fundamentals as were previously listed for the MBA program. As in the MBA program, students may be granted equivalent credit for any or all of the background fundamental courses, depending on the depth of their undergraduate or previous graduate preparation.

Beyond the background fundamentals, the degree program includes 31 to 33 hours of work. All course work taken for the degree must be approved by the student's adviser. (Courses identified as background fundamentals may not be included in the 31-33 hours required for the degree.)

Students obtaining the MS in business (under either option) are required to complete six hours of methods courses designed to enhance the student's capabilities for practical applications and/or research in the field of specialization. Methods courses would likely be drawn from such courses as research methods, statistical analysis, and experimental design.

Additional requirements under each option area are as follows:

Option A: Option A requires the completion of a minimum of 31 credit hours of work, including at least 21 hours in 800-level courses. In addition to the two required courses specified earlier, candidates must present a thesis, in their area of specialization, for a total of four semester credit hours. They must also take at least nine hours in this area of specialization.

A preliminary oral examination over the thesis proposal is required. Candidates also must present an oral defense of their thesis conducted according to the requirements of Wichita State University's Graduate School.

Option B: Option B requires the completion of a minimum of 33 credit hours of work, including at least 24 hours in 800-level courses. In addition, at least 15 must be hours in the area of specialization. Admission to Option B must be approved by the MS committee.

Of the 15 hours of specialization, three credit hours must be taken as a special project in the student's area of specialization. The special project may involve original case research or field research. This project must be approved by the MS committee and ordinarily is directed by a group of graduate faculty members.

For Option B, a final oral examination, conducted according to requirements of the MS committee, is held over a student's entire degree program.

Master of Arts in Economics
The Department of Economics presents a curriculum leading to the Master of Arts (MA) degree. Courses of study concentrate on either economic analysis or business economics. Both seek to provide students with analytical skills useful in decision-making and a broader understanding of the overall economic environment. The economic analysis sub-specialty is particularly suitable for students who wish to continue their studies in economics at the doctoral level. Business economics is geared to those who seek careers in the private or public sector, and desire to augment their analytic and quantitative skills. This track includes courses designed to analyze economic data, plus electives to provide exposure to graduate studies in other functional areas of business.

Options provide as much flexibility as is compatible with a student's background and career interests. The economic analysis track requires either a written comprehensive examination (33 hours), which allows students additional course work in a field of interest, or a thesis (30 hours). The business economics track is a 33-hour program that requires either a written comprehensive examination or a three-hour independent research project.

Admission Requirements
Admission to the MA program in economics requires an undergraduate degree from a regionally accredited university. Students without proper undergraduate economics background must make up the deficiency by taking undergraduate theory courses designated by the graduate coordinator. Students lacking calculus must make up this deficiency during the first semester of graduate work.

Admission to the program is based in large part, but not exclusively, on the student's grade point average. For admission to full standing, students must have a grade point average of at least 2.750 for the last 60 hours of their undergraduate work and for their economics courses. The aptitude test of the Graduate Record Examination (GRE) must be taken and the results submitted to the department no later than the end of the first year of their study to retain full standing in the program.

Degree Requirements
The candidate's Plan of Study must be approved by the graduate coordinator or the chairperson of the department. All plans of study must include at least 18 hours of graduate-level courses in economics or courses approved by the graduate coordinator. Courses identified as background fundamentals of the MBA program and other courses designated by the economics department may not be included in the hours required for the degree.

Required courses include:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Econ. 731</td>
<td>Intermediate Business</td>
<td>3</td>
</tr>
<tr>
<td>Statistics</td>
<td></td>
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<tr>
<td>Econ. 801</td>
<td>Macroeconomic Analysis</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 802</td>
<td>Microeconomic Analysis</td>
<td>3</td>
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<tr>
<td>Thesis</td>
<td>If students elect to write a thesis, they must complete 30 semester hours</td>
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including three thesis hours. They also must present and successfully defend their thesis before their thesis committee. Candidates are required to pass an oral examination based primarily on the defense of the thesis.

Comprehensive Examination. If students elect not to write a thesis, they must complete 33 semester hours and pass a written comprehensive examination covering economic theory and statistics.

Business Economics
In addition to Econ. 731 and 801 listed above, the business economics sub-specialty requires the following courses:

Courses for Graduate Students Only
Where a course is indicated as a prerequisite to a second course, all prerequisites to the earlier course(s) also apply to the later course(s).

800. Financial Accounting. (3). A study of the basic structure of accounting, income determination, asset valuation, liability recognition and accounting for ownership equity. Includes the interpretation and analysis of financial statements. May not be taken for credit in the School of Accountancy. Prerequisite: no previous credit in accounting or permission of the School of Accountancy.

801. Managerial Accounting. (3). Examines the use of accounting data to analyze management problems. Covers concepts of cost analysis, return on investment analysis, and operations and capital budgeting. May not be taken for credit in the School of Accountancy. Prerequisite: Acct. 800 or equivalent.

810. Financial Accounting V. (3). A continuation of the financial accounting sequence. Emphasizes accounting for leases, pensions, foreign currency and futures contracts; segment reporting; insolvency; and calculating earnings-per-share. Prerequisites: graduate standing and Acct. 510 (or equivalent), or permission of the School of Accountancy.

815. Theoretical Foundations of Accounting. (3). A systematic treatment of the basic concepts and methodology of accounting theory and their application to problems of income determination and asset/liability valuation. Prerequisites: graduate standing and Acct. 510 (or equivalent), or permission of the School of Accountancy.

820. Managerial Accounting III. (3). Advanced study of the use of accounting information in financial policy decisions, profit planning and control, quantitative analysis of financial data and capital budgeting. Includes the application of selected quantitative methods of accounting. Prerequisites: graduate standing and Acct. 320 (or equivalent), or permission of the School of Accountancy.

825. Managerial Accounting IV. (3). Advanced study of theoretical concepts underlying cost accounting, emphasizing the nature of business costs, establishing a conceptual framework for cost and managerial accounting and selected problem areas in cost determination and analysis. Prerequisites: graduate standing and Acct. 320 (or equivalent), or permission of the School of Accountancy.

830. Taxation II. (3). A study of the federal tax law as it applies to corporations, partnerships, estates, trusts and gifts. Prerequisites: graduate standing and Acct. 430 (or equivalent), or permission of the School of Accountancy.

835. Taxation III. (3). The application of research and planning techniques to federal tax law. Also examines selected topics in federal taxation. Prerequisites: graduate standing and Acct. 330 (or equivalent), or permission of the School of Accountancy.

840. Auditing II. (3). An advanced study of auditing emphasizing EDP auditing statistical sampling and ethics. Prerequisites: graduate standing and Acct. 510 and 540 (or equivalent), or permission of the School of Accountancy.

860. Accounting Information Systems II. (3). A study of the concepts of information systems, their design and operation and the relationship of these concepts to the economic information requirements, information flows, decision criteria and control mechanisms in the business organization. Prerequisites: graduate standing and Acct. 560 (or equivalent) or permission of the School of Accountancy.

880. Researching Contemporary Issues in Accounting. (3). An advanced seminar for oral discussion and written reports on matters of current interest in diverse areas of accounting. Develops the student’s ability for independent research and the presentation and defense of findings. Prerequisites: graduate standing, completion of the accounting core and a course in statistics, or permission of the School of Accountancy.

890. Professional Seminar. (1). An orientation to the accounting profession with sessions covering a variety of technical and general topics. Many sessions are conducted by practitioners. MPA candidates must attend a specified number of sessions throughout their professional program but actually enroll for only one semester. Graded S/U. Prerequisite admission to MPA program or permission of the School of Accountancy.

891. Directed Study in Accounting. (1-3). Prerequisite: School of Accountancy consent.

899. Thesis Research. (1-3).

Aviation Management
Department of Marketing and Entrepreneurship

Courses for Graduate/Undergraduate Credit

690. Seminar in Selected Topics. (1-3). Repeatable with departmental consent. Prerequisite: junior standing.

750. Workshop in Aviation Management. (1-4). Prerequisite: junior standing.

Business Law
Department of Finance, Real Estate, and Decision Sciences

Courses for Graduate/Undergraduate Credit

690. Seminar in Selected Topics. (1-5). Repeatable with departmental consent. Prerequisite: junior standing.
Courses for Graduate Students Only

831. Legal Environment of Business. (3). An introduction to the legal environment within which the business system operates. Considers the functions of law in relation to the business system, the institutions and processes involved in the interaction between business, society and government and the major frameworks of private and public law. Emphasizes the realm of public law from a managerial perspective, including the ethical and social responsibility aspects of business behavior.

890. Seminar in Special Topics. (1-3). Repeatable with departmental consent.

891. Directed Studies. (1-5). Prerequisite: departmental consent.

Decision Sciences

Department of Finance, Real Estate, and Decision Sciences

Courses for Graduate/Undergraduate Credit

575. Decision Making Techniques. (3). An introduction to the quantitative techniques commonly used for managerial decision making and their application to problems in such areas as production, distribution and finance. Includes linear, integer, goal and dynamic programming, transportation models, network models, queueing theory and simulation. Prerequisite: DS 350.

651. Design of Operations Systems. (3). Gives an in-depth view of the long-term design aspects of operations systems. Includes process analysis and design, production control information systems, facilities planning, materials handling system, job design, personnel planning and scheduling and current issues. Prerequisite: DS 350.

652. Operations Planning Systems. (3). Gives an in-depth analysis of the short-term or operational aspects of goods- or service-producing systems. Includes forecasting methods, inventory control models, material requirements planning, aggregate planning and scheduling and current issues. Prerequisite: DS 350.

690. Seminar in Selected Topics. (1-5). Repeatable with departmental consent. Prerequisite: junior standing.

750. Workshop in Decision Sciences. (1-4). Prerequisite: junior standing.

Courses for Graduate Students Only

850. Production and Operations Management. (3). Concepts for planning and controlling the production of either goods or services. Topics include: linear programming, scheduling, quality control, inventory models, and waiting-line models. Not open to students with credit in DS 350. Prerequisites: calculus and statistics.

851. Intermediate Production Management. (3). Theory of productive systems, decision making under uncertainty and advanced technological forecasting methods for business and industry. Application of forecasting methods and some operations research models to real-world productive systems. Prerequisite: DS 350 or 850.

871. Multivariate Statistical Methods. (3). A study of selected multivariate statistical methods used in support of modern decision making. Topics include multivariate hypothesis testing, multiple regression, correlation, analysis of variance and covariance, and discriminant analysis. Prerequisite: Econ. 870 or Econ. 231.

872. Advanced Statistical Analysis. (3). Examines topics such as sample design, chi square, variance analysis and correlation, and regression analysis from conceptual and decision-making points of view. Prerequisite: DS 871.

874. Management Information Systems. (3). A study of the structure and the strategic organizational role of computer-based information systems in organizations. Coverage includes transaction processing/accounting information systems, management reporting and executive information systems, decision support and expert systems, and workflow information systems. An information resource management perspective emphasizes issues of building an information architecture, data integration and archiving, and outsourcing and risk in information systems development efforts.

875. Management Science. (3). Course provides quantitative bases from which the student may develop analytical abilities for use as a decision maker. Areas of study include mathematical programming, game theory forecasting, queuing theory and simulation. Prerequisite: calculus.

876. Advanced Management Science. (3). An in-depth examination of selected management science models. Includes advanced inventory and quality control topics, goal programming and other current decision making techniques. Prerequisite: DS 875 or departmental consent.

884. Database Planning and Management. (3). Prepares students to deal with issues in planning and managing organization-wide integrated databases. Emphasizes logical database design and relational database implementation. Includes SQL, ensuring database integrity, database conversion, database administration, and data management for computer integrated manufacturing. Prerequisite: DS 874 or instructor's consent.

890. Seminar in Special Topics. (1-3). Repeatable with departmental consent.

891. Directed Studies. (1-6). Prerequisite: departmental consent.

893. Special Project in Decision Sciences. (1-4). A special project including original case research, supervised internships, or field research. Prerequisite: approval of the MS Committee. Open only to MS in business candidates.


Economics

Department of Economics

Courses for Graduate/Undergraduate Credit

605. History of Economic Thought. (3). A critical analysis of economic thought, the factors that influence this thought and its impact upon the social and economic development of the modern world. Prerequisites: Econ. 201Q, 202Q, or 800, and junior standing.

614. Industrial Organization. (3). A study of both competitive and noncompetitive market structure, conduct and performance, with special emphasis on related public policy, such as antitrust. Prerequisites: Econ. 202Q and junior standing.

615. Economics of Transportation. (3). A study of economic characteristics of transportation modes, problems and policies. Prerequisites: Econ. 201Q, 202Q, or 800 and junior standing.

616. Economics of Air Transportation. (3). A study of economic characteristics of air transportation. Prerequisites: Econ. 201Q, 202Q, or 800, and junior standing.

617. Economics of Regulation. (3). A study of the theory and practice of regulation. Includes both the traditional regulation of public utilities and communications and the newer forms of regulation, such as safety and environmental regulations. Prerequisites: Econ. 201Q, 202Q, or 800, and junior standing.


625. Economic History of Europe. (3). Cross-listed as Hist. 614. An analysis of the development of economic institutions; the rise of capitalism and its influence on overseas expansion, technology, precious metals, politics and war; changes in economic ideologies; and cultural effects of economic change. Prerequisites: Econ. 201Q and junior standing.


653. Public Finance. (3). 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, 202Q, or 800, and junior standing.

660. Labor Economics. (3). An introduction to labor economics surveying both theoretical and empirical research in this field. Includes labor markets, wage determination and human
661. Collective Bargaining and Wage Determination. (3). An examination of economic and legal aspects of collective bargaining, emphasizing the techniques and procedures used to resolve the major issues and problems inherent in the bargaining process. Explores the manner in which wages are determined under various institutional relationships. Prerequisites: Econ. 201Q, 202Q, or 800, and junior standing.

662. Work and Pay. (3). Investigation of the economic aspects of work and the workplace. Deals with the demographics of the labor force, methods of rewarding those who participate in the labor force and such topics as the quality of work life, worker alienation and the nature of work under capitalism. Prerequisites: Econ. 201Q, 202Q, or 800, and junior standing.

663. Economic Insecurity. (3). Cross-listed as Geront. 663. Personal economic insecurity, such as unemployment, old age, health care, disability, and erratic economic fluctuations. Includes costs and benefits of government action to aid in meeting such insecurities. Prerequisites: Econ. 201Q, 202Q, or 800 or instructor's consent; junior standing.

671. Economic Growth and Development. (3). Survey of leading growth theories, emphasizing the processes of development and capital formation in developed and underdeveloped economies. Determinants of real income, resource allocation, investment criteria, balance of payment problems, national policies and related topics are analyzed within this framework. Prerequisite: Econ. 201Q, 202Q, or 800, and junior standing.

672. Introduction to International Economics and Business. (3). Cross-listed as Mgmt. 561. A survey of the economic foundation of international trade and investment. After a study of international trade theory and policy (the international economy), the operations of the multinational firm within that environment are explored. Prerequisites: Econ. 201Q, 202Q, or 800, and junior standing.

674. International Finance. (3). Cross-listed as Fin. 625. The study of foreign exchange, balance of payments, the international monetary system and the world's money and capital markets and their relationships with the financial operations of multinational firms. Also explores relevant aspects of international financial management through a series of case studies. Prerequisites: Fin. 340, Econ. 201Q, 202Q, or 800, and junior standing.

680. Economics of Energy and Natural Resources. (3). A study of the business and economic aspects of energy and natural resources problems. Includes energy demand and supply, the price of energy, energy industry characteristics and government regulations, conservation, environmental problems and public policies. Uses statistical data extensively to evaluate the past and present energy and natural resources situations and the trends for the future. Employs simple economic concepts and theories to interpret the facts and to assess the impact of various public policies on the use of energy and natural resources. Prerequisites: Econ. 201Q, 202Q, or 800, and junior standing.

688. Urban Economics. (3). 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.

692. Group Studies in Economics. (1-3). Repeatable for credit with departmental consent. Prerequisite: junior standing.

702. Mathematical Methods in Economics. (3). Introduces mathematical tools that are especially useful in economics, econometrics, and finance. Includes a review of differential and integral calculus, an introduction to matrix algebra and various constrained optimization and economic modeling techniques. Emphasizes economic applications and modeling. Prerequisites: Econ. 201Q, 202Q, or 800, and Math. 144 or equivalent and junior standing.


740. Monetary Problems and Policy. (3). An examination of historical and contemporary monetary monetary issues in the context of the global economy. Prerequisites: Econ. 201Q, 202Q, or 800; 340; and junior standing.

750. Workshop in Economics. (1-4). Prerequisite: junior standing.

760. Local Government Finance. (3). Cross-listed as Pol. S. 760. An analysis of state and local government expenditure and revenue systems, with an introduction to state and local financial administration. Prerequisites: Econ. 202Q and a course in statistics or instructor's consent.

Courses for Graduate Students Only

800. Analysis of Economic Theory. (3). An intensive analysis of micro- and macroeconomic principles. Not for graduate credit in the MA program in economics. Prerequisite: departmental consent.

801. Macroeconomic Analysis. (3). An intensive analysis of contemporary literature and problems of national income analysis. Prerequisite: Econ. 301. Prerequisite or corequisite: Econ. 702 or equivalent.

802. Microeconomic Analysis. (3). An intensive analysis of contemporary literature and problems in the areas of production, pricing and distribution. Prerequisites: Econ. 302 or 804 or equivalent, Econ. 702.

803. Analysis of Business Conditions and Forecasting. (3). An intensive study of research methodologies and forecasting for real life business decision making. Covers formulation of research questions, specification of models, collection of time series and survey data, applications of forecasting techniques and interpretation and communication of the results. Prerequisites: Econ. 800 or equivalent and one semester of introductory statistics.

804. Managerial Economics. (3). A survey of theoretical and analytical tools of economics that are useful in decision making by managers. Prerequisites: Econ. 201Q, 202Q or 800 and one course in calculus.


815. International Economics. (3). An examination of international trade and transfer of technology. Includes a basic theory of international trade, an introduction to international financial markets, and an introduction to international monetary systems. Prerequisites: Econ. 201Q, 202Q, or 800, and junior standing.

820. Money and Capital Markets. (3). Theoretical and empirical studies of the determination of interest rates, prices and quantities in financial markets. Prerequisite: Econ. 301 or Econ. 702. Prerequisite or corequisite: Math. 144 or equivalent. Repeatable for credit with departmental consent.

821. Introduction to Financial Economics. (3). Analysis of the determination of asset prices and the pricing of financial assets. Prerequisites: Econ. 201Q, 202Q, or 800, and junior standing.

822. Money and Capital Markets. (3). Theoretical and empirical studies of the determination of interest rates, prices and quantities in financial markets. Prerequisite: Econ. 301 or Econ. 702. Prerequisite or corequisite: Math. 144 or equivalent. Repeatable for credit with departmental consent.

831. Introduction to Econometrics. (3). Analysis of time series, multiple regression, and partial correlation. Analysis of variance and selected nonlinear techniques. Includes a review of differential and integral calculus, an introduction to matrix algebra and various constrained optimization and economic modeling techniques. Emphasizes economic applications and modeling. Prerequisites: Econ. 201Q, 202Q, or 800, and Math. 144 or equivalent and junior standing.

834. Money and Capital Markets. (3). Theoretical and empirical studies of the determination of interest rates, prices and quantities in financial markets. Prerequisite: Econ. 301 or Econ. 702. Prerequisite or corequisite: Math. 144 or equivalent. Repeatable for credit with departmental consent.

841. Analysis of Financial Markets. (3). An examination of speculative markets and their use in economic decision-making. Includes a review of differential and integral calculus, an introduction to matrix algebra and various constrained optimization and economic modeling techniques. Emphasizes economic applications and modeling. Prerequisites: Econ. 201Q, 202Q, or 800, and junior standing.

847. Speculative Markets. (3). Cross-listed as Fin. 810. An analysis of the markets for speculative securities such as futures, options and commodities. Evaluates underlying theories explaining speculative markets in which such securities are traded. Discusses trading strategies such as hedging and arbitrage. Prerequisite: Fin. 840 or equivalent.

853. Seminar in Public Finance. (3). An analysis of the behavior of public finance in the American and foreign economies. Explores selected topics of current and permanent importance. Repeatable for credit with departmental consent. Prerequisite: Econ. 201Q, 202Q, or 800.

861. Seminar in Contemporary Labor Issues. (3). An intensive analysis of contemporary problems in the field of labor. The specific nature of the problems is determined by the interest of those enrolled in the course. Repeatable for credit with departmental consent. Prerequisite: instructor's consent.
Entrepreneurship

Department of Marketing and Entrepreneurship

Courses for Graduate/Undergraduate Credit

560. Consulting with Small Enterprise. (3). Gives hands-on experience consulting with an existing small business. Students work with the owner in teams under the guidance of the instructor to identify the problem, gather information relevant to the problem, propose solutions to the problem and help the owner implement the solutions. The student gains practical knowledge of the lifecycle of an entrepreneur, both the good and the bad, as well as an experienced-based knowledge about various aspects of managing a small business. Prerequisites: Mkt. 300, Fin. 340, Mgmt. 360, senior standing. Preferred: Mkt. 465 also taken.

506. New Product Marketing. (3). Cross-listed as Mkt. 606. Addresses identifying, evaluating, developing and commercializing new products within both smaller and larger firms. Explores the role of the product/brand manager, a person who often acts as an internal entrepreneur. Prerequisites: Mkt. 300, 400 and 405.

508. Selling and Sales Force Management. (3). Cross-listed as Mkt. 608. An analysis of current behavioral concepts of personal selling and the problems and policies involved in managing a sales force. Prerequisites: Mkt. 300 and junior standing.

668. Feasibility Analysis. (3). Advanced course in feasibility research for startups, new product development, or expansion of existing business organizations. Special attention is given to entrepreneurial finance including sources of seed money and on-going financing, private placement or stock, initial public offerings, business valuation, and financial planning. Other content areas include environmental analysis, insurable and investment risk management, site location analysis, planning exit strategies, and business negotiation. Students develop an advanced business plan and work on special projects. Prerequisites: Entrep. 361 and 465.

690. Special Topics in Entrepreneurship. (3). Advanced course in-depth discussion of emerging topics and trends within the field of entrepreneurship. Topics rotate, allowing the student to repeat the class one time. Prerequisites: Entrep. 668, 465, senior standing.

750. Workshop in Entrepreneurship. (1-4). Prerequisite: junior standing.

Courses for Graduate Students Only

886. New Venture Feasibility Seminar. (3). Focuses on directing students in the appropriate methods of selecting financial sources and in raising seed capital through the preparation of a comprehensive feasibility study. Covers (1) sources of capital, such as venture capitalists, investment bankers, banks and creative forms of financing; (2) marketing opportunities of their feasibility study; (3) pro forma development; (4) feasibility analysis; (5) actual preparation of the loan package. Prerequisites: Accnt. 800 or its equivalent, or approval of the instructor. Not open to students with credit in Entrep. 668.

890. Entrepreneurship and Innovation Within Organizations. (3). Addresses trends, current status and success factors in the area of innovation and entrepreneurial activities within organizations and their management. Principles examined are applicable to any organization, large or small, private or public. By those people who wish to create change and innovate within the existing structure. Covers (1) foundations of entrepreneurship; (2) barriers to change; (3) entrepreneurial characteristics of individuals; (4) creative thinking and forced ideation methods; (5) intrapreneurship and its need for it, definition, methods, favorable environment, and rewards; (6) examples of intrapreneurship; (7) entrepreneurial strategies, policies and practices for organizations; and (8) the entrepreneurial process, a growing way of life. Prerequisites: open to all students fully admitted to graduate programs in the Barton School of Business and instructor's approval.

891. Seminar in Special Topics. (1-3). Repeatable with departmental consent.

669. Entrepreneurship and Innovation Within Organizations. (3). Addresses trends, current status and success factors in the area of innovation and entrepreneurial activities within organizations. Principles examined are applicable to any organization, large or small, private or public. By those people who wish to create change and innovate within the existing structure. Covers (1) foundations of entrepreneurship; (2) barriers to change; (3) entrepreneurial characteristics of individuals; (4) creative thinking and forced ideation methods; (5) intrapreneurship and its need for it, definition, methods, favorable environment, and rewards; (6) examples of intrapreneurship; (7) entrepreneurial strategies, policies and practices for organizations; and (8) the entrepreneurial process, a growing way of life. Prerequisites: open to all students fully admitted to graduate programs in the Barton School of Business and instructor's approval.

680. Seminar in Special Topics. (1-3). Repeatable with departmental consent.

681. Directed Studies. (1-3). Prerequisite: departmental consent.


Finance

Department of Finance, Real Estate, and Decision Sciences

Courses for Graduate/Undergraduate Credit

610. Short-Term Financial Management. (3). An introduction to short-term financial management. Includes bank balances, compensa-


621. Security Analysis and Portfolio Management. (3). Comprehensive study of methods of analyzing major types of securities. Market behavior analysis also is made. Explores the formulation of investment objectives, the design of portfolios for classes of institutional and individual investors and portfolio theory. Prerequisites: Fin. 340 and junior standing.

626. Futures and Options Markets. (3). Presents an overview of the futures and options markets. Basic theoretical concepts as well as the practical issues of hedging and speculating in these markets are discussed. Prerequisite: Fin. 340 and junior standing.

627. International Financial Management. (3). Cross-listed as Econ. 674. The study of foreign exchange, balance of payments, the international monetary system and the world's money and capital markets and their relationships with the financial operations of multinational corporations. Focuses on the international aspects of international financial management through a series of case studies. Prerequisites: Fin. 340, Econ. 202Q and junior standing.

630. Financial Institutions. (3). A study of the management, structure, regulation, and operations of banks and other financial institutions and the markets in which they operate. Includes in-depth analysis of commercial banks, savings and loans, credit unions, mutual funds, insurance companies, investment companies, and other firms in this industry. Prerequisite: Fin. 340 and junior standing.

631. Money and Capital Markets. (3). A study of domestic and international financial markets, instruments, and institutions and the determinants of the general level and structure of interest rates and security prices. Management of interest rates and portfolio risk using a variety of techniques is also covered in detail. Prerequisite: Fin. 340 and junior standing.

632. Commercial Bank Management. (3). A study of bank assets and liability management. Also explores the internal organization of commercial banks, current problems and recent innovations in commercial banking. Prerequisites: Fin. 340 and junior standing.
840. Principles of Finance. (3). An intensive analytical introduction to finance from the management viewpoint, including the theory of financial management, the financial institutional structure and an analysis of a variety of practical problems of business finance. Prerequisite: Acct. 500 or equivalent.

850. Managerial Finance. (3). Provides knowledge and tools to make informed investment and financing decisions. Topics include capital markets, advanced capital budgeting, decision making under uncertainty, asset pricing models, contingent claims models, capital structure, dividend policy, mergers, restructuring and corporate control, and exchange rate systems and international finance. Prerequisites: Fin. 840 or equivalent.


890. Seminar in Special Topics. (1-3). Repeatable with departmental consent. Prerequisite: Fin. 840.

891. Directed Studies. (1-6). Repeatable with departmental consent. Prerequisite: Fin. 840 or equivalent.

893. Special Project in Finance. (1-5). Repeatable with departmental consent. Prerequisite: Fin. 840 or equivalent.


Human Resource Management
Department of Management

Courses for Graduate/Undergraduate Credit

664. Labor Relations. (3). Presents the philosophy underlying labor legislation and the function of collective bargaining in labor-management relationships. Prerequisite: junior standing.

666. Human Resource Selection. (3). Analysis of all phases of the selection process as implemented in private and public sector organizations. Topics include an analysis of the impact of federal and state anti-discrimination legislation on selection practices; as well as human resource planning; recruiting; job analysis and selection techniques, including testing and interviewing. Also validation of selection techniques. Prerequisite: HRM 466 or instructor's consent.

668. Compensation. (3). Approaches to compensation processes in organizations. Discusses job evaluation techniques, wage level and wage structure determination, individual performance analysis, individual wage rate decisions, incentive plans and benefits. Also, the legal implications of compensation practices. Prerequisite: HRM 466 or instructor's consent.

699. Training and Development. (3). Analysis of the training and development function as applied in private and public sector organizations. Consideration is given to the role of training and development in today's business environment, needs assessment, learning objectives, learning theory, instructional methods and techniques, and evaluation of training effectiveness. Prerequisites: HRM 466 or instructor's consent.

867. Seminar in Personnel Administration. (3). An in-depth study and analysis of several critical and/or major current problems in human resources and a review of significant literature. The direction of the course could be determined by the interests of the class. Prerequisite: HRM 466.

868. Wage and Salary Administration. (3). A study of job evaluation and other procedures that lead to the development of a sound wage and salary structure. Prerequisites: HRM 466 or instructor's consent.

890. Seminar in Special Topics. (1-5). Repeatable with departmental consent.

891. Directed Studies. (1-5). Repeatable with departmental consent.


Management
Department of Management

Courses for Graduate/Undergraduate Credit

561. Introduction to International Economics and Business. (3). Cross-listed as Econ. 672. A survey of the economic foundations of international trade and investment. After a study of international trade, theory and policy (the international economy), it explores the operations of the multinational firm within that environment. Prerequisites: Econ. 203Q and junior standing.

663. Organizational Interactions. (3). A dynamic experiential study of interpersonal, intraorganizational and interorganizational interactions. Prerequisites: Mgmt. 360 or concurrent enrollment and junior standing.

665. Organizational Development. (3). Planned organizational change. Emphasizes diagnosis of problems and discusses the structural process, human resources management, and strategic interventions that can be implemented to increase effectiveness at the individual, team, or system-wide levels of an organization. Prerequisites: Mgmt. 360 or concurrent enrollment and junior standing.

667. Organizational Structure and Design. (3). Study of how work and workers can be structured to best accomplish the goals of an orga-
ization. Explores the interplay of design, integration, technology, strategy, and the environment, and discusses frameworks that effectively promote organization growth, market responsiveness, innovation, and global competitiveness. Prerequisites: junior standing and Mgmt. 360.

680. Decision Making. (3). Cross-listed as P. Adm. 730. A study of the theories of decision making with attention to the factors of creativity, the quest for subjective certainty, rationality, cognitive inhibition, problem identification, evaluation of alternatives, applications of qualitative methods to decision processes and decision implementation. Prerequisites: Mgmt. 360 or concurrent enrollment and junior standing.

801. Strategic Management. (3). An analysis of business problems from a strategic management perspective. A capstone course which integrates the functional areas of business, including management, marketing, finance, accounting, and production. Discusses both domestic and international policy issues, large and small firms, and various sources of competitive advantage. Prerequisites: DEn 350, Fin. 340, Mkt. 360, Mgmt. 360, and senior standing.

683. International Management. (3). A study of management concepts and practices applicable to business operations in an international setting. Examines a wide range of problems associated with business operations across national boundaries. Discusses cultural differences, language barriers, nationalism, protectionism, technology transfer and trade policies. Prerequisites: Mgmt. 360 or concurrent enrollment and junior standing.

690. Seminar in Selected Topics. (1-3). Repeatable with departmental consent. Prerequisite: junior standing.

750. Workshop in Management. (1-4). Prerequisite: junior standing.

Courses for Graduate Students Only

803. Business Decision-Making and Analysis. (3). A study of business decision-making and problem-solving methodologies including problem definition, research design, data-gathering techniques, analytical techniques, reporting strategies, and communication issues. Prerequisite: Econ 231 or equivalent.

812. Introduction to Total Quality Management. (3). Cross-listed as Mkt. 812. Introduces the philosophy of quality improvement and compares/contrasts these views with traditional management thought. Also introduces the basic components of the quality improvement process. Includes application exercises in quality improvement techniques and experience with team concept. Prerequisite: instructor's consent.

830. Socio-Legal Environment of Business. (3). An examination of the economic, political, social and legal environment in which business operates. Considers the philosophical foundation of capitalism and how business has interacted with government, consumers and labor over time. Emphasizes the role of business in dealing with various societal problems. Current issues, such as the social responsibility of business, affirmative action, occupational safety and health, environmental protection and the challenge to the legitimacy of the firm, are dealt with from the perspective of the decision-making manager.

836. International Business Administration. (3). An introduction to international business administration with particular attention to the development of multinational business strategies in light of the diverse economic, political, social and cultural dimensions of the environment that exist in both developed and developing areas of the world.

860. Management of Organizations. (3). An introduction to management and organizational theory. Includes classical and contemporary management theory, human relations, group dynamics, motivation, communication, organizational structure and design and behavioral control.

862. Organizational Behavior. (3). The study of individual and group behavior as it affects organizational functioning. Concepts such as motivation, personality, interpersonal relationships, organizational control, and leadership are applied to organizational settings with emphasis on analysis and action-planning. Prerequisite: Mgmt. 860 or departmental consent.

865. Communication. (3). Cross-listed as Comm. 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. Prerequisite: Mgmt. 860 or departmental consent.

866. Organizational Conflict and Stress. (3). Studies in flexibility and rigidity. Reviews research and thinking in the areas of innovation, conflict, resolution, stress and anxiety as related to organizational structures and behaviors. Prerequisite: Mgmt. 860 or departmental consent.

869. Research in Behavioral Science. (3). An analysis of some of the concepts and tools in behavioral science that are relevant to research in organizations. One or two areas such as motivation, cognitive processes, attitudes and values, etc., may be analyzed in depth. Prerequisite: Mgmt. 862 or departmental consent.

885. Advanced Strategic Management. (3). An analysis of business problems from a strategic perspective. Builds on prior course work to focus on a firm's ability to develop a sustainable competitive advantage. Firms studied represent a broad range of manufacturing and service, global and domestic, entrepreneurial and mature issues. Prerequisite: to be taken during last semester of student's program, or departmental consent.

886. Seminar in Research Methodology. (3). A study of concepts and procedures in the design and performance of research.

900. Seminar in Special Topics. (1-3). Repeatable with departmental consent.

901. Directed Studies. (1-5). Prerequisite: departmental consent.

903. Special Project in Management. (1-4). A special project including original case research, supervised internships or field research. Prerequisite: approval of the MS Committee. Open only to MS in business degree candidates.


Marketing

Department of Marketing and Entrepreneurship

Courses for Graduate/Undergraduate Credit

601. International Marketing. (3). Problems and procedures of marketing in foreign countries. Includes the effects of foreign cultures and marketing systems on the design of marketing programs. Prerequisites: Mkt. 300 and junior standing.

604. Distribution Management. (3). A study of all areas involved with the distribution of a firm's products or services. Focuses on such issues as the development of a firm's marketing channels and its relationships with wholesalers and retailers as well as the management of the firm's storage facilities, inventory control procedures and shipping facilities. Prerequisites: Mkt. 300 and junior standing.

606. New Product Marketing. (3). Cross-listed as Entre. 606. Addresses identifying, developing and commercializing new products within both smaller and larger firms. Explores the role of the product/brand manager, a person who often acts as an internal entrepreneur. Prerequisites: Mkt. 300, 403 and 465.

607. Promotion Management. (3). An analysis of all issues involved with the promotion of an organization and its products or services. Deals with the development of advertising campaigns, management of the personal sales force, development of special promotional activities and management of public relations. Prerequisites: Mkt. 300 and junior standing.

608. Selling and Sales Force Management. (3). Cross-listed as Entre. 608. An analysis of current behavioral concepts of personal selling and the problems and policies involved in managing a sales force. Prerequisites: Mkt. 300 and junior standing.

609. Marketing Programs. (3). A study of all the aspects of the marketing mix that are integrated to make an effective and coordinated marketing program. Prerequisites: Mkt. 300 and six additional hours of marketing.

690. Seminar in Selected Topics. (1-3). Repeatable with departmental consent. Prerequisite: junior standing.

750. Workshop in Marketing. (1-4). Prerequisite: junior standing.
Courses for Graduate Students Only

801. Marketing Systems. (3). An intensive analytical introduction to the combination of institutions that comprise the overall marketing system. Also presents the marketing function as a major subsystem within the individual business firm.

803. Marketing Strategy. (3). Integration of long-range marketing and corporate policies. Includes budgetary control and the evaluation of the effectiveness of marketing systems. Also probes the organization of the marketing department and its relation to the total organization. Prerequisite: Mkt. 800 or equivalent.

805. Consumer Decision Processes. (3). An examination of different aspects of the behavior of consumers and of the factors that help explain their behavior. Includes an analysis of current concepts and models. Prerequisite: Mkt. 800 or departmental consent.

807. Services and Nonprofit Marketing. (3). Examines the characteristics of commercial and nonprofit services that pose unique marketing challenges for these types of organizations. Prerequisite: Mkt. 800 or equivalent.

Real Estate

Department of Finance, Real Estate, and Decision Sciences

Courses for Graduate/Undergraduate Credit

611. Real Estate Finance. (3). Real estate financing instruments, institutions, traditional and creative financing techniques. Risk analysis, mortgage financing and underwriting, primary and secondary mortgage markets. Prerequisite: Fin. 340. RE majors should have completed RE 310.


615. Real Estate Investment Analysis. (3). Equity investor decision criteria, institutional and ownership entity investment constraints, financial leverage opportunities, cash flow analysis and creative income tax strategies. Prerequisite: Fin. 340. RE majors should have completed RE 310.

619. Urban Land Development. (3). A hands-on course to familiarize students with all aspects of land development, including supply and demand analysis, site selection, feasibility analysis, development financing, cash-flow budgeting and marketing strategies. Prerequisite: RE 310 or 611 or 618.

750. Workshop in Real Estate. (1-4). Prerequisite: junior standing.

Courses for Graduate Students Only

810. Real Estate Feasibility Analysis. (3). Theory and practice of analyzing the feasibility of both new construction and redevelopment of income-producing projects. Approaches detailed comprehensive case studies with contemporary analytical techniques. Prerequisites: RE 310, 614 and 618.

College of Education

Offices: 104 Corbin Education Center
James L. Carroll, dean
Marcus T. Ballenger, associate dean of students and certification
Randolph Ellsworth, associate dean of graduate programs and research
Dennis J. Kear, associate dean for teacher preparation

Departments
Administration, Counseling, Educational and School Psychology, (316) 689-3326—Orpha K. Duell, chairperson
Communicative Disorders and Sciences, (316) 689-3240—Rosalind Scudder, chairperson
Curriculum and Instruction, (316) 689-3322—Dennis J. Kear, associate dean for teacher preparation and chairperson
Health and Physical Education, (316) 689-3340—Susan Kovar, chairperson

The College of Education offers programs leading to the Master of Arts (MA) in communicative disorders and sciences; the Master of Education (MEd) in counseling, curriculum and instruction, educational administration, educational psychology, physical education, and special education; the Specialist in Education (EdS) in school psychology; the Doctor of Education (EdD) in educational administration; and the Doctor of Philosophy (PhD) in communicative disorders and sciences.

Graduate offerings include courses which help students meet requirements for state certification as principals, supervisory personnel, district school administrators, school counselors, early childhood teachers, special education teachers, reading specialists, school psychologists, speech and language pathologists, audiologists and gifted teachers. Other programs are available to support the continued academic and professional development of teachers.

Admission Requirements
Specific admission requirements for each degree specialization are described in each department's section of the Graduate Bulletin. Applicants for admission should review admission criteria well in advance of intended enrollment dates since some program admissions are determined by a faculty committee once each year or once each semester. Several programs require submission of scores from examinations (e.g., Graduate Record Examination), as well as transcripts and letters of reference.

Minimum admission requirements for full standing are a bachelor's degree from a regionally accredited institution and a grade point average of at least 2.750 based upon the last 60 credit hours of course work (including any post-bachelor's graduate work). The student should have no more than nine hours of background deficiencies in the major field of graduate study desired. For most degree programs, admission requirements exceed these minimums.

Degree Requirements
Each advanced program of study specifies the number of semester hours of graduate course work required, elective courses, practica, comprehensive examinations, and thesis requirements. Specific degree requirements are listed on program sheets available from departmental offices. A thesis option in the MA or MEd programs may be elected. Appropriate topics range from basic to applied action research, and approaches vary from historical to descriptive to experimental, both qualitative and quantitative. The thesis program requires a minimum of 30 credit hours, approval of the thesis proposal by the student's graduate adviser and thesis committee, and an oral examination over the thesis topic. The committee is appointed by the graduate dean from nominees submitted by the student's adviser.

Candidates for the nonthesis MA and MEd are usually required to pass a written comprehensive examination in their major area. Within the first three weeks of the semester in which students take the exam, an Application for Comprehensive Examination should be filed with the department office. Applications will not be accepted if submitted less than two weeks prior to the scheduled examination date. Specific examination requirements are described under the appropriate department's section of the Graduate Bulletin. The written comprehensive examination is scheduled the first Saturday in November for the fall semester, the second Saturday in April for the spring semester, and the first or second Saturday in July for the Summer Session.

Thesis students must pass an oral examination over their research.

Financial Assistance
Some financial assistance to support graduate study is available, including federal traineeships, assistantships, and Wichita State University fellowships. Full degree status is required to receive financial assistance.

Applications for graduate program admission must be submitted by departmental deadlines for eligibility for student loans and scholarships.

Administration, Counseling, Educational, and School Psychology
Graduate Faculty
Distinguished Professor: Melva Owens
Professors: James L. Carroll (dean), Glen R. Dey, Orpha K. Duell (chairperson), Randolph A. Ellsworth (associate dean), Willis J. Furtwengler, James J. Rhatigan (vice president, Student Affairs), John H. Schuh (associate vice president, Student Affairs)
Associate Professors: Linda Bakken, Carol B. Furtwengler, Charles A. Romig, Anthony Ambrosio, Ruth A. Hitchcock, David S. Hurst, Joseph W.C. Mau, Nancy A. McKellar, Marlene Schommer, Brian J. Stone, Randall Turk, Vicky L. Triponey (associate vice president, Campus Life)

Degrees and Areas of Specialization
The Department of Administration, Counseling, Educational, and School Psychology offers programs leading to the Master of Education (MEd) in educational administration and supervision for students pursuing certification endorsement at the building level; the MEd in educational psychology, the Specialist in Education (EdS) in school psychology, post master's work for students pursuing certification endorsement as district level administrators, and the Doctorate of Education (EdD) in educational administration.

Master of Education Requirements
The Master of Education (MEd) in counseling and in educational psychology
Admission Requirements—Counseling

3.000 grade point average based upon the counseling program are required to have a Kansas teaching certificate and have two years of teaching experience prior to recommendation for school counselor certification. Only people who have been admitted to and have completed the MEd counseling program at the 39 credit hour nonthesis level or at the 44 credit hour thesis level, hold a Kansas teaching certificate and have two years teaching experience may be recommended for certification as a school counselor.

Admission Requirements—Educational Psychology

To be considered for admission to the MEd in educational psychology, students must provide their grade point average for the most recent 60 credit hours of course work; Graduate Record Examination scores (verbal and quantitative); names, addresses, and phone numbers of three people to provide letters of reference; and a statement of professional goals and research interests. The Graduate Record Examination (GRE) and grade point average (GPA) will be evaluated using the following index:

\[ \text{GPA} + \frac{(\text{GRE Verbal} + \text{GRE Quantitative})}{400} \]

Ordinarily, applicant's scores on this index will equal or exceed 5.5. This index of 5.5 could be achieved by a student who attained a combined verbal and quantitative score on the GRE of 1,000 and a B average over the last 60 credit hours of undergraduate course work.

Admission Requirements—Educational Administration and Supervision

Applicants must have a minimum 3.000 grade point average in their last two years (60 hours) of college course work from accredited institutions and a score of 480 or above on any two of the three General Tests of the GRE or a score of 42 or above on the Miller Analogies Test. In addition, applicants must have validated strengths on the multiple indicators listed below.

1. Official transcripts of all college-level work completed and indication of a degree conferred.
2. At least two letters of recommendation from supervisors and/or professional peers of which at least one must be from a supervisor that attests to the applicant's potential as a building administrator.
3. Evidence of certification for a role in the public/private schools and at least one year of accredited experience.
4. A resume or curriculum vita of education and professional experience.
5. A brief statement of professional goals related to completion of the master's degree and/or certification as a public school administrator.

Specialist in Education Requirements

The Specialist in Education (EdS) in school psychology requires 39 credit hours of course work beyond the MEd. The degree is awarded upon completion of course work and practica. For full certification in school psychology, students must apply for a one year provisional certificate, register for a four credit hour post-specialist internship, and complete the full-time, one year internship in a public school.

Applications for admission will be reviewed twice a year, in the fall and spring. Deadlines for submitting applications to the Graduate School will be the first Monday in October for consideration for spring admission and the last Monday in March for consideration for fall admission. There will be no summer admissions. All completed applications will be considered for admission within four weeks after the application deadline. In the event that all available openings are not filled from the pool of completed applications, candidates who applied to the Graduate School by the deadline but whose departmental application materials were not complete prior to the deadline will be considered in the order in which their applications were completed.

Admission Requirements—School Psychology

Students who have completed a master's degree in educational psychology, counseling, or a directly related area may apply for admission. Students must provide graduate degree transcripts; undergraduate grade point average for the last 60 credit hours; Graduate Record Examination scores (verbal and quantitative); names, addresses, and phone numbers of three people to provide letters of reference; and a statement of professional goals and research interests. Undergraduate grade point average (GPA) and Graduate Record Examination (GRE) scores will be evaluated using the following index:

\[ \text{GPA} + \frac{(\text{GRE Verbal} + \text{GRE Quantitative})}{400} \]
Ordinarily, applicant's scores on this index will equal or exceed 5.5 and master's degree grade point averages will equal or exceed 3.5. The GPA and GRE index of 5.5 could be achieved by a student who attained a combined verbal and quantitative score on the GRE of 1,000 and a B average over the last 60 credit hours of undergraduate course work.

Following admission to the EdD program, each student will meet with a faculty adviser to determine whether prerequisite requirements have been met or how remaining prerequisites can best be met. All students must complete the introductory professional issues course at WSU, and all students must have either completed a thesis as part of their master's program or prepare a thesis equivalent as part of the EdD program. A thesis equivalent differs from a thesis only in procedures for enrollment and in form of recognition. Faculty will apply all thesis criteria for advisement, proposal review, human subjects review, and final oral examination.

District Educational Administration Endorsement Requirements

Applicants must have a minimum 3.250 grade point average for the first 30 hours of graduate course work leading to a building-level certification from an accredited institution and a score of 500 or above on any two of the three General Tests of the GRE or a score of 46 or above on the Miller Analogies Test. In addition, applicants must have validated strengths on the multiple indicators listed below.

1. Official transcripts of all college-level work completed and indication of a degree conferred.
2. At least three letters of recommendation from supervisors and/or professional peers of which at least one must be from a supervisor that attests to the applicant's potential as an administrator.
3. Evidence of certification at the building level for a role in the public/private schools and at least three years of accredited experience.
4. A resume or curriculum vita of educational and professional experience.
5. A brief statement of professional goals related to the completion of the doctoral degree in educational administration and certification as a public school administrator.
6. A professional portfolio which includes samples of written or media products disseminated to constituent groups.

Completion of requirements includes core courses, a minimum of 15 dissertation hours, final examinations, and an approved dissertation.

Certification Programs

The Department of Administration, Counseling, Educational, and School Psychology provides degree programs and course work that lead to State of Kansas certification endorsement in the following areas:

- 91-1-33 Director of Special Education
- 91-1-34 Supervisor/Coordinator of Special Education
- 91-1-127a Supervisor
- 91-1-128a Building Administrator (requires completion of the MEd program)
- 91-1-129a District Administrator

Counseling, Educational, and School Psychology

Courses for Graduate/Undergraduate Credit

652. Student Development. (3). Training for students involved as small-group leaders. Prerequisite: CESP 652 and DARE student leader.

653. Studies in Student Development. (1.2). A supervised experience for students participating as peer advisers and leaders in developing activities for students entering or assigned to University College. Emphasizes peer counseling and consulting skills. Prerequisites: CESP 652 and DARE student leader.

655. Studies in Student Services. (1.6). Provides students with training in basic helping skills for paraprofessional counseling. Includes training and periodic seminars. May be repeated for a maximum of six hours' credit. Prerequisite: departmental consent.

681. Cooperative Education (1-8). A work-related placement that integrates theory with a planned and supervised professional experience designed to complement and enhance the student's academic program. Prerequisites: graduate standing in the department and department chairperson approval. No more than 3 credit hours will be allowed in one Plan of Study. Repeatable for credit. Offered CR/NC.

701. Introduction to Educational Research. (3). An introduction to research in education. Includes (1) a survey of current educational research, (2) the nature of research methodology, (3) the preparation of research reports and (4) criticism of current research.

704. Introduction to Educational Statistics. (3). An introduction to statistics, including measurement of central tendency, measures of variability, correlation, chi square, median test, t test, correlated t test and one way and two-way analysis of variance.

728. Theories of Human Development. (3). Describes what developmental theories are, what they say, where they come from, how they work and how they are used to explain human nature. Uses theoretical assumptions and related research to systematically evaluate developmental theories in terms of their scientific worthiness and their ability to address characteristics of human development. Focuses on those theories which helped shape the way we currently view human development as well as significant new perspectives which may shape the way we view it in the future. Prerequisites: CESP 334, Psy. 334, or equivalent, and CESP 701 or equivalent, or Instructor's consent.

729A, B, C, and D. Applications in Development: (A) Infants/Toddlers—prenatal to three; (B) Early Childhood—three through eight; (C) Late Childhood/Early Adolescence—nine through fourteen; (D) Adolescence—fifteen to young adulthood. (1). An in-depth study of the physical, cognitive, emotional and social development of the child in family and social environments. Focuses on the integration of a conceptual framework with the
basic elements of an appropriate environment to facilitate healthy development. Prerequisite: CESP 728. Students who have a previous age-specific graduate course in growth and development may request instructor's consent to take 728A, B, C or D as an update.

732. Behavior Management (3). Presentation and utilization of psychological principles and techniques for dealing with developmental behavior and learning patterns. Emphasizes the preschool and elementary school child. Prerequisite: CESP 334 or equivalent or departmental consent.

750. Workshops. (1-4).

752. Special Studies in Education. (1-5). For students with personal and guidance interests. May emphasize different preselected areas during a semester. Repeatable with advisor's consent. Prerequisite: instructor's consent.

Courses for Graduate Students Only

800. Principles and Applications of Educational Psychology. (3). A critical examination of the major topic areas traditionally defined as educational psychology. After examination of basic paradigms and strategies of the discipline, students apply them to such areas as instructional practices and design, classroom management and discipline. Prerequisites: CESP 334, 433, 801.

802. Introduction to Interaction Process. (1). S/U/L grade only. A laboratory approach to an examination of the counselor's role in the counseling process. Helps the prospective counselor increase personal understanding of self as a variable in the counseling process. Prerequisites: counseling majors and instructor's consent. To be taken concurrently with CESP 804. May not be taken concurrently with CESP 825.

803. Counseling Theory. (3). A study of selected theories of counseling. Prerequisite: CESP 804 or concurrent enrollment or admission to school psychology program.

804. Principles and Philosophy of Counseling. (3). The development of a guidance philosophy, including a study of the helping relationship and the services that are part of school, agency and other institutional settings. Prerequisite: admission to counseling program.

807. Counseling: Child Abuse and Neglect. (2). The etiology, symptoms and indicators, treatment and prevention issues of physical abuse and neglect, emotional abuse and neglect, and sexual abuse. Prerequisites: CESP 701, 704, 802, 803, 804.

808. School Psychology Professional Issues. (3). Examines roles and function of school psychologists within the context of historical foundations of the profession. Uses lecture, discussion, observations in schools and presentations by field-based school psychologists to acquaint students with the kinds of problems with which school psychologists typically work, the methods they employ to deal with problems, social systems in which these endeavors occur and professional issues that shape and characterize the profession.

810. Elementary School Counseling. (3). The role of the elementary counselor in providing individual and group counseling, group guidance and consultation in the school setting. Prerequisites: CESP 701, 704, 802, 803, 804.


819. Social Psychology of Education. (3). A critical study of the individual in social interaction in a variety of educational settings. Application of theory to research to school-related issues and problems.

820. Learning Theory and Instruction. (3). Application of some major learning theories and learning principles. Prerequisite: CESP 701 or departmental consent.

821. Multicultural Issues in Counseling. (2). Acquaints students with belief and behavior differences which are often the source of conflicts among people of various cultures. Prerequisite: CESP 701, 704, 802, 803, 804; or instructor's consent.

822. Psychometric Procedures in Counseling. (3). Survey and study of standardized tests and their application in counseling, emphasizing their selection, use and interpretation. Studies the basic concepts pertaining to the interpretation of psychological tests and inventories, including basic measurement theory and the factors involved in the selection of tests. Prerequisites: CESP 701 and 704; counseling students must also have CESP 802, 803, 804.

823. Experimental Design in Educational Research. (3). A consideration of sampling theory, design for testing hypotheses about populations from samples, testing correlation coefficients, means and difference between means, simple factorial designs, designs involving matched groups, designs involving repeated measures of the same group and analysis of covariance. Prerequisite: CESP 704.

824. Techniques of Counseling. (3). Examines and practices techniques of counseling through simulated counseling situations and extensive examination of counseling case studies. Prerequisites: CESP 728, 821, 822 and Psy. 845.

825. Group Counseling Techniques. (3). Examines different kinds of groups, group selection, communication patterns in groups and issues to be addressed in group settings. Prerequisites: CESP 821 and 822.

830. Introduction to Marriage and Family Counseling. (3). A survey course on marriage and family counseling including theory, techniques and research in the field. Prerequisite: CESP 803 or departmental consent.


840. Psychology of Exceptional Children. (3). Study of the conceptual and theoretical formulations, empirical evidence and research concerning behavioral characteristics of exceptional children.

852. Special Studies. (1-4). Covers specific topics identified by the department in consultation with institutions or groups of graduate students. Course procedures vary according to topic. Repeatable. Prerequisite: instructor's or departmental consent.

855. Individual Intelligence Assessment. (3). Use of individual tests for appraisal of intelligence, adaptive behavior and learning styles. Considers research and clinical theory in a lecture-discussion format, which includes some case simulation and practice activities. Prerequisites: CESP 822 and instructor's consent.

856. Counseling Practicum. (3). Supervised practice in counseling. Responsibilities include at least 60 hours applied experience. Repeatable for credit. Prerequisites: CESP 824 and 825 and coordinator's consent. Must be taken within one year of completion of CESP 824.

857. Professional and Ethical Issues. (2). Study of major ethical, legal and professional issues in counseling. Prerequisites: CESP 824 and 825.

858. Diagnostic Testing. (3). Use of individual tests, rating procedures and behavioral techniques for the appraisal of perceptual development, cognitive development, classroom behavior and academic skills. Considers assessment theory and research relevant to these areas in a lecture discussion format which includes some case simulation and practice activities. Prerequisites: CESP 822, 835 and instructor's consent.

859. School-Based Interventions. (3). Focuses on planning, implementing, monitoring and evaluating interventions in the school setting with students who are experiencing academic and/or behavioral problems. Prerequisite: CESP 822 or departmental consent.


862. Presentation of Research. (1-2). A project submitted in thesis manuscript form. Repeatable for a maximum of two hours of credit. Prerequisite: CESP 860.

866. Practicum in Guidance Services. (2-3). Supervised practice in administration, test interpretation, group counseling and other activities of the department. Prerequisite: CESP 833 and instructor's consent.

867. Practicum in Group Guidance and Counseling Methods. (3). Supervised practice in group guidance and counseling. Repeatable for three hours of additional credit. The second
practicum must be in a different area or have a different focus from that of the first. Prerequisites: CESP 825, 856 and instructor's consent.


881. Seminar In School Psychology. (1). Examines current trends and issues within the area of school psychology. Also considers alternative role models for the school psychologist from the standpoint of research and program development in related areas such as special education, general education and professional psychology. Repeatably to a maximum of four hours. Prerequisite: CESP 804 or concurrent enrollment or instructor's consent.

890. Special Problems. (1-3). Directed reading and research under the supervision of a graduate instructor. Prerequisite: departmental consent.

903. Counseling Theory II. (3). In-depth critical review of research and applicability of major theories to the evaluation and design of interpersonal intervention strategy.

914. Consultation Techniques. (3). Intensive study of the literature in counseling, school psychology, social psychology and administration that provides a basis for consultation techniques in the interpersonal context of school and work settings.

915. Intervention Design. (2). Gives the student further experience and skill in utilizing theories of interpersonal relations in creating macro- and micro-learning experience designs for individuals or groups experiencing dysfunctional situations. Stresses individual and organizational effectiveness assessment skills.

926. Seminar: Selected Topics. (2). Intensive study of current issues, techniques, research and application of the selected topic. Repeatable for different topics for a maximum of eight hours. Prerequisite: 15 hours of related graduate course work.

928. Seminar: Postsecondary Student Services. (2). Intensive study of issues, theories, approaches and research in topics related to postsecondary student services. Repeatable for different topics for a maximum of eight hours.

930. Marriage and Family Counseling II. (3). An advanced course on marriage and family counseling, including theory, techniques and research in the field. Prerequisite: CESP 803, 830, 30 graduate hours or permission of instructor.

934. Personality Assessment. (3). Focuses on theory and interpretation of instruments representing three major approaches to personality assessment: projective techniques, behavioral techniques and personality inventories. Includes alternative personality assessment approaches and reviews of personality theory and psychopathology. Includes supervised experience. Prerequisites: CESP 822, post-master's standing or last six hours of master's program.

946. Practicum in School Psychology. (3 or 6). Supervised practice in providing school psychological services to children in school, clinical or community agency settings. Requires at least 300 hours applied experience per three hours of credit. Repeatable for a maximum of six. Prerequisite: departmental consent.

847. Internship in Counseling: Internal or External. (2). The Internal Internship is normally a full-time placement, appropriate to career objectives in a position within an agency, institution or school. The External Internship is normally a series of planned placement intervention experiences in a variety of settings designed to develop expertise in interpersonal consulting. Repeatable up to 6 hours of credit.

948. Practicum in Marriage and Family Counseling. (3). Prerequisite: CESP 930, graduate student status or departmental consent.

977. Internship in School Psychology. (2). Supervised experience as a school psychologist in a school or agency setting. Requires at least 600 hours of applied experience. Repeatable for a maximum of four hours. Prerequisites: CESP 946 and departmental consent.

990. Special Problems in Counseling and School Psychology. (1-3). Directed problems in research for specialist degree students under supervision of a graduate instructor. Prerequisites: CESP 701 and instructor's consent.

**Educational Administration and Supervision**

Courses for Graduate/Undergraduate Credit

681. Cooperative Education. (1-8). A work-related placement that integrates theory with a planned and supervised professional experience designed to complement and enhance the student's academic program. Prerequisite: 2.5 GPA. Repeatable for credit. Offered C/NC.

750. Experienced Administrator's Workshop. (1-2). Offers a variety of administrative topics.

851. Special Studies in Educational Administration and Supervision. (1-3). Designed for students interested in learning more about school administration at the K-12 level. Emphasizes the role of the administrator as applied theoretician, problem finder, problem solver, legal/financial expert, instructional supervisor and human resource developer. Students are familiarized with the skills, understandings and career commitments essential to success in school administration. Not applicable to EAS graduate degree program requirements. Prerequisite: admission to Graduate School.

Course for Graduate Students Only

801. Introduction to Educational Administration. (3). An examination of educational foundations and the major theories of administration and application to specific problems. Provides an overview of administration of the school district, especially problems involving the community and staff. Includes data gathering for self-evaluation of supervisory potential.

804. Clinical Supervision for Administrators/Supervisors. (3). An examination of clinically-oriented supervisory models, explicit teaching approaches and their practice applications. Emphasizes the use of formative evaluation strategies that focus on performance issues coming from actual teaching situations and the teacher's guided analysis of these issues. Also considers related responsibilities of the supervisor for planning and organizing staff development activities. Prerequisite: EAS 801.

826. Curriculum Management. (3). A study of curriculum philosophies, theories and developmental processes. Includes examination of recent programs and proposals, curriculum development at the building and school system levels and techniques of program evaluation.


842. School Law. (3). General concepts of law, interpretations of statutes and court decisions affecting education, and legal responsibilities of school personnel.

892. Special Studies in Educational Administration and Supervision. (1-3). Designed for students in advanced study. Emphasizes development of research proposals and studies. Prerequisite: completion of master's degree or advisor's consent.

862. Presentation of Research. (1-2). A project submitted in thesis manuscript form. Repeatable for a maximum two hours of credit. Prerequisite: EAS 860.

873. Interpersonal Skills for Administrators. (3). Designed as a laboratory approach to interpersonal skills development. Students engage in simulation exercises to acquire skills in dealing with groups.


878. Strategies for School Improvement. (3). An examination of organizational/instruction-
characteristics of schools as determinants of their effectiveness (e.g., pupil academic achievement). Considers various school improvement models, including programs designed specifically for elementary and secondary schools. Research studies considered examine established correlates for school effectiveness, as well as related teacher effectiveness variables. Prerequisite: EAS 801 and 804.

884. School Plant and Facilities. (3). Planning new educational facilities based upon educational programs. Includes the evaluation of existing schools, remodeling and operation and maintenance of present school plant. Prerequisite: master's degree or instructor's consent.

890. Special Problems in Administration. (1-4). Directed problems in research for master's students primarily under supervision of a graduate instructor. Prerequisite: instructor's consent.

892. Principalship/Practicum. (6). Two-semester course includes building-level field experience designed to emphasize the acquisition of knowledge and skill in administrative practices and procedures of administration. Prerequisites: all program course work and departmental consent.

904. Supervisory Strategies for Successful Schools. (3). An examination of supervisory strategies designed to enhance school and classroom effectiveness. Focuses on contingency approaches to supervisory practice, curriculum and instructional leadership requirements, measurement and evaluation issues, staff development and school restructuring requirements, and related school climate issues. Prerequisite: EAS 804.

909. Planning in Educational Administration. (3). Seeking out, analyzing, and making appropriate use of information in effective school planning. Examines systems analysis, management information systems in school settings, and strategies for long- and short-range planning.

910. Financial Support of Education. (3). Focuses on the financial support of education at local, state and national levels. Emphasizes methods of taxation, budget preparation and efficient expenditures. Prerequisite: master's degree or instructor's consent.

915. Field Project in Administration and Supervision. (2-4). Field projects are planned to meet a legitimate need in an educational setting in which the student, under professional guidance, may become directly involved. The project may fulfill a community need, a departmental concern or a needed investigation or inquiry. Acceptable projects are developmental or must include an appropriate research design. A useful, well-documented report of the project is required, with the plan, format and style approved by the student's committee. Prerequisite: completion of master's degree.

963. Politics and Power in Education. (3). An examination of the interaction of society and the school as it relates to administrative processes. Studies systems of control, social class, power structure, human relations and group dynamics. Prerequisite: instructor's consent.

970. Advanced Administrative Theory Seminar. (3). Examines the relationship between theory and practice in educational administration. Participants consider various theoretical frameworks for empirical studies, program designs, and organizational implementation efforts and take initial steps toward an integration of those frameworks. Class activities require the application of the constructs and propositions considered to an on-going analysis of school-related problems and the conceptualization of action programs for addressing such problems. Prerequisite: admission to EAS program in EAS.

971. Decision-Making and Problem-Solving Seminar. (5). Focuses on approaches to identifying, clarifying, and solving various problems in elementary and secondary education. Decision-making and problem-solving models are reviewed, critiqued, and applied. Prerequisites: admission to EAS program; EAS 970 and 981, concurrent enrollment in EAS 982.

972. Administrative Leadership Seminar. (5). Designed to facilitate in-depth investigations of research relevant to leadership theory and practice. Activities include clarifying and developing personal leadership skills; identifying, fostering, and supporting the leadership skills of others; and conducting observations of leaders in action. Prerequisites: admission to EAS program; EAS 970 and 971, and concurrent enrollment in EAS 986.

981. Applied Inquiry Seminar I. (3). Provides doctoral students with an introduction to field based inquiry/problem-solving strategies; begins the development of field-based problems/issues; and provides practice in field research design, implementation, and reporting. Prerequisite: admission to EAS program.

982. Applied Inquiry Seminar II. (3). Continues EAS 981 and provides opportunities for more sophisticated and complex field-based studies. Prerequisite: admission to EAS program.

983. Applied Inquiry Seminar III. (3). Continues EAS 981 and EAS 982. Focuses on the development of individualized research plans leading to small group or individual field-based experiences in the second year of doctoral study. Prerequisite: admission to EAS program.

986. Field-Based Research I. (3). This is the first in a sequence (Fall, Spring, Summer) that provides opportunities for field work leading to EAS dissertation proposals. Prerequisites: admission to EAS program; EAS 981, 982, 983, and concurrent enrollment in EAS 972.

987. Field-Based Research II. (3). Follows EAS 986 and continues field-based research activities and development of dissertation proposals. Prerequisites: admission to EAS program; EAS 986.

988. Field-Based Research III. (2). Follows EAS 986 and 987 and culminates this field-based sequence. Prerequisites: admission to EAS program; EAS 986 and 987.

990. Special Problems in Administration. (1-4). Directed problems in research for specialists and doctoral degree students under supervision of a graduate instructor. Prerequisite: instructor's consent.

992. Superintendent/Internship. (6). Two-semester course designed primarily for individuals who are currently with EAS or EAS programs in Educational Administration and Supervision. Focuses on the role expectations of district-level administrators, and includes field experiences designed to emphasize knowledge and skill in administrative practices and procedures. Work is designed for each student's particular administrative experience. Students must file an application for this terminal course. Prerequisites: building-level administrator certification, all program course work and departmental consent.

999. Dissertation Research. (1-6). Taken concurrently with EAS 986, 987, and 988 and for six credits each semester during the last year of enrollment. Provides students with dissertation proposal and dissertation advisement and may be taken for one to six credits per term for a maximum of 24 credits. Up to 17 credits may be counted toward program completion. Prerequisites: admission to EAS program and required doctoral course work.

Communicative Disorders and Sciences

Graduate Faculty

Professors: Kenneth W. Burk, Barbara W. Hodson, Raymond H. Hull

Associate Professors: Harold T. Edwards, Wesley L. Faires, Rosalind R. Scudder (chairperson), Carol E. Westby

Assistant Professors: Yvette D. Hyter, Thomas R. Kneil

Degrees and Areas of Specialization

The Department of Communicative Disorders and Sciences offers courses of study leading to the Master of Arts (MA) and the Doctor of Philosophy (PhD). Academic and clinical education are provided for students who wish to become pro-
professionally qualified to work with children and adults. Instructional areas include communication sciences, speech and language pathology, and clinical and rehabilitative audiology. A graduate program culminating in a master's degree is required for professional certification as a speech-language pathologist or audiologist in the public schools and for work in hospital clinics, rehabilitation centers, or private practice. With an undergraduate preprofessional major, students normally can complete the master's program in two years and be eligible for certification by the Kansas State Department of Education and the American Speech-Language-Hearing Association, and be eligible for Kansas licensure.

Admission Requirements

Admission to the master's degree program is granted to students who have completed an undergraduate major of at least 30 credit hours in the area of speech, language, and hearing disorders or closely allied courses. Admission also requires an overall grade point average of 2.750 and at least 3.00 for the last 60 credit hours of the undergraduate degree program and in the undergraduate major field. Scores for the general aptitude section of the Graduate Record Examination must be submitted. The Graduate Record Examination must be taken within the last five years and the sum of the verbal and quantitative portions of the exam should equal 900 or better. Three letters of recommendation are required.

Admission to the doctoral degree program requires a master's degree and completion of at least one year of that graduate work with a grade point average of 3.500 or better. Scores for the general aptitude section of the Graduate Record Examination must be submitted. The Graduate Record Examination must be taken within the last five years and the sum of the verbal and quantitative portions of the exam should equal 1,000 or better. Three letters of recommendation are required.

Master of Arts Requirements

The Master of Arts (MA) in communicative disorders and sciences may be earned under a thesis option or a nonthesis option.

The thesis option requires the presentation and oral defense of an acceptable thesis and the successful completion of a minimum of 40 credit hours. Enrollment in CDS 895 or 899 is required for each semester in which the student is working with a faculty member on thesis research.

The nonthesis option also requires the successful completion of a minimum of 40 credit hours. Written comprehensive examinations also must be taken. Students may not take these examinations during any semester in which they are on academic probation.

Candidates in either option must complete a three credit hour course in descriptive statistics with a grade of C or better or pass an examination. All students must enroll in a clinical practicum course each semester of enrollment. No more than four credit hours in clinical practice may count toward the minimum credit hour requirements for the MA. Clinical competence also must be demonstrated before the completion of the graduate program.

Participation in the department's clinical practicum courses requires that students obtain medical clearance prior to the start of the course. This requirement is indicated in the individual course descriptions. Procedures to be followed may be obtained from the department office. Also, graduate students who participate in active clinical practice during the year must purchase professional liability insurance in an amount of not less than $1,000,000-$3,000,000. This must be done on a yearly basis, when appropriate. Procedures for insurance purchase may be obtained from the departmental office.

Doctor of Philosophy Requirements

Doctoral students, in conjunction with their advisory committee, develop a Plan of Study which normally consists of at least 95 credit hours, 60 percent of which must be taken at Wichita State University. Students normally take the qualifying examination in the semester in which they complete the Plan of Study requirements, exclusive of dissertation hours. A minimum of nine hours of Advanced Practicum will be included in the Plan of Study. Enrollment in CDS 999 is required for each semester in which the student is working on dissertation research, including the semester of graduation. The final requirements in the PhD program are the completion of original research and an oral defense thereof.

General

Courses for Graduate/Undergraduate Credit

540. Senior Seminar. (1-2). Advanced study in selected areas of speech, language, and hearing disorders, with students structuring the content of the seminar. Provides an opportunity for original student contributions within the group seminar experience under the guidance of a senior professor. Prerequisite: CDS major with junior or senior standing.

570. Foreign Accent and Dialect Modification. (3). Primarily for the nonnative speaker of American English wanting to improve pronunciation. Studies problems of foreign accent and American English dialect reduction. Analyzes speech patterns and phonological changes and applies this knowledge in practical exercises. Prerequisite: CDS major with junior or senior standing.

681. Cooperative Education (1-8). A work related placement that integrates theory with planned and supervised practical experience designed to complement and enhance the student's academic program. Prerequisite: 2.750 GPA. Repeatable for credit. Offered CR/NC. Repeatable for credit. Offered CR/NC.

740. Selected Topics in Communicative Disorders and Sciences. (1-3). Individual or group study in specialized areas of communicative disorders and sciences. Repeatable.

750. Workshop in Communicative Disorders and Sciences. (1-4). Offered periodically on selected aspects of speech and hearing habilitation.

Courses for Graduate Students Only

800. Research Methods. (3). A survey of the different research methods utilized in the fields of communication sciences and communication pathology. Students acquire the fundamental knowledge and skills for conducting clinical and basic science research and for reading and critically evaluating the clinical research literature. Prerequisite: graduate student status.

890. Independent Study in Speech and Language Pathology or Audiology. (1-3). Arranged individual, directed study in specialized content areas in speech and language pathology or audiology. Repeatable. Prerequisite: instructor's consent prior to enrollment.

892. Presentation of Research. (1-3). A directed research project culminating in a manuscript appropriate for publication. Repeatable, but total credit hours may not exceed three. Prerequisites: CDS 800 and instructor's consent prior to enrollment.

895. Thesis Research. (1-2). Repeatable, but total credit hours counted toward degree requirements must not exceed two. Prerequisite: instructor's consent.

899. Thesis. (1-2). Repeatable, but total credit hours counted toward degree requirements shall not exceed two. Prerequisite: instructor's consent.

935. Advanced Practicum in Communicative Disorders and Sciences. (1-4). Supervised internship in one or more of the following selected areas: Advanced Practicum in Client Management, Advanced Practicum in Clinical Supervision, Advanced Practicum in Academic Instruction, Advanced Practicum in Research, and Advanced Practicum in Clinical and Prof...
807. Laboratory Technologies. (3). An introduction to clinical and research instrumentation used in the fields of communicative disorders. Experience with instrumentation is gained through practical projects and applications within the laboratory. Prerequisite: CDS 801.

900. Speech Auditory. (3). A detailed analysis of the acoustics of speech. Studies the various theories of speech sound production along with the instrumental analysis of speech sounds and ends with an examination of various speech disorders from the point of view of acoustics. Prerequisite: CDS 801.

980. Speech Perception. (3). A critical review of the theories and empirical research addressing the perception of speech, species-specific communication, and speech recognition systems through artificial intelligence. Discusses both unimodal and bimodal models of perception. Prerequisite: CDS 900.

984. Seminar in Clinical Research. (1). Presentation of advanced models in research design applicable to the investigation of communicative disorders in a clinical setting. Prerequisites: CDS 800 and competency in statistics.

995. Research Proseminar. (1). A weekly seminar of informal discussion and formal presentation of ongoing or planned research by the CDS faculty and doctoral students. Goal is to provide CDS doctoral students with new and valuable knowledge and insights regarding how real world research is performed. Prerequisite: doctoral student standing.


Communication Sciences

Courses for Graduate/Undergraduate Credit

501. Speech and Hearing Science. (3). Examination of elements in the chain of events that lead to human communication. Studies speech production and perception at physiological and acoustical levels with primary emphasis on acoustics. Prerequisite: CDS 111Q.

603. Neurology of Speech and Language I: Basic Processes. (4). A consideration of basic neuromotor and neuropsychology necessary for obtaining an understanding of the representation of speech and language in the human central nervous system and of conditions resulting from neuromotor impairment. Prerequisite: at least senior standing.

Courses for Graduate Students Only

801. Advanced Speech and Hearing Science. (3). Advanced study of speech and hearing processes, primarily in their normal aspects. Attention to current understanding of speech generation, the speech signal, and the normal function of hearing. Attention also to techniques of investigation of these processes. Prerequisite CDS 801 or equivalent or departmental consent.

807. Laboratory Technologies. (3). An introduction to clinical and research instrumentation used in the fields of communicative disorders. Experience with instrumentation is gained through practical projects and applications within the laboratory. Prerequisite: CDS 801.

900. Speech Acoustics. (3). A detailed analysis of the acoustics of speech. Studies the various theories of speech sound production along with the instrumental analysis of speech sounds and ends with an examination of various speech disorders from the point of view of acoustics. Prerequisite: CDS 801.

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Speech-Language Pathology

Courses for Graduate/Undergraduate Credit


516. Language Intervention Strategies—Birth to 5. (3). Discussion of current language intervention strategies and programs for infants, toddlers, and preschoolers, birth to 5 years. Examination of assessment procedures and the development of individualized remediation plans. Discussion of the multidimensional nature of language and culturally different language patterns. Prerequisite: CDS 416.

635. Clinical Methods in Speech and Language. (2). Techniques and methods for development of clinical skills in a supervised practicum setting. Children with language and speech sound disorders provide the primary focus. Development of a philosophy of the clinical process will include clinical procedures for therapy, writing behavior objectives, and progress and discharge reports. Prerequisites: junior or senior standing, 20 clock hours of observation, CDS 414 and 416, prior or concurrent enrollment in 510.

636. Beginning Practicum in Speech and Language. (1). Supervised practicum of clinical assignments in the University Speech-Language-Hearing Clinic. Prerequisites: prior or concurrent enrollment in CDS 635, instructor consent on one semester prior to enrollment, medical clearance.

676. Teaching English as a Second Language. (2-3). Cross-listed as Engl 727 and Ling 727. Consideration of theories of second-language teaching with special application to English. Description and evaluation of current methods of teaching English. Practical application for various levels of instruction.

711. Voice Disorders. (3). Review of current knowledge on the symptomatology and etiology of commonly encountered voice disorders in children and adults. Presentation of procedures for differential diagnosis and clinical intervention, based on a working knowledge of the anatomy and physiology of normal voice production. Multicultural issues are considered. Prerequisites: at least senior standing and CDS 300, 510.

712. Fluency Disorders. (3). A review of current theories on the etiology and development of the disorder. Considers behaviorally based diagnostic procedures for children and adults, as well as methods for clinical intervention, including procedures for parent interviewing and counseling, and multicultural concerns. Provides opportunities for observation, one focused on the demonstration of intervention methods. Prerequisites: senior standing and CDS 300, 510.


716. Language Disabilities in Children and Adolescents. (3). Examination of various approaches to working with children and adolescents with language abilities. Practical application of language assessment procedures, individualized planning, and language intervention strategies. Language in the classroom for school-age children and adolescents and collaborative strategies. Multicultural literacy and the multidimensional nature of language in the classroom. Prerequisite: CDS 416 or departmental consent.

718. Craniofacial Anomalies. (3). Provides a working knowledge of research and theory concerning etiology, characteristics, assessment, and clinical management of individuals having craniofacial anomalies. Prerequisite: CDS 501.

770. Communication Development and Disorders. (3). Identification of communication deviations, differentiating disorders from developmental and/or cultural/linguistic differences. Evaluation of potential impact of various communication disorders on academic performance of individuals. Consideration of strategies for facilitating development of children's communication skills in educational settings.

780. Communication Disorders in Educational Settings. (3). Communication, cooperation, and interaction of professionals and paraprofessionals in public school speech and language management programs on the elementary and secondary school levels. Emphasizes procedures and materials for surveying, scheduling, writing IEP's; therapeutic management, record keeping, and utilization of various instructional media. Should be taken prior to student teaching—CDS 781 and
Courses for Graduate Students Only

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Audiology

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Courses for Graduate Students Only

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864. Habilitation of the Hearing-Impaired Child. (2). Psychological, social, and educational impact of congenital and adventitious hearing loss in hearing-impaired children. Studies the acquisition of speech and language skills of hearing-impaired children, current assessment, and intervention strategies to develop functional and effective communication, and the techniques and programs to assist hearing-impaired children and their parents overcome the barriers posed by hearing impairment. Prerequisites: graduate standing, CDS 250, 450.

886. Graduate Practicum in Audiology. (1-2). Repeatable. Application of audometric techniques in clinical situations. Experience in complete patient management, counseling, and rehabilitation follow-up, when appropriate. Requires 3-4 hours of practicum per week for each hour of credit. Prerequisites: departmental consent and medical clearance.

Curriculum and Instruction
Graduate Faculty

Professors: Robert D. Alley, Marcus T. Ballenger (associate dean), Bryant P. Filion, John H. Wilson

Associate Professors: Jeri A. Carroll, Louis Goldman, Michael A. James, Dennis J. Kear (associate dean for teacher preparation and chairperson), Michael P. Tilford (dean, Graduate School)

Assistant Professors: Alan A. Aagaard, Peggy J. Anderson, Barbara J. Attivo, Frances L. Clark, Gerry Coffman, James E. Fisher (coordinator of field experience), Tonya Huber, Frank M. Kline, Dennis E. Potthoff, Diana Rogers-Adkinson, Twyla G. Sherman, Candace B. Wells, Catherine G. Yeotis

Degrees and Areas of Specialization

The Department of Curriculum and Instruction offers courses of study leading to the Master of Education (MEd) in curriculum and instruction and the MEd in special education (mildly handicapped). The department also provides course work leading to endorsement in early childhood education, early childhood handicapped, gifted education, middle level education, teaching English to speakers of other languages (TESOL), and reading.

Admission Requirements

In addition to the general admission requirements, students seeking the MEd in curriculum and instruction must be certified or eligible for certification in early childhood, elementary or secondary education. They must have at least one semester of satisfactory full-time teaching or equivalent professional experience. They must complete the prerequisite course (CI 706) with a grade of B or better, and demonstrate effective writing skills in a 500-word statement of purpose. Students must also take the Graduate Record Examination (GRE) or the Miller Analogies Test (MAT). On the GRE students are required to achieve a combined score of 917 or higher on any two of the three general tests; on the MAT, a score of 40 or above is required.

The special education degree is available for people certified at the elementary and/or secondary teaching level with successful teaching experience in a regular classroom setting. Students must take the Graduate Record Exam (verbal and quantitative). The Graduate Record Exam (GRE) and grade point average (GPA) will be evaluated using the following index:

\[
\text{GPA + (GRE Verbal + GRE Quantitative)} / 400
\]

Ordinarily, applicant's scores on this index will equal or exceed 5.4. This index of 5.4 could be achieved by a student who attained a combined verbal and quantitative score on the GRE of 960 and a B average over the last 60 credit hours of undergraduate course work. The special education degree is limited to 20 students yearly. Applications are evaluated periodically.

Master of Education Requirements

The Master of Education (MEd) in curriculum and instruction is a 33-credit hour program, in addition to the prerequisite course (CI 706). Students must complete either a thesis option or a portfolio option. Students complete 14 credit hours of required courses in curriculum and instruction, research and research problems. They also complete 12 hours in a self-selected area of specialization, 3 hours in a course related to their particular thesis or portfolio project and 4 hours in thesis or portfolio work.

The MEd in special education may be earned under a thesis option or a nonthesis option. The nonthesis option requires 36 credit hours of course work and a written comprehensive examination. The thesis option requires 30 credit hours of course work, 6 hours of thesis work and an oral examination on the thesis.

Courses for Graduate/Undergraduate Credit

501. Professional Writing for Educators. (1-3). Helps students learn the writing skills, techniques and typical procedures required for developing manuscripts for possible publication in the field of education. Addresses manuscripts for a variety of publication outlets.

518. Instructional Strategies: Kindergarten. (3). Students examine the content and methods of instruction in kindergarten and observe and teach in a variety of settings. Students examine all aspects of the kindergarten program and are introduced to a wide variety of materials available and in use. Prerequisites: acceptance into teacher education, CI 328 and CESP 433.

615. Learning and Reading Strategies. (3). Students are provided with the understanding of the development of learning and reading strategies and explore instructional approaches for guiding secondary students in those strategies and their use in content areas.

616. Literature for Adolescents. (3). Students participate in extensive reading of literature in all genres consistent with studies of adolescents; reading interests, abilities and responses to literature. Prerequisite: acceptance into teacher education. Currently and previously certified teachers meet prerequisites.

621. Instructional Strategies: Middle Level Education. (3). Students examine the middle grades school as an organization that takes its design specifically from the analysis of 10-14 year olds, their characteristics and their needs. Students examine many curricular and instructional alternatives for middle grades education and learn to manage changes.

701. Foundations of Education. (3). Students survey the various foundations areas, including philosophical, historical, social and comparative. This course is prerequisite to subsequent foundations courses. Prerequisite: graduate standing.

702. Introduction to Exceptional Children. (3). A survey of the characteristics of exceptional learners, including the handicapped and the gifted. Service delivery models and current practices are presented. Fulfills certification requirements for teachers and serves as an introductory course in exceptionality for special education majors, administrators and school psychologists. Prerequisite: bachelor's degree or departmental consent.

703. Learning Centers. (3). Students consider a variety of alternative approaches to teaching at all grade levels and subject matter areas via learning centers.

705. Introduction to the Reading and Writing Process. (3). Examine all aspects of current theories and pertinent research on reading and writing. Stresses applying this information to the actual teaching of children.
706. Reflective Inquiry Into Learning, Teaching, and Schools. (3). Fosters the cognitive, critical, and narrative elements of teachers' reflective thinking about the relationships among learning, teaching, and schools. Various psychological, historical, philosophical, developmental, and social/multicultural frameworks are explored as the fox that drive the teachers' investigations. Prerequisite: graduate standing.

707. Introduction to Mildly Handicapped. (3). Examine the roles and responsibilities of special educators and become acquainted with issues and challenges confronting special educators. Also examine alternative approaches to the delivery of special education services and with the social systems within which special education services are provided. Prerequisite: acceptance into the MEd, special education for mildly handicapped program.

709. Current Topics in Curriculum. (1-3). Addresses a broad range of topical issues in curriculum development and implementation. A current issue will be covered under this course number, an umbrella number for a variety of topics/innovations in curriculum. Repeatable.

709. Current Topics in Instruction. (1-3). Addresses a broad range of topical issues in current practices for effective instruction. A current issue will be covered under this course number, an umbrella number for a variety of topics/innovations in instructional practices. Repeatable.

710. Current Topics in Classroom Management. (1-3). Addresses a broad range of topical issues in current classroom management practices. A current issue will be covered under this course number, an umbrella number for a variety of topics/innovations in classroom management. Repeatable.

711. Multicultural Education. (3). Primary emphasis is on students understanding multiple perspectives in a global society and developing multiple modality, culturally aware curriculum experiences. Designed to provide disciplined inquiry and critical experience "to become more responsive to the human condition, cultural integrity and cultural pluralism in society" (NCATE, 1982, p. 14). Emphasizes diversity issues in education and the development of a knowledge base to support culturally responsible pedagogy. Prerequisite: graduate standing or departmental consent.

712. Environmental Education. (3). Provides basic information on environmental issues which can be addressed in the classroom. Become familiar with a wide range of resources for both teachers and their students. Stresses applying environmental issues to everyday teaching.

713. Agriculture in the Classroom. (2). K-12 teachers learn about agriculture and develop ways to integrate that information into their everyday teaching. Includes presentations, field trips and projects showing how the food chain industry touches every person's life. Teachers learn to integrate agricultural information into existing teaching basic subjects like math, language arts, social studies, science, art.

714. Activities for Human Relations I. (3). Students examine values, communications and creativity. Activities in the above areas can be used by individuals and groups in instructional settings to explain, teach and enhance human relationships.

715. Activities for Human Relations II. (3). Students cover introductory activities, cooperation and self-awareness which can be used by individuals and groups in instructional settings to explain, teach and enhance human relationships.

717. The Ethnography of Schooling. (3). Through readings, guided experiences in research and field work, graduate students become familiar with qualitative research approaches in education, with emphasis on case study methodology and expertise in non-participant and participant observation, constant comparative analysis and reporting research. Prerequisite: admission to Graduate School.

725. Improvement of Instruction in Science. (3). Students identify and explore the principles of science that teachers should recognize, understand, and consider from K-9. Prerequisite: CI 402.

734. Literature-Based Reading Programs. (3). Students examine specific methods for developing a literature program with children (preschool—elementary years) with specific emphasis on extending literature and media through the reading environment, language arts, the arts and creative expression. Prerequisites: CI 705 and graduate standing.

735. Introduction to the Gifted. (3). Students are introduced to the historical and socio-educational perspectives germane to gifted education, and are provided an overview of the characteristics and learning needs of high aptitude students. For administrators, teachers or anyone interested in gifted education. Prerequisite: graduate standing.

740. Introduction to Early Childhood Handicapped. (3). Students are provided a basic introduction to the emerging field of early intervention for handicapped children and their families. Prerequisites: CESP 726 and CI 761.

747L. Practicum TESOL/Bilingual Education. (3). Provides opportunities to develop competencies with speakers of other languages by working in a classroom setting with a trained professional. Opportunities to apply theoretical principles of second language acquisition and methodologies of second language learning to the teaching of English to non-native speakers. Prerequisites: CI 750 or Eng. 315 or Eng. 151G and CI 430 or 711 or Ling./Astrh. 651.

750. Workshops in Education. (1-4).

751, 752, 753, or 754. Special Studies in Education. (1-3). For elementary and secondary school teachers. Repeatable with adviser's consent. Prerequisite: teacher certification or instructor's consent. Graded S/U.

757. HyperMedia in the Classroom. (2). Explores authoring tools that help teachers integrate media into instruction. Focuses on applications that connect text to multimedia such as CD-ROM, videodisk or videotape. Learn how to use these media tools and explore the effectiveness of each tool in developing instructional media. Prerequisite: CI 770 or instructor's consent.

770. Introduction to Macintosh Computing. (1). Provides basic Macintosh skills appropriate for classroom use. Covers mouse skills, desktop menu, managing documents and folders, managing floppy and hard disks and simple word and data processing. Teachers with little or no experience on a Macintosh should enroll in this workshop before taking Instrucational Applications workshops or courses. Graded S/U.

772A. Instructional Applications: Apple Ile. (1). An introduction to using the Apple Ile computer in the classroom. Students learn about Apple Ile hardware, care of hardware and software, networking in an Apple Ile lab, software appropriate to Apple Ile, word processing, desktop publishing on the Apple Ile and LOGO. Graded S/U.

772M. Instructional Applications: Macintosh. (1). An introduction to how the Macintosh computer can be used in the classroom. Learn how to use word processing, graphics, simple desktop publishing, basic database applications, HyperCard, teacher utilities and productivity programs to facilitate learning in the classrooms. Integrated media is introduced and demonstrated. Prerequisite: CI 770.

773. HyperMedia in the Classroom. (2). Explores authoring tools that help teachers integrate media into instruction. Focuses on applications that connect text to multimedia such as CD-ROM, videodisk or videotape. Learn how to use these media tools and explore the effectiveness of each tool in developing instructional media. Prerequisite: CI 770 or instructor's consent.

774. Special Projects in HyperMedia. (1). Must be taken concurrently with CI 773.
Provides students with full-time participation in a class for learning disabled children/adolescents supervised by a master teacher and University professor, emphasizing applied teaching methods for the learning disabled, formal-informal psycho-educational assessment devices, curriculum strategies, behavior management and prescriptive remediation for academic deficits. Prerequisite: CI 886 and 888.

877. Instructional Applications: Telecommunications. (1). Introduces the classroom teacher to instructional applications of telecommunications. Learn about electronic bulletin boards, on-line services, types of modems and telecommunication with the Macintosh, Apple Ile and MS-DOS computers. Field trips demonstrate how telecommunication is used beyond the classroom. Prerequisite: CI 770 or instructor's consent.

780C. Computers and the Young Child. (1). Learn to use the computer with children in preschool through second grade. Appropriate software is evaluated and used in planning for instruction. Prerequisite: CI 770 or instructor's consent.

780D. Computers in Special Education. (1). Covers assistive and adaptive devices used with Apple Ile and Macintosh computers in the special education classroom. Learn to make decisions about applicability of computer technology for special education students. Prerequisite: CI 770 or instructor's consent.

780J. Computers in Social Studies. (2). Introduces classroom teachers to application of computer technology, CD-ROM and laserdisc technology in the social studies curriculum. Appropriate software is evaluated and used in planning for instruction. Prerequisite: CI 770 or instructor's consent.

780L. Computers in Language Arts. (2). Enables classroom teachers to utilize computer and related technology in the language arts curriculum. Appropriate software is evaluated and used in planning for instruction. Prerequisite: CI 770 or instructor's consent.

780M. Computers in the Math Classroom. (1). Focuses on the integration of software programs designed for middle and high school mathematics classrooms. Explore software and instructional activities which support math at the middle and high school levels using Apple Ile and Macintosh systems. Prerequisite: CI 770 or instructor's consent.

780S. Computers in Science. (2). Introduces classroom teachers to application of computer technology, CD-ROM and laserdisc technology in the science curriculum. Appropriate software is evaluated and used in planning for instruction. Prerequisite: CI 770 or instructor's consent.

781. Co-Op Education. (1-4). Provides the student a work-related placement that integrates theory with a planned and supervised professional experience designed to complement and enhance the student's academic program.

782. Computers as a Management Tool. (1). Covers computerized IEP's, portfolio assessment, gradebook programs and database management for the classroom teacher. Apple Ile and Macintosh platforms included. Prerequisite: CI 770 or instructor's consent.

783. LOGO Implementation. (2). Acquaints students with the philosophy of LOGO, teach the LOGO language in its classroom applications and develop curricular activities which stress problem solving and programming techniques. Prerequisite: CI 772A or equivalent.

786. Structured BASIC. (2). Designed to help middle school and high school teachers integrate computer applications utilizing structured BASIC programming techniques. Examine the relationship between programming and everyday life and use BASIC as a programming language in a wide variety of educational settings. Prerequisite: CI 770 or instructor's consent.

787H. Practicum in Center-Based/Home-Based Early Childhood Handicapped (ECH). (3). Provides opportunities for the student to develop clinical competencies with handicapped young children and their parents under the supervision of trained professionals in the field and while working in the center and the homes of the client children. Prerequisites: CI 740, 847R, 891, CDS 815 or CI 760 - departmental consent.
847L. Practicum: Edcuable Mentally Handicapped. (3-6). Provides students with full-time participation in a class for edcuably handicapped children/adolescents supervised by a master teacher and University professor, emphasizing applied teaching methods for the mildly handicapped students, formal-informal psycho-educational assessment devices, curriculum strategies, behavior management and prescriptive remediation for academic deficiencies. Prerequisites: CI 707 and 888.

847K. Practicum: Behavior Disorders. (3-6). Provides students with full-time participation in a class for emotionally disturbed children/adolescents supervised by a master teacher and University professor, emphasizing applied teaching methods for the mildly and severely disturbed, formal-informal psycho-educational assessment devices, curriculum strategies, behavior management and prescriptive remediation for academic deficiencies. Prerequisites: CI 707 and 888.

847M. Practicum: Gifted. (3-6). Stresses applied teaching approaches. Provides opportunities to apply theoretical, structural and technological methodologies related to the education of the gifted learner. Prerequisites: CI 735 and 883.

847R. Practicum: Regular Early Childhood. (3). Provides opportunities in a traditional setting for the student to develop competencies with young children by working in a classroom setting with a trained professional. Prerequisites: CI 761 and 762.

853. Improvement of Instruction in Language Arts. (3). Students examine recent developments in the teaching of language arts in elementary and secondary school, educational programs, concerns, methods, materials and research related to listening and oral, written and visual communication including "school" writing and creative writing. Students select particular concepts and related skills for special attention.

854. Improvement of Instruction in Social Studies. (3). Students examine recent changes in social studies curriculum and instruction to investigate strengths and limitations of various approaches. Stresses competency in teaching for concept development, dealing with value-laden issues and teaching for inquiry. An inquiry-centered learning environment emphasizes personalizing the social studies curriculum for children. Alternative teaching strategies and complementary evaluative techniques are reviewed and practiced.

856. Improvement of Instruction in Mathematics. (3). Students examine recent trends in subject matter content and teaching guides to improve understanding of meanings, vocabulary and mathematical concepts. Includes instructional methods and materials.

859A-M. Seminars in Curriculum and Instruction. (1-3). Seminars deal with current issues, topics, trends, and problems in a class- room and instruction. Seminars engage students actively in the conduct or reading of scholarship and/or research related to the topic, with stress on the development of students' skills in research, development, and scholarship. The focus and nature of the intended skill development are clearly identified in the description of each seminar. A maximum of two hours can be applied to the MEd in Curriculum and Instruction.

860. Seminar on Research Problems. (3). Helps MEd students formulate either an agenda for the development of a professional portfolio, or an acceptable proposal for a master's thesis in order to satisfy the applicant's requirement for the MEd in Curriculum and Instruction. Prerequisite: admission to MEd in Curriculum and Instruction. Prerequisites: admission to MEd in Curriculum and Instruction; CI 806, CESP 801.

862. Professional Portfolio Development. (2). Students develop the professional portfolio proposed and accepted in CI 860. In consultation with their portfolio advisor and two other faculty members, students proceed with their approved agenda. Prerequisite: CI 860.

863. Presentation of Professional Portfolio. (2). Students complete, present to their faculty portfolio committee, and orally defend the professional portfolio proposed in CI 860. Prerequisites: CI 860 and 862 (or concurrent enrollment in CI 862).

879. Trends in Early Childhood Education. (3). Students analyze current early childhood education research with an in-depth study of contemporary programs influencing the education of young children.

879-876. Master's Thesis. (2-2). Students complete their research proposal that was accepted by their thesis committee. Also required is the completion and oral defense of the student's thesis. Students work closely with their advisor and committee. Students needing an additional semester to satisfy these requirements should enroll in CI 876. Students receive credit (for coursework) when their thesis has been completed and defended. Prerequisite: CI 860.

883. Methods: Gifted Education. (3). Students plan for a qualitatively differentiated curriculum to meet the unique needs of the gifted learner. Explores a variety of suitable program models including grouping, acceleration, guidance and combination of these. Prerequisite: CI 735.

887. Assessment and Analysis of the Learner. (3). Students learn the application of standardized and informal evaluation techniques including critical evaluation of standardized tests and their appropriateness for special populations (including reading disabled), alternative methods of assessment and intervention techniques based on diagnostic profiles. Prerequisites: CI 705 or CI 707 or CI 735 or CI 740.

888. Methods: Mildly Handicapped. (3). Students master specified competencies in teaching special students including use of data based instruction; strategies for reading assessment; techniques to improve reading, math, and written language skills; and strategies for working with other teachers to facilitate mainstreaming of special students. Prerequisites: CI 707 and acceptance into the MEd, special education for mildly handicapped program.

892. Methods: Early Childhood Handicapped. (3). Students demonstrate and discuss current procedural strategies and materials used cross-categorically with specific categorical groups and across domains in early intervention. Corequisite enrollment in an early childhood special education practicum is strongly recommended. Prerequisites: CI 728, 740 and 761.

894. Advanced Topics in Early Childhood Handicapped. (1-4). Students participate in topical seminars in early intervention offered periodically to facilitate opportunities for the in-depth study of critical issues or topical research in this rapidly developing field. Prerequisites: CI 740, 761, 762, 847R, 887, and 892 or instructor's consent. Repeatable for credit.

Health and Physical Education
Graduate Faculty
Associate Professors: John F. Hansan, Susan K. Kovan (chairperson)
Assistant Professors: Joseph W. Donnelly, Natasha M. Fife, Richard E. Laptad, Sarah McCallister, Gloria Napper-Owen, Nancy B. Stubbs, Matthew D. Vukovich

Degrees and Areas of Specialization
The Department of Health and Physical Education offers courses of study leading to the Master of Education (MEd) in sports administration or in physical education. Academic training is provided for students who wish to prepare for careers in physical education programs in public schools and universities, for careers in exercise science/wellness, and for careers in sports administration.

Admission Requirements
Admission to the master's degree program requires students to have completed an undergraduate degree from a regionally accredited institution and have a grade point average of at least 2.750 (4.000 system) in the last 60 credit hours of undergraduate course work including any post-bachelor's graduate work. In addition to the above requirements, students selecting the sports administration major must submit a letter of application and three letters of recommendation and have an interview with the sports administration committee.

Master of Education Requirements
The Master of Education (MEd) in physical education may be earned under a 33 credit hour thesis option or a 36 credit hour nonthesis option. The exercise/wellness program offers a 34 hour thesis option and a 36 hour nonthesis option. The thesis option requires an oral examination on the research; the nonthesis
option requires a written comprehensive examination. The MEd program in sports administration requires 36 hours of course work (thesis or nonthesis) and a final oral examination.

Courses for Graduate/Undergraduate Credit

500. Health Education K-12. (3). Goal is to provide practical applications of theoretical models of change for the health field. Discusses health problems, strategies for affecting change and outcome assessment. Develops selected instructional materials. Two field trips are taken to preselected local health agencies. Additional projects are required for graduate students. Prerequisites: PE 510 and admission to teacher education block.

502. Applied Health I. (2). Introduction to public health problems and practices. Field excursions are arranged. Prerequisite: departmental consent.

504. Applied Health II. (2). Intensive study of selected health problems with regard to illness prevention and the present state of world health. Prerequisite: PE 502 or departmental consent.

515. Rhythmic Activities. (2). Teaches methodology and curricular content of rhythmic activities appropriate for elementary and middle school children. Prerequisites: PE 510 and admission to teacher education block.

520. Physiology of Exercise. (3). Essential for the student with a working knowledge of human physiology as it relates to exercise. Prerequisite: PE 229 or equivalent.

533. Measurement and Evaluation in Physical Education. (3). A study of the modern practices utilized in the total evaluation of physical education programs including (1) basic statistical procedures, (2) evaluating students, (3) evaluating teaching and (4) a survey of measurement tools. Prerequisite: PE 201B or 111 and 201A or B.

540. Seminar in Sport Business. (3). Integrate the knowledge base of sport and business as they apply in the practical setting. Prerequisites: 2.5 GPA, admission to College of Education, PE 460, and senior standing.

544. Organization and Administration of Physical Education Programs. (3). The organizational and administrative problems of physical education programs and the management of the physical plant.

547. Internship in Sport Business. (8). Culminating activity for students in the field option sport business specialization. Students spend the equivalent of full-time employment in the appropriate agency for a total of at least 520 hours. Prerequisites: PE 481, 2,500 GPA overall and in major, and admission to College of Education.

557. Internship in Fitness/Wellness (8). Culminating activity for students in the fitness field option specialization. Students spend the equivalent of full-time employment in the appropriate agency for one full semester. Prerequisites: senior standing, departmental consent, PE 470, 2,500 minimum GPA overall and for major, admitted to College of Education.

590. Independent Study. (1-3). Prerequisite: departmental consent.

705. Wellness in the Fitness Setting. (3). Introduces topics in the field of health/wellness promotion; presents methods of implementing health/wellness programs; focuses on issues addressing the management of a health/wellness program. Prerequisites: senior standing, full standing in the Graduate School or instructor's consent.

720. Teaching Strategies. (3). Non-traditional and innovative techniques and strategies for increasing student participation and motivation in the physical education lesson. Prerequisites: senior standing, graduate standing or instructor's consent.

732. Introduction to ECG's. (3). Develops a foundation in electrocardiography. Includes ECG leads, rate and rhythm, ECG complexes and intervals, conduction disturbances, arrhythmias. ECG identification of myocardial infarction location and drug effects on an ECG. Prerequisites: PE 530 and senior standing, full standing in the Graduate School or instructor's consent.

750. Workshop in Education. (1-4).

752. Special Studies in Health, Physical Education and Recreation. (1-3). Group study in a preselected area of health, physical education or recreation. Repeatable for credit with departmental consent. Prerequisite: departmental consent.

760. Sport in Society. (3). Impact of sports on American culture, with focus on competition, economics, mythology, education, religion, ethics, professional sports, sports and minorities.


781. Cooperative Education Field Study. (1-8). Goal is to provide the graduate student with a field placement which integrates theory with a planned and supervised professional experience designed to complement and enhance the student's academic program. Individualized programs must be formulated in consultation with appropriate graduate faculty. The Plan of Study for a graduate degree-bound student must be filed before approval of enrollment for cooperative education graduate credit. May be repeatable for credit with a limit of eight hours counting toward the graduate degree. Offered CR/NC only.

Courses for Graduate Students Only

800. Recent Literature in the Profession. (3). Survey and critical analysis of research and other pertinent materials in the field.

861. Leadership and Management in Sport. (3). Initial introduction into the administration of sports in public schools, institutions of higher education and commercial and professional sports organizations. Learn about the various components of sports administration by reading appropriate materials and entering into dialogue with practicing administrators.

810. Adapted Physical Education. (3). Philosophy, principles and methods of adapting physical education and recreational activities to the needs of the handicapped and the exceptional individual. Provides laboratory experience. Prerequisite: PE 528 or departmental consent.

812. Advanced Techniques in Physical Education. (3). Comprehensive coverage of selected physical activities, with special emphasis on class procedures. Includes laboratory experiences.

814. Analysis of Teaching. (3). An in-depth examination of teacher effectiveness. Includes analysis of research in physical education, identifying significant teacher and student behaviors involved in effective teaching, examining evaluation models designed for analyzing and measuring teaching effectiveness, and developing intervention programs.

815. Fitness Assessment/Exercise Recommendations. (3). Introduces techniques appropriate for screening, health appraisal and fitness assessment as required for prescribing exercise programs for individuals without disease or with controlled disease. Requires out of class laboratory experiences. Prerequisites: PE 530 or equivalent and graduate standing.

816. Physical Education in Secondary Schools. (3). For the physical education specialist. New concepts and recent trends in methodology, programming, and supervision at the secondary level.

825. Physical Education in Elementary Schools. (3). New concepts, recent trends, methodology, programming, and supervision. Designed for the elementary teacher and physical education specialist.

830. Advanced Physiology of Exercise. (3). In-depth study into the physiological basis of exercise. Includes energy metabolism, respiratory dynamics, cardiovascular function and regulation during rest, steady state and exhaustive physical activity. Special emphasis on immediate and long term adaptation to exercise and training. Prerequisite: PE 530.

835. Legal Issues in the Profession. (3). Acquaints the graduate student with legal research and the role that law plays in governing the sport and fitness industries. Actively research various theories of law and how they affect the nature of sport, fitness activity, the participants and consumers. The basic concepts of negligence utilizing illustrative cases from sports, physical education and fitness activities is intensely investigated. An additional focus is on specific situations regarding injury and subsequent lawsuits.

847. Internship. (6-12). Internship in selected areas of specialization in exercise science or sports administration. Prerequisite: departmental consent.
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857. Internship in Exercise Science/Wellness. (6). Internship in selected area of specialization within the exercise science/wellness program. Students spend the equivalent of full-time employment in the appropriate agency for one full semester. Prerequisite: departmental consent.

860. Research Methods in the Profession. (3). Examination of research methodology as related to topics in health, PE, recreation, sports studies and exercise science/wellness. Includes review and critical evaluation of the literature, research design and statistical processes, methodology, data collection techniques, computer-based analysis of data and thesis/report writing. Students design and complete a mini-research project.

875. Thesis Research. (1-2). Development of a research problem and proposal with the direction of a graduate faculty member. Repeatable but total credit hours counted toward degree requirements must not exceed two. Prerequisites: admission to graduate school in good standing, PE 860 and departmental consent.

876. Thesis. (1-2). Repeatable but total credit hours counted toward degree requirements must not exceed two. Students must be enrolled in this course during the semester in which all requirements for the thesis are met. Prerequisites: PE 875 and consent of the student's committee chair.

890. Problems in Health, Physical Education and Recreation. (1-4). Directed reading of research under supervision of a graduate instructor.

Music Education
See School of Music section, College Fine Arts.

The following abbreviations are used in the course descriptions: R stands for lecture and L for laboratory. For example, 4R, 2L means four hours of lecture and two hours of lab.
College of Engineering

Offices: 100 Wallace Hall
William J. Wilhelm, dean
Mark M. Jong, associate dean

Departments
Aerospace, (316) 689-3410—Ramesh K. Agarwal, chairperson; Bert L. Smith, master's graduate coordinator; Klaus Hoffmann, doctoral graduate coordinator
Electrical, (316) 689-3415—Roy H. Norris, chairperson; M. Ed Sawan, graduate coordinator
Industrial and Manufacturing, (316) 689-3425—Abu Masud, chairperson; Jeffrey E. Fernandez, graduate coordinator
Mechanical, (316) 689-3402—Richard T. Johnson, chairperson; Makensh S. Greywall, graduate coordinator

Master of Science
The College of Engineering offers graduate programs leading to a Master of Science (MS) in aerospace engineering, electrical engineering, industrial engineering, and mechanical engineering, and a Doctor of Philosophy (PhD) in aerospace engineering, electrical engineering, industrial engineering, and mechanical engineering. The graduate programs are enhanced by the presence of the industrial complex in Wichita and of the National Institute for Aviation Research on the Wichita State campus. Details of the MS programs can be found in the individual departmental sections.

Doctor of Philosophy
PhD programs are offered by the four departments of engineering at WSU. Typical fields of specialization can be found in the individual departmental sections. These fields will be used in determining testing areas for the comprehensive examination in the major and minor fields.

Admission Requirements
Admission to any PhD program in engineering requires that the student has completed (or nearly completed) a master's degree in engineering or physical science. Scores for the General Test of the Graduate Record Examination (GRE) must be submitted. Some students may find it necessary to take prerequisite courses to be able to meet the course breadth requirements. The student is recommended to the graduate dean for admission by the department chairperson in consultation with the graduate coordinator of the department where the graduate student will be housed.

Plan of Study and Advisory Committee
Within the first 12 hours of PhD coursework, the department chairperson, in consultation with the graduate coordinator and the student, recommend to the Engineering Graduate Committee an advisory committee for each student. The committee will be composed of a minimum of five graduate faculty, with at least four having full membership including the chairperson who also must have authorization to chair doctoral committees. A majority of the advisory committee members must be from the major department and at least one member must be outside the student's major department. The chairperson of the advisory committee should be the student's dissertation adviser. The student and advisory committee chairperson will formulate a Plan of Study and a tentative dissertation topic for approval by the advisory committee, the department chairperson, the engineering graduate committee, and the graduate dean. The Plan of Study will include designation of major and minor fields and any graduate-level course work which is applicable to the degree.

Course Breadth Requirements: To ensure proper breadth of course work, the Plan of Study must include at least 15 hours in the student's major field and 18 hours outside the major area. The 18 hours must include a minimum of six hours in a minor area (defined by the advisory committee) and a minimum of six hours of mathematics/statistics. A Plan of Study normally contains about 60 hours of course work, including courses from the master's degree, and should have a minimum of 80 percent of the hours (24 dissertation hours included) beyond the master's work at the 800-900 level or equivalent.

Foreign Language or Research Tools Requirement (FLORT): The Plan of Study must include either (1) proof of translating ability in one foreign language in which a significant amount of printed material in the student's field exists, or (2) six hours of course work (not necessarily at the graduate level) in advanced computing skills, statistics, or experimental methods related to the dissertation research.

Comprehensive Examination
After the PhD Plan of Study has been approved, and after sufficient course work has been completed, the student must take the comprehensive examination given by the advisory committee. The comprehensive examination will cover the major and minor fields and any course that the advisory committee deems necessary. The student's advisory committee is responsible for ensuring that the student takes the comprehensive examination at the appropriate time. No part of the comprehensive examination may be attempted more than twice. Upon passing the comprehensive examination, a student is known as an Aspirant for the PhD.

Time Limits and Residency Requirement
From the time the student is admitted to the program, no more than six years may elapse until requirements for the degree have been completed. However, the student may petition the advisory committee for a leave of absence to pursue full-time professional activities related to his/her doctoral program and long-range professional goals. At least two semesters shall be spent in residency on the WSU campus involved in full-time academic pursuits. This may include up to half-time teaching and research. Well-designed plans for obtaining dissertation research experience under the supervision of the student's adviser will be considered in lieu of the residency requirement.

Dissertation Approval Examination (DAE)
When the PhD aspirant has completed the major portion of the course work and FLORT requirement, the advisory committee can petition for permission to administer the DAE. The aspirant will submit a written dissertation proposal to the advisory committee. After reading the proposal and receiving permission of the graduate dean, the advisory committee will conduct an oral examination to determine the aspirant's ability to carry out the proposed research and whether or not this research qualifies as a PhD disserta-
tution. Any essential change in the project requires committee approval.

After passing the DAE, the student is known as a Candidate for the PhD Degree. A candidate must be continuously enrolled in PhD Dissertation for a minimum of six hours each semester and two hours in the Summer Session until completion of the dissertation or 24 hours of PhD Dissertation have been taken. After this, two hours per semester and one hour per summer are required. In any case, no less than 24 hours of enrollment for PhD Dissertation will be required. The dissertation may be performed in absentia with the approval of the advisory committee.

Final Dissertation Examination
The student must defend the dissertation before the advisory committee. At least five months must elapse between the DAE and the final examination. The final examination will be open to the public. Invited guests or external examiners may be invited if the committee desires.

Aerospace Engineering
Graduate Faculty

Distinguished Professors: Ramesh Agarwal (chairperson), William H. Wenniz, Jr.
Professors: Bert L. Smith (master's graduate coordinator)

Associate Professors: Klaus A. Hoffmann (doctoral graduate coordinator), Steven J. Hooper, Walter J. Horn, L. Scott Miller, M. Gawad Nagati, Michael Papadakis

Assistant Professors: Roy Y. Myose, Kamran Rokhaaz, John S. Tomblin

The Department of Aerospace Engineering offers programs leading to Master of Science (MS) and Doctor of Philosophy (PhD) degrees. Faculty research provides valuable educational opportunities for graduate students. Current research topics include theoretical and experimental aerodynamics, computational fluid dynamics, composite materials and structures, damage and failure mechanics, impact dynamics, flight dynamics and control, and aircraft simulation.

The department's facilities, which are among the finest of any university nationwide, include six wind tunnels, a water tunnel, and a structural testing lab. Graduate students have opportunities to use equipment in all laboratories for their research projects. Students also may use the research facilities in the University's National Institute for Aviation Research, including a composites lab, a crash dynamics lab, and a flight simulation lab. Computer facilities for students include mainframe terminals, high performance workstations, and various PCs.

The department's programs are enhanced by Wichita's aviation heritage and the presence of leading aerospace and aviation companies, including Beech, Boeing, Cessna, and Learjet.

Graduate course work is scheduled so that engineers employed in local industry may pursue graduate degrees.

Master of Science
A course of study leading to the MS degree may be taken with specialization in any of the following four fields: (1) aeronautics, fluid mechanics, and propulsion; (2) structures, solid mechanics, and composites; (3) flight dynamics and control; and (4) multidisciplinary design, analysis, and optimization. Two options are available: (1) the thesis option requires a minimum of 30 credit hours, including six hours of thesis, and (2) the nonthesis option requires a minimum of 33 credit hours of course work. At least 60 percent of the course work in either option must be 700-level or above. The Plan of Study must be filed within the first 12 credit hours of course work, and must be approved by the student's advisor and the graduate coordinator. Additional details of the MS degree may be obtained from the department chairperson or the graduate coordinator.

Before the MS degree is granted, candidates must pass an examination. Candidates pursuing the thesis option must pass an oral examination over their thesis research. Candidates pursuing the nonthesis option must pass an examination over core graduate course work in their major.

To be admitted to the MS program, students must have completed the equivalent of an undergraduate degree in an engineering or related field. For admission with full standing, a minimum grade point average of 2.750 is required for (1) the last two years of undergraduate work, (2) all engineering courses, and (3) mathematics and physical sciences courses.

Doctor of Philosophy
Courses of study leading to the Doctor of Philosophy (PhD) degree are available with specializations in the same fields as listed for the MS degree. Details of the PhD program can be found under the College of Engineering heading.

Graduate Courses
All graduate courses must be approved in advance of enrollment by a student's graduate adviser.

Courses for Graduate/Undergraduate Credit


508. Systems Dynamics. (3). Lumped parameter modeling: classical, numerical, transform and state model methods of solution; introduction to systems with feedback: analogies of various physical systems. Prerequisites: AE 373 and Math 555.


528. Aerospace Design I. (4). 2R; 2L. Methodology of flight vehicle design, mission objectives, regulations and standards, use of hand and computer methods for configuration development and component sizing; ethics and liability in design. Prerequisite: AE 514.


615. Introduction to Space Dynamics. (3). Fundamentals of three-dimensional and orbital mechanics; orbital maneuvers, earth satellite operations and interplanetary trajectories; rigid
body dynamics and spacecraft attitude control. Prerequisites: AE 227 and 373.

625. Flight Structures II (3). 2R; 3L. Strength analysis and design of flight vehicle components. Introduction to energy methods and variational principles. Application of finite element method to the analysis of flight vehicle structures. Special projects in structural analysis and design. Prerequisite: AE 525.


633. Basic Composite Material Technologies (3). An introduction to the basic composite material technologies including mechanical behavior, material classification, testing for mechanical properties, manufacturing methods, nondestructive inspection and design. Prerequisite: AE 333.

654. Manufacturing Composite Structures (1-2). Manufacturing methods and tooling for fiber-reinforced polymer structures and structural components. Prerequisites: ME 250 and AE 653 both recommended.

660. Selected Topics (1-3). Prerequisite: instructor's consent.

702. Aerospace Propulsion II (3). In-depth study of rocket and jet propulsion. Turbojet and rocket engine components. Effect of operating variables on turbojet cycles and rocket performance. Prerequisite: AE 502 or instructor's consent.

703. Rotor Aerodynamics (3). Aerodynamics of rotors, including propellers, wind turbines and helicopters; momentum, blade element and potential flow analysis methods; Reynolds number and Mach number effects; helicopter dynamics, control and performance. Prerequisite: AE 711.


711. Intermediate Aerodynamics (4). A study of transformations of motion, potential flow, conformal mappings, finite wing theory, non-steady airfoil theory and advanced numerical techniques in aerodynamics. Prerequisite: AE 424 or 420 or ME 521.

712. Advanced Aerodynamics Laboratory (3). 1R; 3L. Advanced topics in wind tunnel testing including analysis and sensitivity, modeling techniques, flow visualization using smoke tunnels and water tunnel. Prerequisite: AE 512 or instructor's consent.


715. Space Dynamics I (3). Advanced trajectory analysis methods and attitude acquisition techniques. Prerequisite: AE 373.

716. Compressible Fluid Flow (3). Analysis of compressible fluid flow for one- and two-dimensional cases, moving shock waves, one-dimensional flow with friction and heat addition, linearized potential functions, method of characteristics, conical shocks and subsonic similarity laws. Prerequisites: AE 420, AE 424, ME 521 or equivalent.

719. Introduction to Computational Fluid Dynamics (3). Classification of partial differential equations, numerical solution of parabolic, elliptic, and hyperbolic differential equations, stability analysis, boundary conditions, colar representation of the Navier-Stokes equations, incompressible Navier-Stokes equations. Prerequisite: AE 424 or ME 521.


725. Aerospace Engineering Workshop (1-4). Various topics in aerospace engineering. Prerequisite: instructor's consent.


750. Aerospace Engineering Workshop (1-4). Various topics in aerospace engineering. Prerequisite: instructor's consent.


760. Selected Topics (1-3). Prerequisite: instructor's consent.


777. Vibration Analysis (3). A study of free, forced, damped and undamped vibrations for one and two degrees of freedom, as well as classical, numerical and energy solutions or multidegree freedom systems. Introduces continuous systems. Prerequisites: Math-555, AE 373 and 333.

Courses for Graduate Students Only

801. Structural Dynamics (3). A study of the free and forced vibration of multiple degree of freedom systems and continuous systems. Computational, numerical and energy solutions. Prerequisite: AE 777.


811. Panel Methods in Aerodynamics (3). An introduction to panel method theory and application for inviscid incompressible attached flows. Utilization of some two and three dimensional computer codes. Prerequisites: AE 711 and Math. 757 or equivalent.

812. Aerodynamics of Viscous Fluids (3). Viscous fluids flow theory and boundary layers. Prerequisites: AE 424 or 420 or ME 521.

814. Advanced Flight Dynamics II (3). Sensitivity analyses of flight parameters; control surface sizing; handling qualities; pilot-in-the-loop analysis; trajectory optimization. Prerequisite: AE 714.

815. Space Dynamics II (3). Missile and interplanetary trajectories, orbital perturbations, attitude control methods and atmospheric reentry. Prerequisite: AE 715 or equivalent.

817. Transonic Aerodynamics (3). Experimental and analytical difficulties in flow and flight near Mach one. Basic equations and solution methods; linearized potential equation; shock occurrence criteria on wings; Transonic Area Rule; nozzle throat design; detached shock wave computations; computational methods. Prerequisites: AE 424, 420 or equivalent; and AE 711 or 716.


822. Finite Element Analysis of Structures (3). Formulation of the finite element equations by variational methods; the use of isoparametric and higher order elements for analyzing two- and three-dimensional problems in solid mechanics; introduction to solutions of nonlinear problems. Prerequisites: AE 722 and 731.
831. Mechanics of Damage Tolerance. (3). An introduction to the analysis of damage tolerant structures with emphasis on mechanics aspects. Topics include stress shields around cracks tips, stress intensity factors, unstable crack growth from static loading, and stable crack growth from cyclic spectrum loading. Prerequisite: AE 731.

832. Theory of Plates and Shells. (3). Small deflections of thin elastic plates; classical solutions for rectangular and circular plates; approximate solutions for plates of various shapes; introduction to the analysis of thin shells. Prerequisite: AE 731.


838. Random Vibration. (3). Includes characterization, transmission and failure of mechanical systems subjected to random vibration. Includes analysis and measurement methods for random data. Prerequisite: instructor's consent.

860. Selected Topics. (1-3). Prerequisite: instructor's consent.


890. Advanced Independent Studies. (1-3). Prerequisite: instructor's consent.

Electrical Engineering

Graduate Faculty


Assistant Professors: Hyuck M. Kwon, Ravindra Pendse, Steven R. Skinner, Asrat Teahome

The Department of Electrical Engineering offers courses of study leading to the Master of Science (MS) and Doctor of Philosophy (PhD) degrees.

Master of Science

Courses of study leading to the MS degree are available with specializations in control systems, communications, signal processing, computers and digital systems, and energy and power systems.

Admission Requirements

Admission to the MS program in electrical engineering requires the completion of an undergraduate degree, or the equivalent, in electrical engineering or related areas with a grade point average of 2.750 for (1) the last two years of undergraduate work, (2) all engineering courses, and (3) mathematics and physical sciences courses.

Degree Requirements

The MS in electrical engineering requires the completion of a Plan of Study approved by a student's adviser and the department's chairperson. Two options are available with separate requirements: (1) the thesis option requires a minimum total of 30 hours, including four to six hours of thesis (EE 876) and (2) the non-thesis option requires a minimum of 34 total hours, including two to four hours of directed studies (EE 878).

Programs in either option must have at least 60 percent of the course work numbered at the 700 level or above. Students must have a 3.00 grade point average in electrical engineering courses for graduation as well as in all work on the Plan of Study. Specific course requirement information will be supplied by a student's graduate adviser.

Examinations

Before the degree is granted, non-thesis option candidates must pass an oral examination over their course work. They also must give an oral presentation and submit a written report on their directed studies. Thesis option candidates must pass an oral defense of their thesis.

Doctor of Philosophy

Courses of study leading to the Doctor of Philosophy (PhD) degree are available with specializations in control theory, communications/signal processing, digital systems, and energy and power systems. Details of the PhD program can be found under the College of Engineering heading.

Facilities

Modern electrical engineering laboratories contain facilities for experimental work in areas of instrumentation, control systems, computers and digital systems, electronics, circuits, energy conversion, power electronics, and power quality.

Courses for Graduate/Undergraduate Credit

585. Electrical Design Project I. (2). 3L. A design project under faculty supervision chosen according to the student's interest. Prerequisite: departmental consent. May not be counted toward a graduate electrical major.

588. Advanced Electric Motors. (3). Advanced electric motor applications and theory. Topics include single-phase motors, adjustable speed drive applications, and stepper motors. Prerequisites: EE 488 and 492.

594. Microprocessor Based System Design. (3). Development of microprocessor based systems presented. Interfacing the address bus, data bus, and control bus to the processor chip studied. Memory systems and I/O devices interfaced to the appropriate busses. Vendor-supplied, special-purpose chips, such as interrupt controllers, programmable I/O devices, and DMA controllers, integrated into systems designed in class. Prerequisites: EE 238 and 294, or 394.

595. Electrical Design Project II. (2). 3L. May not be counted toward a graduate electrical
majors. A continuation of EE 585. Prerequisite: EE 585 or departmental consent.

598. Electric Power Systems Analysis. (3). Analysis of electric utility power systems. Topics include analysis and modeling of power transmission lines, transformers, power flow analysis and software, and an introduction to symmetrical components. Prerequisite: EE 282.

636. Telecommunications. (3). Topics in circuit and packet switching, layered communication architectures, state dependent queues, traffic engineering, call processing, software organization, routing and common channel signaling. Prerequisites: EE 686 or departmental consent.

638. Microprocessor Systems and Applications. (3). A detailed study of microprocessor architectures and addressing, assembly language programming, interrupt processing, interfacing to input/output devices and numeric coprocessors. Assembly language programs are designed and tested to illustrate the major concepts. Prerequisites: EE 238 and at least one EE course at 400 level or above.

663. Waves, Waveguides and Antennas. (3). A study of radiation and transmission of electromagnetic waves. Includes plane wave propagation in various media normal and oblique reflections, dielectric windows, transmission and antennas. Prerequisites: EE 363 and 682.

681. Electronic Circuits II. (4). 3R; 3L. An investigation of the theory and application of discrete and integrated circuits. Includes op-amp construction, frequency response, feedback and stability, power amplifiers, and non-linear integrated circuits. Prerequisites: EE 284 and 492. May not be counted for credit toward a graduate major.

682. Distributed Parameter Circuits. (3). 2R; 3L. A study of the theory and applications of distributed parameter circuits with emphasis on transmission lines. Treats telegrapher's equations, transient signals on lossless lines, steady state signals on lossless lines, effects of lumped impedances, and Smith Chart techniques. Prerequisite: EE 284.


688. Power Electronics. (4). 3R; 3L. Deals with the applications of solid-state electronics for the control and conversion of electric power. Gives an overview of the role of the thyristor in power electronics application and establishes the theory, characteristics and protection of the thyristor. Presents controlled rectification, static frequency conversion by means of the DC link-converter and the cyclo converter, emphasizing frequency, and voltage control and harmonic reduction techniques. Also presents requirements of forced commutation methods as applied to DC-DC control and firing circuit requirement and methods. Introduces applications of power electronics to control AC and DC motors using new methods such as microprocessor. Prerequisite: EE 492.

691. Integrated Electronics. (3). A study of BJT and MOS analog and digital integrated circuits. Includes BJT, BIMOS, and MOS fabrication, application specific semi-custom VLSI arrays, device performance and characteristics and integrated circuit design and applications. Prerequisites: EE 294, 492.

698. Principles of Power Distribution. (3). Advanced topics in analysis and operation of electric utility power systems. Topics include faulted system analysis, economic dispatch, generator modeling, power system stability, and system protection. Prerequisite: EE 498.

726. Digital Communication Systems I. (3). Presents the theoretical and practical aspects of digital and data communication systems. Includes modeling and analysis of digital systems as discrete processes; basic source and channel coding; multiplexing and framing; spectral and time domain considerations related to ASK, PSK, DPSK, QPSK, FSK, MSK and other techniques appropriate for communicating digital information in both base-band and band-pass systems; intersymbol interference; effects of noise on system performance; optimum systems; and general M-ary digital systems in signal-space. Prerequisites: EE 686 and 754.

736. Data Communication Networks. (3). Presents a quantitative performance evaluation of communication networks and systems. Includes fundamental digital communications system review; packet communications; queuing theory; OSI, s.25, and SNA layered architectures; stop-and-wait protocol, go-back-N protocol, and high-level data link layer; network layer flow and congestion control; routing; polling and random access; local area networks (LAN); integrated services digital networks (ISDN); and broadband networks. Prerequisites: Stat. 471 and EE 635 or departmental consent.

738. Embedded Systems Programming. (3). A study of the requirements and design of embedded software systems. Application of the C programming language in the implementation of embedded systems emphasizing real-time operating systems, interfacing to assembly and high-level languages, control of external devices, task control and interrupt processing. Prerequisites: EE 239 and 638.

745. Probabilistic Methods in Systems. (3). A course in random processes designed to prepare the student for work in communications controls, computer systems information theory, and signal processing. Covers basic concepts and useful analytical tools for engineering problems involving discrete and continuous-time random processes. Discusses applications to system analysis and identification, analog and digital signal processing, data compression and error parameter estimation, and related disciplines. Prerequisites: EE 284 and 383 and either Stat. 471 or IE 254 or departmental consent.

777. Selected Topics in Electrical Engineering. (1-4). New or special courses presented on sufficient demand. Repeatable for credit. Prerequisite: departmental consent.

781. Analog Filters. (3). A detailed study of analog filter design methods. Includes both passive and active filters. Discusses analog filter approximations; covers sensitivity and noise analyses. Prerequisite: EE 681.


790. Independent Study in Electrical Engineering. (1-3). Arranged individual, independent study in specialized content areas in electrical engineering under the supervision of a faculty member. Repeatable for credit. Prerequisite: departmental consent.

792. State Variable Tech Systems I. (3). Review of mathematics fundamental to state-space concepts. Formulation of state-variable models for linear and nonlinear continuous and discrete systems and concepts of controllability and observability. Studies adjoint systems and solution of linear and nonlinear systems; stability and computational approximation techniques. Prerequisites: EE 284 or departmental consent.

797. Computer Application to Power System Analysis. (3). Describes the use of power system component models and efficient computational techniques in the development of a new generation of computer programs representing the steady and dynamic states of electric power systems and informs of methods currently employed in the electric utility industry. Emphasizes algorithms suitable for computer solution of power systems problems such as power flows and system voltages during normal and emergency conditions and transient behavior of the system resulting from fault conditions and switching operations. Prerequisites: EE 239, 598.

798. Advanced Electric Power Systems Analysis. (3). Advanced topics in analysis and operation of electric utility power systems. Topics include faulted system analysis, economic dispatch, generator modeling, power system stability, and system protection. Prerequisite: EE 598.
Courses for Graduate Students Only

826. Digital Communication Systems II. (3). Presents in-depth theoretical and practical digital communication systems and channels. Includes the modeling and analysis of all digital communications receiver with intermediate frequency (IF) sampling and A/D converter; synchronization techniques; trellis-coded modulation (TCM); Multiple Access; fading multipath channel; radio frequency interference (RFI) channel; jamming channel. Applies to digital satellite communication systems and digital cellular: code division multiple access (CDMA) system. Prerequisite: EE 726.

838. Network Systems Programming I. (3). Introduction to programming in a network environment. The study of application programming interfaces (API) for the development of systems for the management and control of a local area network (LAN), Communication APIs for the IPX/SPX protocol suite will be investigated and used for the development of client/server and parallel/distributed applications. Prerequisite: EE 738.

842. Modern Filters. (3). Concerned with estimating a signal of interest or the state of a system in the presence of additive noise, making use of the statistical characteristics of both the signal and the noise. Course includes Wiener filters, Kalman filters, linear prediction, and algorithms for linear prediction parameter estimation. Prerequisite: EE 754.


845. Adaptive Filters. (3). Concerned with estimating a signal of interest or the state of a system in the presence of additive noise, but without making use of priori statistical characteristics of the signal or the noise. Concerned with the design, analysis, and application of recursive filtering algorithms that operate in an environment of unknown statistics. Content includes least-mean-squares (LMS) filters, recursive least-square (RLS) and recursive least-squares (RLS) filters, all of which are adaptive and self-designing. Includes concepts of convergence, tracking ability, and robustness. Prerequisite: EE 754.

846. Spectrum Estimation. (3). Concerned with estimating the frequency spectrum, primarily power but also energy, of a signal of interest. Review historical methods, but concentrate on modern methods that are model based, achieve high resolution even for short data lengths. Content includes maximum entropy, maximum likelihood, autoregressive, moving average, and autoregressive moving average spectrum estimation methods. Applications also included. Prerequisite: EE 754.

854. Stochastic Control Systems. (3). Reviews the properties of linear deterministic system models and linear dynamic systems emphasizing linear systems driven by white Gaussian noise; linear estimation and optimal filtering; design and performance analysis of Kalman filters. Prerequisite: EE 684 and 754.

866. Error Control Coding. (3). Presents fundamental topics from information theory which underlie source and error control coding. Reviews topics from finite field theory and vector spaces essential for the study of coding. Presents the concepts of code-space, sphere packing and perfect codes. Considers linear (n,k) block codes in some detail including error detection and correction concepts, parity check matrices and syndromes. Hamming codes, cyclic codes, error trapping decoding, BCH codes, burst-error-correcting codes, interleaving and product codes. Presents convolutional codes and topics such as the Viterbi algorithm for decoding. Prerequisite: EE 684 and 754.

882. Speech Digital Signal Processing. (3). An introductory study in speech signal generation and digital speech signal processing. Includes speech generation and perception, acoustic phonetics, models of speech signals and speech production, analysis synthesis methods of digital speech, digital representations of speech signals, short-time Fourier transforms and the application to spectrograms, pitch and formant estimation, parametric and nonparametric methods of signal representation, linear prediction methods, speech data compression, some methods of speech synthesis and recognition, and speech signals in the presence of noise. Prerequisites: EE 754 and 782.

886. Selected Topics in Antennas and Propagation. (D). Determination of characteristics of practical antenna systems; radiation patterns and the effects of standing waves, slots, etc.; and wave propagation in the earth's environment, including tropospheric and ionospheric phenomena. Prerequisite: EE 663.

890. Topics in Control Systems. (3). A study of various concepts such as multi-loop systems, multivariable systems and decoupling; nonlinear systems; and sampled-data systems. Repeatable for credit. Prerequisite: EE 684 or departmental consent.

893. State-Variable Techniques in Systems II. (3). A continuation of the study of state-space concepts in the areas of nonlinear systems and optimal and suboptimal control systems with wide classes of performance measures. Prerequisite: EE 792 or departmental consent.

904. Advanced Computer Architecture II. (3). Vector processors, memory-hierarchy design, input and output. Prerequisite: EE 844.

905. Nonlinear Control Theory. (3). An introduction to the analysis and design of nonlinear control systems emphasizing stability. Includes stability definitions, phase-plane methods, linearization, time and frequency domain stability criteria, limit-cycle criteria and exact methods for relay control systems. Prerequisites: EE 844 and 792 or instructor's consent.

907. Operation and Control of Power Systems. (3). Acquaints electric power engineering students with power generation systems, their operation in economic mode and their control. Introduces mathematical optimization methods and applies them to practical operating problems. Introduces methods used in modern control systems for power generation systems. Prerequisite: EE 598.

960. Advanced Selected Topics in Electrical Engineering. (1-3). Presents new or specialized advanced topics in engineering. Repeatable for credit. Prerequisite: instructor's consent.


982. Speech Recognition. (3). Reviews topics of speech digital signal processing and analysis as necessary for a study of speech recognition such as speech signal production and perception; acoustic-phonetic characterization of speech signals; representing speech signals in time and frequency; and signal analysis of speech signals. Studies topics such as vector quantization, pattern comparison and template matching methods and dynamic time alignment or warping; stochastic methods such as hidden Markov models, linear prediction or phonetics as two methods of segmenting speech signals, language or context-dependent models, and small vs. large vocabulary models. Prerequisite: EE 882 or departmental consent.

986. Spread-Spectrum Communication Systems. (3). Reviews topics from random processes, finite field and linear feedback shift register theory as necessary for the study of pseudo-random noise and maximal length sequences. Studies partial autocorrelation...
The Industrial and Manufacturing Engineering Department offers graduate programs leading to Master of Science (MS) and Doctor of Philosophy (PhD) degrees with specialization in industrial ergonomics/human factors, manufacturing systems engineering, and operations research. The department is equipped with modern laboratories in human factors engineering, manufacturing process control, computer integrated manufacturing, and computer aided design. Several of these laboratories are housed in the National Institute for Aviation Research located on the campus.

Brief descriptions of the three curriculums, coursework requirements, and research areas in Industrial and Manufacturing Engineering are given below:

**Industrial ergonomics/human factors.** The primary teaching and research emphases in this area are in industrial ergonomics, man-machine systems, carpal-tunnel syndrome and other industrial hygiene issues, and ergonomics and human factors issues in aviation/space systems. An area of continued research involvement is rehabilitation engineering, especially dealing with people with severe physiological disabilities.

**Manufacturing systems engineering.** The teaching and research emphases in this area are in computer integrated manufacturing systems, planning/design/control of manufacturing systems, CAD/CAM, and applications of robotics, vision systems and artificial intelligence in manufacturing.

**Operations research.** The teaching and research emphases in this area are in deterministic and stochastic optimization, multi-criteria decision making, expert systems and artificial neural networks, modeling and analysis of system reliability, total quality management, and modeling/management/simulation of manufacturing and service systems.

**Master of Science**

**Admission Requirements**

To be admitted to the MSIE program, students must have completed the equivalent of an undergraduate degree in engineering, science, business, or other related discipline. Students with deficiency in certain areas may be required to take additional courses. Students with an undergraduate degree from a program not accredited by ABET (Accreditation Board for Engineering and Technology) must submit GRE (general) scores with their application. Applicants' records are examined individually prior to admission to assess their potential for success in graduate study. For full admission, a minimum grade point average of 2.900 is normally required for (1) the last two years of undergraduate work and (2) all mathematics, engineering, and physical sciences coursework.

**Degree Requirements**

The MS in industrial engineering requires the completion of a Plan of Study approved by the student's academic adviser and the department's graduate coordinator. Two options are available for satisfying the requirements: (1) the thesis option requires a minimum of 30 hours, including six hours of thesis through IE 876, and (2) the nonthesis option requires a minimum of 34 hours, including four hours of project through IE 849. Both options require a written report.

The Plan of Study in either option must include: (1) core courses (6 hours depending on area: IE 549, IE 550, or IE 553) or their equivalents, (2) at least 12 hours of courses from the student's selected area of emphasis, (3) a minimum of 21 hours (or 60 percent, whichever is higher) of courses at the 700 or higher level, and (4) no more than six hours of approved non-IE graduate courses.

**Examinations**

Before a degree is granted, candidates in both options must pass an oral examination of their thesis/project work. Details of the examinations can be obtained from the student's academic advisor or the department's graduate coordinator.

**Doctor of Philosophy**

Courses of study leading to the Doctor of Philosophy (PhD) degree are available with specialization in industrial ergonomics/human factors, manufacturing systems engineering, and operations research. Details of the PhD program can be found under the College of Engineering heading.

**Industrial Engineering**

Courses for Graduate/Undergraduate Credit


549. Industrial Ergonomics. (3). A systematic approach to the optimization of human-envi-

553. Production and Inventory Control. (3). Quantitative techniques used in the analysis and control of production systems. Includes forecasting, inventory models, operation planning and scheduling. Prerequisite: IE 550.

554. Statistical Quality Control. (3). A study of the measurement and control of product quality using statistical methods. Includes acceptance sampling, statistical process control and total quality management. Prerequisite: IE 524.

556. Information Systems. (3). A study of the design, implementation and economic analysis of computer-based information systems. Prerequisites: IE 255 and IE 239 or AE 227.


558. Manufacturing Methods and Materials I. (3) 2R; 3L. A study of traditional manufacturing processes and relevant material properties. Includes casting, metal cutting, metal forming, casting and joining processes, measurement and inspection methods. Prerequisite: Math. 243.

563. Facilities Planning and Design. (3). Quantitative and qualitative approaches to problems in facilities planning and design, emphasizing activity relationships, space requirements, materials handling and storage, plant layout and facilities location. Prerequisites: IE 550 and IE 558. Corequisite: IE 452.

565. Systems Simulation. (3). The design of simulation models and techniques for use in designing and evaluating discrete systems, including manufacturing systems too complex to be solved analytically. Emphasizes general purpose computer simulation languages. Prerequisites: IE 550 or equivalent and EE 239 or AE 227. Corequisite: IE 524.

590. Industrial Engineering Design I. (3). A design project utilizing industrial engineering principles, performed under faculty supervision, for solving practical problems. May not be counted toward a graduate industrial engineering major. May not get credit in both IE 590 and MfgE 590. Prerequisites: must be within one year of graduation and departmental consent.

664. Engineering Management. (3). An introduction to the design and control of technologically based projects. Considers both the theoretical and practical aspects of systems models, organizational development, project planning and control, resource allocation, team development and personal skill assessment. Prerequisite: IE 254 or Stat. 471.


690. Industrial Engineering Design II. (3). Continuation of the design project initiated in IE 590 or the performance of a second industrial engineering design project. May not be counted toward a graduate industrial engineering major. May not get credit in both IE 690 and MfgE 690. Prerequisites: IE 590 and department consent. Corequisites: IE 549, 554.


740. Analysis of Decision Processes. (3). Decision analysis as it applies to capital equipment selection and replacement, process design and policy development. Explicit consideration of risk, uncertainty and multiple attributes is developed and applied using modern computer aided analysis techniques. Prerequisites: IE 254 and 255.

749. Advanced Human Factors. (3). A continuation of IE 549. Includes principles and application of human factors to the design of the workplace, displays, control systems, hand tools and video display terminals. Prerequisite: IE 549.

750. Industrial Engineering Workshops. (1-4). Various topics in industrial engineering. Prerequisite: departmental consent.

754. Reliability and Maintainability Engineering. (3). Studies problems of quantifying, assessing and verifying reliability. Presents various factors that determine the capabilities of components emphasizing practical applications. Examples and problems cover a broad range of engineering fields. Prerequisite: IE 524.


764. Systems Engineering and Analysis. (3). Presentation of system design process from the identification of a need through conceptual design, preliminary design, detail design and development, and system test and evaluation. Includes operational feasibility, reliability, maintainability, supportability and economic feasibility. Prerequisites: IE 254 and 255.

770. Industrial Automation. (3). Teaches the design and application of manufacturing automation systems. Discusses automation components, such as sensors, actuators and microprocessors, along with the use of programmable logic controllers. Introduces other areas of automation, such as robotics, machine vision, DNC machine tools, and their integration into automated systems. Prerequisite: EE 282.

775. Computer Integrated Manufacturing. (3). A study of the concepts, components and technologies of CIM systems, enterprise modeling for CIM, local area networks, CAD/CIM interfaces, information flow for CIM, shop floor control and justification of CIM systems. Prerequisite: IE 553 or instructor's consent.

780. Topics in Industrial Engineering. (3). New or special courses are presented under this listing. Repeatable for credit when subject matter warrants.

781. Cooperative Education. (1-5). A work-related placement with a supervised professional experience to complement and enhance the student's academic program. Intended for master's level or doctoral students in IE. Repeatable for credit. May not be used to satisfy degree requirements. Prerequisite: department consent and graduate GPA of 3.00 or above. CR/NC only.

Courses for Graduate Students Only


830. Advanced Linear Programming. (3). A study of the mathematical developments of the simplex methods, revised simplex methods, decomposition, bounded variables, parametric programming and other advanced topics in LP. Prerequisite: IE 450 or 743.

831. Nonlinear Programming. (3). An extensive treatment of constrained and unconstrained search techniques and nonlinear optimization algorithms. Prerequisite: IE 450 or 743 or departmental consent.

832. Advanced Production and Inventory Control. (3). A study of the elements of production and inventory control systems, their design and integration. Prerequisite: IE 553.

835. Applied Forecasting Methods. (3). A study of the forecasting methods, including smoothing techniques, time series analysis and Box-Jenkins models. Prerequisite: IE 524.

842. Advanced Simulation. (3). A study of advanced techniques and methods for statistically selecting input distributions for and analyzing output from simulation models. Also studies variance reduction and model validation techniques. Prerequisites: IE 560 and 524.

844. Sequencing and Scheduling. (3). Deterministic/stochastic sequencing problems with static/dynamic models. Problems involving different measures of effectiveness, solution techniques (optimizing, heuristic) and industrial scheduling problems. Prerequisite: IE 743.

849. Industrial Engineering Graduate Project. (4). An independent study performed under the supervision of an academic advisor for students in MSIE non-thesis option. Requires a report and an oral examination based on the study. Graded S/U only. Prerequisite: consent of student advisor.

857. Environmental Hygiene Engineering. (3). Evaluation and control of mechanical, physical
and chemical environments. Environmental factors considered include heat, cold, noise, vibration, light, pressure, acceleration, radiations and air contaminants. Prerequisite: IE 549.


880. Topics in Industrial Engineering. (3). New or special courses are presented under this listing on sufficient demand. Repeatable for credit when subject matter warrants.

890. Independent Study in Industrial Engineering. (3). Analysis, research and solution of a selected problem. Prerequisite: instructor's consent.

900. Multiple Criteria Decision Making. (3). An extensive treatment of techniques for decision making where the multiple criteria nature of the problem must be recognized explicitly. Prerequisite: IE 450 or 743.

949. Work Physiology. (3). The study of cardiovascular, pulmonary and muscular responses to industrial work including aspects of endurance, strength, fatigue, recovery and the energy cost of work. Utilization of physical work capacity and job demand for task design, personnel assignment and assessment of workrest scheduling. Prerequisite: IE 549.

950. Occupational Biomechanics. (3). Theoretical fundamentals of the link system of the body and kinetic aspect of body movement. Includes application of biomechanics to work systems. Prerequisites: IE 549 and AE 223.

955. Knowledge-Based Systems. (3). Introduction to the concepts and techniques in knowledge-based systems or expert systems. Includes design and development of knowledge-based systems using microcomputer-based software. Prerequisite: EE 239 or AE 227 or departmental consent.

960. Advanced Selected Topics. (1-3). New or special courses on advanced topics presented under this listing on sufficient demand. Prerequisite: instructor's consent.

970. Machine Vision Applications. (3). A study of machine vision techniques, such as thresholding, edge detection, boundary following, object identification and measurements using machine vision. Emphasizes the application of machine vision techniques in automated inspection and object recognition. Prerequisites: EE 239 or knowledge of a programming language, IE 670, or instructor's consent.


990. Advanced Independent Study. (1-3). Arranged individual, independent study in specialized content areas. Repeatable toward the PhD degree. Prerequisites: advanced standing and departmental consent.

Manufacturing Engineering

Courses for Graduate/Undergraduate Credit

502. Metrology. (3). Covers new methods of manufacturing metrology and digital measurement techniques. Introduces devices such as Coordinate Measuring Machines and non-contact optical measurement devices. Includes a laboratory to familiarize the students with these devices. Prerequisites: IE 254 and MfgE 258.

554. Manufacturing Tools and Processes. (3). Introduces the concepts of concurrent engineering, tool design, fixture design, jig design, preswork tools design, and mold design. Also includes the fundamental soft gauge design and measuring, fabrication processes, assembly tooling and processes. Prerequisites: MfgE 258.

558. Manufacturing Methods and Materials II. (3). Covers the theoretical aspects of manufacturing processes, knowledge of material treatment and its effect on manufacturing processes. In depth study of the material removal processes and non-traditional machining. Tool wear and tool wear monitoring and unattended machining. Introduces the fundamentals of geometric dimensioning and tolerancing. Includes laboratory experience and plant tours. Prerequisites: MfgE 258 and EE 259 or equivalent.

575. Computer Aided Manufacturing. (3). An introductory course in Computer Aided Manufacturing. Examines the basic principles of CAM, such as computer aided design, NC programming, CAD/CAM integration, and principles of group technology and part family formation. Prerequisites: MfgE 258 and EE 259 or equivalent.

590. Manufacturing Engineering Design I. (3). First of two capstone design project courses utilizing manufacturing engineering principles performed under faculty supervision, for solving practical problems. May not be counted toward a graduate industrial engineering major. May not be counted toward a graduate industrial engineering minor. Prerequisites: MfgE 590 and MfgE 558. Prerequisites: must be within one year of graduation and departmental consent.

622. Computer Aided Design. (3). Intended as an introduction to 3-D computer graphics. Discuss concepts of CAD/CAM/CIM, design theory and automation, knowledge-based CAD systems and the use of AI tools in CAD. Describes the design interchange standards and the interface between CAD/CAM. Prerequisites: IE 222, EE 229 or equivalent, and Math 553.

645. Manufacturing Systems Engineering. (3). A study of the design, planning, implementation, and control of manufacturing systems. Discusses types of manufacturing systems, material requirement planning, capacity planning, facilities planning, scheduling, and an introduction to computer aided process planning. Prerequisite: MfgE 558.

654. Non-traditional Machining Processes. (3). A study of the role and economics of non-traditional processes; use of laser and electron beams in inspection and measurement; heat treatment; material removal; material joining; and coating. Also covers the fundamentals of electro-discharge machining, electro-chemical machining, chemical milling, and water-jet machining. Prerequisite: MfgE 558.

658. Forming Processes. (3). Introduction to the fundamentals of deformation and the physical and mathematical modeling of forging, rolling, extrusion, drawing, swaging, spinning, sheet-metal working, spinning. Also covers the fundamentals of tool and die design. Prerequisite: MfgE 558.

690. Manufacturing Engineering Design II. (3). Continuation of the project initiated in MfgE 590 or a second industry-based design project. May not be counted toward a graduate industrial engineering major. May not get credit in both IE 690 and MfgE 690. Prerequisites: MfgE 590 and departmental consent.

Mechanical Engineering

Graduate Faculty

Professors: A. Richard Graham, Mahesh S. Greywall (graduate coordinator), Richard T. Johnson (chairperson)
Associate Professors: Behnam Bahr, Jharna Chaudhuri, Hamid M. Lankarani, George E. Talia
Assistant Professors: Naragaj-Arakere, David N. Koert, Julia A. Mathis, T.S. Ravigururajan, James E. Steck

The Department of Mechanical Engineering offers courses of study leading to the Master of Science (MS) and Doctor of Philosophy (PhD) degrees. Departmental faculty have developed research activities in several areas of specialization, including engineering materials properties and failure modes; controls, robotics, and automation; multibody and impact dynamics; mechanical engineering design and manufacturing; thermodynamics and transport processes; combustion; and heating, ventilating, and air-conditioning (HVAC) and energy conservation.

The majority of departmental faculty members are associates of Wichita State's National Institute for Aviation Research (NIAR). This association makes facilities of the NIAR available for research activities of these faculty and their graduate students. These facilities include scanning and transmission electron microscopes (SEM and TEM) located in the materials laboratory, the crash dynamics laboratory, the shock and vibration laboratory, the propulsion laboratory, and the computer integrated manufacturing laboratory.

The department's programs and efforts are influenced by the concentration of
technology-oriented industries in the Wichita area. Particular attention is given to scheduling course work so that engineers employed by local industry may pursue a graduate degree in mechanical engineering.

**Master of Science**

Course work leading to the MS degree can allow specialization in any of the major research areas of the department faculty. Both thesis and nonthesis degree options are available. Generally, the thesis option provides more in-depth study in a specialty area.

**Admission Requirements**

Full admission to the MS program requires the equivalent of an undergraduate degree in mechanical engineering or related areas with a grade point average of 3.000 for (1) the last two years of undergraduate work, (2) all engineering courses, and (3) mathematics and physical science courses. Each applicant's academic record is evaluated prior to admission to the program to determine their potential for success in the graduate study.

**Degree Requirements**

The MS in mechanical engineering requires the completion of one of two options: (1) the thesis option requires a minimum of 30 credit hours, including a minimum of 24 hours of course work plus four to six hours of thesis through ME 876; (2) the nonthesis option requires a minimum of 34 credit hours, including a minimum of 30 hours of course work plus two hours of directed study through ME 878. In the nonthesis option, an ad hoc faculty committee gives an oral examination to students in relation to their project.

Students must have the Plan of Study in either option approved by their graduate adviser and department chairperson and must have their plan meet the department's requirements.

Course work in either option must include (1) a minimum of 60 percent of the hours at the 700-level or above and (2) a minimum of six hours outside of the department.

**Examinations**

Before a degree is granted, candidates must pass an oral examination over the thesis or directed study and/or course work.

**Doctor of Philosophy**

Areas of research specialization for the Doctor of Philosophy (PhD) program are within those stated previously for the MS degree. Exact specialties will depend upon the student's dissertation adviser and graduate committee. Other details of the Doctor of Philosophy (PhD) program can be found under the College of Engineering heading.

**Courses for Graduate/Undergraduate Credit**

The courses numbered 502 through 760 are not automatically applicable toward a graduate degree in engineering. They must be approved by the student's advisor, the graduate coordinator and the chairperson of the department.

Courses required for the BS degree normally are not permitted for use toward the graduate degree in mechanical engineering.

502. Thermodynamics II. (3). Continuation of Thermodynamics I, emphasizing cycle analysis, thermodynamic property relationships and psychrometrics, with an introduction to combustion processes and chemical thermodynamics. Prerequisites: ME 398 with grade of C or better.

503. Mechanical Engineering Systems Laboratory. (2). 1R. 3L. Selected experiments to illustrate the methodology of experimentation as applied to mechanical and thermal systems. Experiments include the measurement of performance of typical systems and evaluation of physical properties and parameters of systems. Group design and construction of an experiment is an important part of the course. Prerequisites: ME 402, 521. Corequisites: ME 522.


522. Heat Transfer. (3). Temperature fields and heat transfer by conduction, convection and radiation. Study and transient multidimensional conductive and forced convection and combined heat transfer. Discusses various analytical methods, analogies, numerical methods and approximate solutions. Prerequisite: ME 521.

523. Fluid and Heat Flow Laboratory. (1). 3L. Laboratory course designed to illustrate and reinforce the concepts in ME 521 and ME 522. Prerequisites: ME 521, corequisites: ME 522.

541. Mechanical Engineering Design II. (3). Applications of engineering design principles to the creative design of mechanical equipment. Problem definition, conceptual design, feasibility studies, design calculations to obtain creative solutions of current real engineering problems. Introduction to human factors, economics and reliability theory. Group and individual design projects. Prerequisite: ME 439.

544. Design of HVAC Systems. (3). Analysis and design of heating, ventilating and air-conditioning systems based on psychrometrics, thermodynamics and heat transfer fundamentals. Focuses on design procedures for space air-conditioning and heating and cooling loads in buildings. Prerequisites: ME 521 and 522 or equivalent.

550. Selected Topics in Mechanical Engineering. (1-3). New or special topics are presented on sufficient demand. Repeatable for credit when subject material warrants. Prerequisites: departmental consent.

620. Biomechanical Engineering. (3). Study of the physiology and biophysics of the living body from the viewpoint of basic mechanical engineering principles. Introduces and discusses various artificial organs and life support systems. Prerequisites: ME 521 and Math 555.

631. Heat Exchanger Design. (3). Covers analytical models for forced convection through tubes and over surfaces, experimental correlations for the Nusselt number and pressure drop, design of single and multiple pass shell and tube heat exchangers; compact baffled, direct contact, plat, and fluidized bed heat exchangers, radiators, recuperators, and regenerators. Prerequisites: ME 521 and 522 or equivalent.

641. Thermal Systems Design. (3). Modeling, simulation, and optimization used as tools in the design of thermal systems. Engineering design principles, characteristics of thermal equipment, and economic considerations. Studies open-ended problems, including work on design projects in small groups. Prerequisites: ME 502, 521 and 522.

650. Selected Topics in Mechanical Engineering. (1-3). New or special topics are presented on sufficient demand. Repeatable for credit when subject material warrants. Prerequisites: departmental consent.

653. Internal Combustion Engines. (3). A broad coverage of the basics of internal combustion engines with emphasis on spark ignition and diesel engines. Definition of engine types and classifications. Important variables used to evaluate performance and efficiency. Fundamentals learned in thermodynamics, chemistry, and mechanical design are used to understand engine design, performance, and control. Applications discussed are focused primarily on automotive use and involve power output, fuel consumption, and exhaust emissions. Prerequisite: ME 398.


662. Mechanical Engineering Practice. (3). 1R; 6L. An exercise in the practice of mechanical engineering; students engage in a comprehensive design project requiring the integration of knowledge gained in prerequisite engineering science and design courses. Team effort and both oral and written presentations are a part of the experience. Open only to mechanical engineering graduate students.
64. Introduction to Fatigue and Fracture. (3). Deals with the primary analytical methods used to quantify fatigue damage. These are the stress-life approach, strain-life approach and the fracture mechanics approach. Prerequisite: ME 521 and AE 333.

65. Selection of Materials for Design and Manufacturing. (3). Focuses on the selection of engineering materials to meet product and manufacturing requirements. Solution to various product and manufacturing problems by appropriate selection of materials is illustrated through the use of numerous examples and case studies. Prerequisites: ME 250 and AE 333.


67. Mechanical Properties of Materials I. (3). Major focus on deformation mechanisms and on crystal defects that significantly affect mechanical properties. Also covers plasticity theory, yield criteria for multiaxial states of stress, fracture mechanics, and fracture toughness. Includes some review of basic mechanics of materials and elasticity as needed. Prerequisite: ME 250 or departmental consent.

68. Acoustics. (3). Fundamentals of acoustics including the study of simple harmonic systems, acoustic waves, transmission phenomena, environmental and architectural acoustics. Prerequisites: Math 555, AE 373.

69. Studies in Mechanical Engineering. (1-3) Arranged individual, independent study in specialized content areas in mechanical engineering under the supervision of a faculty member. Requires written report or other suitable documentation of work for departmental records. Three (3) hours maximum technical elective credit. Not for graduate credit. Prerequisite: departmental consent.

70. Boundary Layer Theory. (3). Development of the Navier-Stokes equation, laminar boundary layers, transition to turbulence, turbulent boundary layers and an introduction to homogeneous turbulence. Prerequisite: ME 521 or departmental consent.

71. Basic Combustion Theory. (3). Introduction to the fundamental principles of combustion processes. Examines the chemistry and physics of combustion phenomena, i.e., detonation and flames, explosion and ignition processes. Prerequisites: Chem 111Q and ME 502.

72. Computer-Aided Analysis of Mechanical Systems. (3). Modeling and analysis of planar motion for multibody mechanical systems including automotive, generation of governing equations for kinematic and dynamic analysis, as well as computational methods and numerical solutions of governing equations. Open-ended student projects on engineering applications such as vehicle ride stability simulations for different terrains. Prerequisites: ME 339, AE 373 and Math 555.

73. Solar Engineering. (3). A study of solar energy with methods of collection conversion system analysis and economics. Emphasizes solar space and water heating systems. Prerequisite: ME 521 and ME 522.

74. Robotics and Control. (3). A systems engineering approach to robotic science and technology. Fundamentals as manipulators, sensors, actuators, end-effectors and product design for automation. Includes kinematics, trajectory planning, control, programming of manipulators and simulation, along with introduction to artificial intelligence and computer vision. Prerequisite: ME 659 or equivalent.

75. Advanced Machine Design. (3). A broad coverage of principles of mechanical analysis and design of machine elements. Emphasizes dynamic system modeling, prediction of natural frequencies and forced response, effect of support flexibility, failure theories used in design, and fatigue life prediction. Typical mechanical systems studied are gears, bearings, shafts, rotating machinery, and many types of spring-mass systems. Uses fundamentals learned in mechanics, strength of materials, and thermal sciences to understand mechanical system modeling, analysis, and design. Prerequisite: ME 541 or instructor’s consent.

76. Microcomputer-Based Mechanical Systems. (3) R Cr. Microcomputer-based real-time control of mechanical systems. Familiarizes students with design and methodology of software for real-time control. Includes an introductions to wave propagation in beams, shafts, rotating machinery, and many types of spring-mass systems. Uses fundamentals learned in mechanics, strength of materials, and thermal sciences to understand mechanical system modeling, analysis, and design. Prerequisite: ME 659 or departmental consent.

77. Special Topics in Mechanical Engineering. (1-3). New or special topics are presented on sufficient demand. Repeatable for credit when subject matter varies. Prerequisite: departmental consent.

78. Intermediate Thermodynamics. (3). Laws of thermodynamics, introduction to statistical concepts of thermodynamics, thermodynamic properties, chemical thermodynamics, and Maxwell’s relations. Prerequisite: ME 502 or departmental consent.

79. Neural Networks for Control. (3). Introduces specific Neural network architectures used for dynamic system modeling and intelligent control. Includes theory of feed-forward, recurrent and Hopfield networks; applications in robotics, aircraft and vehicle guidance, chemical processes, and optimal control. Prerequisite: ME 659 or departmental consent.

80. Fatigue and Fracture. (3). Covers fracture mechanics in metals, ceramics, polymers and composites. Suitable for graduate and undergraduate study in metallurgy and materials, mechanical engineering, civil engineering and aerospace engineering where a combined materials-failure mechanics approach is stressed. Prerequisite: ME 250 or departmental consent.

81. Thermodynamics of Solids. (3). Presents basic thermodynamic concepts which will form the working tools throughout the course. Emphasizes the interpretation of certain types of phase diagrams—not upon the use of thermodynamics to assist phase diagram construction but upon the use of phase diagrams to obtain thermodynamic quantities. Also, the thermodynamics of defects and defect interactions in metals, ceramics, polymers, elemental semiconductors, and compounds. Prerequisites: ME 250 and 398 or departmental consent.

82. SEM and EDAX. (3). Gives students knowledge of Scanning Electron Microscopy (SEM), a powerful tool in materials science and engineering which can be used to analyze structural defects in materials. Discusses both the theory and experimental methods, as well as the application of these methods. Prerequisite: ME 250 or departmental consent.

83. X-Ray Diffraction. (3). Theory of X-ray diffraction, experimental methods and their applications which can include determination of the crystal structure of materials, chemical analysis, stress and strain measurements, study of phase equilibria, measurement of particle size, and determination of the orientation of a single crystal. Prerequisites: ME 250 and AE 333 or departmental consent.

84. Cooperative Education. (1-8). A work-related placement with a supervised professional experience to complement and enhance the student’s academic program. Intended for junior and/or senior level or graduate students in mechanical engineering. Repeatable for credit. May not be used to satisfy degree requirements. Prerequisite: graduate standing, department’s consent and graduate GPA of 3.00 or above. Offered Cr/NCR only.

Courses for Graduate Students Only

85. Turbulence. (3). An overview of the theory, practical significance and computation of turbulent fluid flow. Prerequisites: ME 521 and 701.

86. Advanced Computer-Aided Analysis of Mechanical Systems. (3). Computational methods in modeling and analysis of spatial multibody mechanical systems. Includes Euler parameters; automatic generation of governing equations of kinematics and dynamics; numerical techniques and computational methods;
computer-oriented projects on ground vehicles with suspension and steering mechanisms, crashworthiness and biodynamics. Prerequisite: ME 729 or instructor's consent.

832. Failure Analysis Applications in Mechanical Design. (3). Application of engineering fundamental to the study of mechanical failure brought about by the stresses, strains and energy transfers in machine elements that result from the forces, deflections and energy inputs applied. Emphasizes recognition, identification, prediction and prevention of failure modes that are prevalent in machine-element design. Prerequisite: ME 439 or departmental consent.

847. Applied Automation and Control Systems. (3). Control theory condensed to engineering practice with the analysis, design and construction of operating control systems. Experiments with pneumatic, hydraulic and electro-mechanical servo-systems. Implementation of feedback and feedforward control schemes for various industrial systems and machine tools. The experiments are project oriented and intended to be representative of the current state-of-the-art in classical and modern control practice. Prerequisite: ME 439 or equivalent.

850. Special Topics in Mechanical Engineering. (3). New or special topics are presented on sufficient demand. Repeatable for credit when subject material warrants. Prerequisite: departmental consent.

851. Principles and Applications of Conduction Heat Transfer. (3). Theory and measurement, Fourier's equation, steady and unsteady state with and without heat sources and sinks and numerical methods. Prerequisites: ME 522, 757 or departmental consent.

852. Principles and Applications of Convective Heat Transfer. (3). Free and forced convection in laminar and turbulent flow. Includes analysis and synthesis of heat transfer equipment. Prerequisite: ME 522 or departmental consent.


854. Two-Phase Flow Heat Transfer. (3). Thermodynamic and mechanical aspects of interfacial phenomena, boiling and condensation near immersed surface, pool boiling, internal flow convective boiling and condensation. Prerequisites: ME 522, Math. 553 or departmental consent.

856. Advanced Thermodynamics. (3). Statistical thermodynamics, Boltzmann Bose-Einstein and Fermi Dirac statistics, calculation of thermodynamics properties, elementary kinetic theory, introduction to irreversible thermodynamics. Prerequisite: ME 802 or departmental consent.


861. Similitude in Engineering. (2). Critical analysis of models and analogies as aids to engineering design. Prerequisite: departmental consent.

864. Physical Metallurgy. (3). Covers a range of basic concepts in physical metallurgy essential for further studies in materials engineering. Topics include structure and diffraction, dislocations, defects and thermal processes, solid solution and hardening, diffusion, and phase diagrams and transformations. Prerequisites: ME 250 and 398, AE 333 or departmental consent.

866. Advanced Fracture Mechanics. (3). Covers the fracture mechanics of elastic-brittle, ductile, time dependent and heterogeneous materials at an advanced level. The material is suitable for graduate study only in metallurgy and materials, mechanical engineering and aerospace engineering where a combined materials-fracture mechanics approach is stressed. Prerequisites: ME 250, AE 333 or departmental consent.

867. Mechanical Properties of Materials II. (3). After a brief review of pertinent concepts of the macro-mechanical behavior of deformable bodies, course focuses on deformation mechanisms and on crystal defects that significantly affect mechanical properties and strengthening mechanisms. This includes point, line and planar crystallographic defects, dislocation dynamics, various hardening and strengthening mechanisms. Concludes with discussion of physical properties and testing methods to measure these properties. Prerequisite: ME 667 or departmental consent.

876. Thesis. (1-4). Graded S/U only. Repeatable for credit toward the MS thesis option up to six hours. Prerequisite: consent of MS thesis advisor.

878. Directed Studies. (1-4). Graded S/U only. Repeatable for credit. Student must write a paper. Students selecting the directed study option to fulfill the degree requirement need also to take an oral examination on the study made. Prerequisite: departmental consent.

901. Advanced X-Ray Diffraction Theory. (3). First part concentrates on the fundamental X-ray diffraction theories including dynamical theory of X-ray and anomalous absorption, with which a serious student in this field must be thoroughly familiar. Second part emphasizes the general theory of X-ray diffraction in a concise and elegant form using Fourier transforms. The general theory is then applied to various atomic structures, ideal crystals, imperfect crystals and amorphous bodies. Prerequisites: ME 767, Math. 757.

958. Computational Fluid Dynamics and Heat Transfer II. (3). Vector form of the Navier-Stokes and the energy equation. Generalized transformation of the flow equations to the computational domain. Numerical methods for inviscid flow equations, boundary layer type equations, "parabolized" Navier-Stokes equations and the Navier-Stokes equations. Prerequisite: ME 858 or equivalent.

960. Advanced Selected Topics. (1-3). New or specialized advanced topics in mechanical engineering. Prerequisite: instructor's consent.


998. Advanced Independent Study. (1-16). Arranged individual, independent study in specialized content areas. Repeatable toward the PhD degree. Prerequisites: advanced standing and 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 four hours of lecture and two hours of lab.
College of Fine Arts

Offices: 415 Jardine Hall
Walter J. Myers, dean
William Mathis, associate dean
Ron Christ, coordinator for graduate studies in art
Nicholas Smith, coordinator for graduate studies in music

School of Art and Design, (316) 689-3551—Donald R. Byrum, chair
Art Education, (316) 689-3555—Mary Sue Foster, director
Art History, (316) 689-3555—Patrick Smith, director
Graphic Design, (316) 689-3555—James Hellman/Kirsten Johnson, directors
Studio Arts, (316) 689-3555—Kathleen Shanahan, director

School of Music, (316) 689-3500—Harold A. Popp, chair
Music Education Studies, (316) 689-3103—Michael Kendall, director
Musicology-Composition Studies, (316) 689-3532—Bertil van Boer, director
Keyboard Studies, (316) 689-3103—Paul E. Reed, director
Strings/Orchestra Studies, (316) 689-3103—Jay C. Decker, director
Voice/Choral Studies, (316) 689-3103—Donalda Crum, director
Winds/Percussion/Band Studies, (316) 689-3103—Victor A. Markovich, director

School of Performing Arts, (316) 689-3368—Leroy Clark, chair
Dance, (316) 689-3645—Thomas Hagedoorn, director
Theatre, (316) 689-3368—Leroy Clark, director

Fine Arts

Although there is no graduate degree in general fine arts, the following course is available for graduate credit.

Course for Graduate/Undergraduate Credit

Fine Arts

Special Topics in the Fine Arts (1-4). For group instruction. Course may be repeated for credit. Course involves interdisciplinary upper division, graduate level topics with the fine arts (music, art, dance, and theatre). Prerequisite: Senior undergraduate or graduate standing or instructor's consent.

School of Art and Design

Donald R. Byrum, Chair

The School of Art and Design offers programs leading to both the Master of Arts and Master of Fine Arts degrees. Students seeking the Master of Arts degree take a major in art education. Students seeking the Master of Fine Arts degree select a major in ceramics, painting, printmaking, or sculpture. The specific requirements for each major are described under the appropriate program listing, below.

Art Education

Graduate Faculty

Associate Professor: Mary Sue Foster
Assistant Professor: Cheryl Hamilton

Master of Arts in Art Education

The Master of Arts (MA) degree in art education meets the needs for advanced study in the field. The program is designed for students pursuing a career in public school art teaching, supervision, college teaching, museum education, or art research.

Admission Requirements

To be admitted without deficiencies, students must have completed a bachelor's degree program in art education and meet requirements for Kansas state certification in this field. Also required are a 2.25 overall grade point average during the last two years of undergraduate study and a 3.0 grade point average in art, with a minimum of 12 hours in art history, 15 hours in one studio area, and nine hours in art education. Degree applicants are required to schedule an interview with the director of art education prior to the first semester of enrollment. During the interview applicants are required to present for evaluation the following: (1) a professional resume reflecting training and accomplishments; (2) a brief statement outlining professional goals; (3) written examples of professional and academic work; and (4) six examples of their art work (either portfolio or slide form) with an accompanying list identifying name, title, size, and media. Up to half of the portfolio may be work produced by students of the applicant. Make up of undergraduate course deficiencies may be required before applicant is admitted to the MA program in full standing. All correspondence should be addressed to the graduate coordinator of art and design.

Degree Requirements

Two plans may be followed in meeting the requirements for the MA in art education.

Plan A. The minimum requirements through Plan A are summarized below. Of the 30 hours required, 18 must be in courses numbered 700 or above.

<table>
<thead>
<tr>
<th>Hrs.</th>
<th>Major art areas and related fields*</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td></td>
<td>30</td>
</tr>
</tbody>
</table>

Plan B. The minimum requirements through Plan B are summarized below. Of the 33 hours required, 20 must be in courses numbered 700 or above.

<table>
<thead>
<tr>
<th>Hrs.</th>
<th>Course includes 6 hours of research problems</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td></td>
<td>33</td>
</tr>
</tbody>
</table>

*May include courses in studio arts and art history

All candidates must pass a written comprehensive examination before enrolling in thesis or terminal project. This examination is scheduled the first Saturday in November, the second Saturday in April, and the first or second Saturday in July. Candidates must pass an oral defense of their thesis if following Plan A. If following Plan B, they must make a verbal and/or visual presentation of their terminal project.

Plan of Study

In order to define a program of study for the graduate degree, students must submit in triplicate the Plan of Study form leading to admission to candidacy for the degree no later than one month following the completion of 12 semester hours of graduate credit.

Transfer of Credit and Extension Work

A maximum of six semester hours of graduate work may be transferred from another regionally accredited graduate school with the approval of the major advisor and the dean of the Graduate School, preferably before the work is taken. Correspondence courses are not accepted for credit, and extension credit is accepted only if approved by the major department and the dean of the Graduate School and if the course is taught by Wichita State University graduate faculty; only six hours of work meeting these criteria will be accepted. Six hours of graduate-level courses taken as a nondegree student will be accepted if approved by the graduate coordinator, provided that all six hours are taken in the same department. Courses taken in more than one department before acceptance into the art degree must have a minimum of 12 hours in art history, 15 hours in one studio area, and nine hours in art education.
education master's program may not apply toward the degree.

Courses for Graduate/Undergraduate Credit

510Q. Stimulating Creative Behavior. (3). Division A course/elective. Includes theories of creativity; strategies for problem-finding and problem-solving; identifying various external and internal blocks to creativity; testing for creativity; the relationships of creativity, cognition and visual thinking; creative challenges; and stimuli. Emphasizes methods to elicit creative behavior. Repeatable once for credit.

514Q. Aesthetic Inquiry. (3). Division A course/elective. Students write critical observations and interpretations in response to art work. Prerequisite: upper-division art major.

515. Developing Visual Materials for Art Education. (3). A production laboratory that emphasizes the integration and selection of appropriate visual media for art instruction. Prerequisite: Art E. 310 or equivalent.

516. Art Education Practicum. (3). The development of an art curriculum for secondary levels. Students enroll in this course the semester before student teaching. Prerequisite: concurrent enrollment in CESP 450.

517. Student Teaching Seminar in Art. (1). Analyzes problems encountered in the art classroom during student teaching. Requires concurrent enrollment in eight hours of student teaching courses. Prerequisite: Art E. 316 and departmental approval for student teaching.

518. Art for the Exceptional Child. (3). A study of the philosophy, psychology and artistic development of the gifted and handicapped student, emphasizing appropriate adaptations and teaching methods for exceptional children in school settings. Prerequisite: Art E. 310 or equivalent.

550. Art Workshop. (1-3). Repeatable for credit. Area covered is determined at the time the course is offered.

702. Metal Processes for Jewelry Construction. (3). Emphasizes fabrication techniques, design analysis and function of jewelry designed and produced by students and acknowledged craftsmen. Repeatable once for credit. Prerequisite: Art E. 212, 302 or instructor's consent.

710. Creative Behavior and Visual Thinking. (3). Identification and application of theories for creative and critical thinking. Emphasizes strategies for problem solving and visual thinking and procedures to implement those strategies. Student identifies an area for individual investigation. Repeatable once for credit.

711. Seminar in Art Education: Topic to be Announced. (1-3). Supervised study and research of contemporary issues in art education. Repeatable for credit with adviser's consent. Prerequisite: instructor's consent.

712. Development of Art Understanding in the Educational Program. (3). Readings, observation and evaluation techniques in the development of concepts and materials for art understanding. Repeatable once for credit. Prerequisite: instructor's consent.

713. Fiber and Fabric Processes. (2-3). Fiber processes using traditional and experimental techniques in woven forms and other structural techniques using natural and man-made fibers. Repeatable once for credit. Prerequisite: instructor's consent.

715. Research Problems in Art Education. (3). Orientation to research methods, findings and designs related to the analysis of studies and current problems in art education. Repeatable once for credit. Prerequisite: instructor's consent.

719. Electronic Imaging. (1-3). Emphasizes Macintosh and Amiga computer processes and their application to art and art education. Students generate computer images using digitizing, scanning, and animation with a variety of software and hardware. Makes application of this new technology to problems of design, art history, and art criticism. Develops curriculum materials for art instruction employing computer graphic instruction. The graduate student prepares a research paper on a selected topic related to computer graphics and art learning.

720. Art and Early Childhood. (1-3). Emphasizes the cognitive and aesthetic domains of young children and develops the potential for creative and visually expressive behavior as a natural means of a child responding to environmental stimuli.

750. Art Workshop. (1-3). Repeatable for credit. Area to be covered is determined at the time the course is offered.

Courses for Graduate Students Only

815. Individual Research Problems in Art Education. (1-4). Directed independent study in art education not normally covered in other graduate course work. Repeatable for credit. Prerequisite: instructor's consent.

816-817. Thesis—Art Education. (1-3). Repeatable for credit.

818-819. Terminal Project—Art Education. (1-3). Repeatable for credit.

Art History

Graduate Faculty

Professor: Mira P. Merriman
Associate Professor: Patrick Smith
Assistant Professor: Frederick Hemans

Although there is no graduate degree in art history, the following courses are available for graduate credit.

Courses for Graduate/Undergraduate Credit

520. Seminar in Art History. (3). Systematic study in selected areas of art history. Course content varies but individual areas are not repeatable for credit.

521Q. Italian Renaissance. (3). Division A course/elective. A study of the architecture, sculpture and painting from the 13th to the 16th century. Emphasizes early developments in Florence and Siena and late developments in Rome.

522. Italian Baroque. (3). A study of Baroque painting, sculpture and architecture in Rome, Venice and Bologna from 1600 to 1750 emphasizing the Carracci, Caravaggio, Bernini and Tiepolo.

523. 18th and 19th Century European Art. (3). A history of European art from Watteau through post-Impressionism.

524. 18th and 19th Century American Art. (3). A history of American art from the colonial period through the 19th century.


528. Museum Techniques I. (3). Primarily for the graduate student interested in museum work. Includes specialized research related to administrative responsibilities of a museum: collection, exhibition, recording, preservation and financial activities.

529. Modern Architecture. (3). An overview of the development of modern architecture from its inception in the early 20th century until today. Stresses theoretical connections between architecture and the arts of painting and sculpture as they developed in the United States and Europe.

530. The Art of Classical Greece. (3). A study of painting, sculpture and architecture of Greece during the 5th and 4th centuries B.C.

531. The Art of Hellenistic Greece. (3). A study of the painting, sculpture and architecture of Greece during the Hellenistic period, 4th to 1st centuries B.C.

532. Independent Study in Art History. (1-9). Work in a specialized area of the study of art history. Directed readings and projects. Prerequisite: instructor's consent.

533. Seminar: Topics in Modern Art. (3). Selected readings and problems in art of the modern era. Course content varies but individual areas are not repeatable for credit.

534. History of Photography. (3). History of photography stressing techniques, media, processes, interrelations with other visual arts, style questions, genres, and criticism.

721. Introduction to Art History for Teachers I. (1). A historic and stylistic overview of the development of art from prehistoric through medieval times. Emphasizes how art history
can be integrated into art and nonart classroom curriculums. Specifically for early childhood, elementary and secondary teachers. Approved for recertification credit for elementary and secondary teachers by KSBOE.

722. Introduction to Art History for Teachers I. (3). A historic and stylistic overview of the development of art from the Renaissance to the present. Emphasizes how art history can be integrated into art and nonart classroom curriculums. Specifically for early childhood, elementary and secondary teachers. Approved for recertification credit for elementary and secondary teachers by KSBOE.

723. Independent Study in Art History. (3). Work in specialized area of the study of art history. Directed readings and projects for graduate students in all disciplines. Prerequisite: instructor's consent.

Courses for Graduate Students Only

828-829. Thesis. (2; 2).

832. Independent Study. (1-3). Individually supervised work in a specialized area of the study of art history. Directed readings and projects for graduate students in all disciplines. Prerequisite: suitable preparation for graduate work in art history (e.g., BA or BFA in art history) and instructor's consent.

Graphic Design—Commercial Art
Graduate Faculty
Professor: Clark V. Britton, Jr.
Associate Professor: Kirsten S. Johnson
Assistant Professors: James Hellman, Shirley McCollum

Although there is no graduate degree in graphic design, the following courses are available for graduate study.

Course for Graduate/Undergraduate Credit

530. Seminar in Graphic Design. (3). Supervised study and research. Requires weekly consultation and reports. Repeatable for credit. Prerequisite: departmental consent.

550. Graphic Design Workshop. (1-3). Repeatable for credit. Area covered is determined at the time the course is offered.

Studio Arts
Graduate Faculty
Professors: John Boyd, Donald Byrum (Chair, art/design), Richard St. John
Associate Professors: Ronald Christ (Coordinator, graduate studies), Kathleen Shanahan
Assistant Professor: Barry Badgett
Visiting Assistant Professor: Jill Eggers

Master of Fine Arts
The Master of Fine Arts (MFA) degree, the terminal degree for studio arts, is offered for qualified students planning careers as professional artists, either working independently or as artist-teachers on the college or art school level. The program is designed for a concentration in ceramics, painting, printmaking, or sculpture.

Admission Requirements
Admission without deficiencies requires a 2.750 overall grade point average and a 3.250 overall grade point average for the last 60 credit hours, which includes one of the following fields of study: ceramics, painting, printmaking, or sculpture. Also required is a Bachelor of Fine Arts (BFA) degree, or the equivalent of a BFA, that includes a minimum of 12 hours of art history, 15 hours in the major field and 20 hours of related work. Applicants should present examples of work for evaluation. They should submit 15 color slides (2" x 2") in their major area. All work should be identified with name, title, size, and media. Applicants should also include a short statement of their artistic philosophy. Also list all honors, awards, scholarships, exhibitions, special recognition for work in art, or services rendered through art. Three letters of recommendation should be forwarded. No application is considered until an application to Graduate School, transcripts, and the materials listed above are received. A stamped return envelope for all materials should be included.

Students holding degrees from institutions where requirements differ from those at Wichita State may be required to take undergraduate courses to make up deficiencies as determined by the major professor and the graduate art coordinator. Applicants should address all correspondence to the graduate art coordinator.

Degree Requirements
Minimum course requirements for completion of the MFA degree are summarized below. In addition, 45 of the 60 hours must be taken in courses numbered 800 or above.

<table>
<thead>
<tr>
<th>Course Type</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Studio courses in the major area</td>
<td>23</td>
</tr>
<tr>
<td>** Courses in a minor option area</td>
<td>15</td>
</tr>
<tr>
<td>Terminal project in the major area</td>
<td>9</td>
</tr>
<tr>
<td>Course in art seminar or directed readings</td>
<td>3</td>
</tr>
</tbody>
</table>

Total: 60

* Minor option can be taken in one studio area, a variety of studio areas, or outside the student major area.
** These nine hours are mandatory.

The terminal project consists of an exhibition of original studio art work, accompanied by (1) a written report in thesis form and (2) the MFA terminal project report, which is a photographic documentation of the candidate's studio work (submitted in duplicate).

Plan of Study. In order to define a program of study for the graduate degree, students must submit in triplicate the Plan of Study form leading to admission to candidacy for the degree no later than one month following the completion of 24 semester hours of graduate credit.

Graduate Review. MFA degree students must satisfactorily complete four graduate reviews conducted in their major MFA area at the end of each fall and spring semester. At this time, the graduate faculty makes observations and recommendations regarding the quality of the students' work and their standing in the program. No graduate review is held during Summer Session.

Transfer of Credit. All graduate credit accepted for transfer will be at the discretion of the departmental adviser and graduate coordinator. A maximum of 12 semester hours from prior graduate study may be considered for transfer to the MFA program. However, no transfer work will be considered until the students have successfully completed 24 semester hours and their first graduate reviews, and no hours can be applied to a major field of study. If a transfer of credit is allowed, it may reduce course requirements but not entrance requirements. A ruling on hours converted to the MFA program by the dean of the Graduate School, graduate art coordinator, and the major professor is final. Graduate nondegree work obtained before admission to a planned degree program will not be accepted.

Required Prerequisite. Students who have not been accepted to degree standing in the MFA Studio or MA Art Education programs may enroll in 800-level courses only with written consent of the art graduate coordinator.

Examinations. At the beginning of and during the semester in which the degree is to be conferred, two interviews between candidates and their committees are conducted. The proposed content of the MFA exhibition is discussed and evaluated. The graduate committee's findings, upon final review and the MFA terminal exhibition, are filed by the major professor with the graduate dean at least two weeks before the end of the final semester. This procedure constitutes the terminal examination for MFA candidates.
Policy Toward Student Art
The School of Art and Design reserves the right to select and retain a maximum of three pieces from the graduate exhibition. MFA printmaking candidates may be required to deposit one print from any or each edition for the University Collection.

General

Courses for Graduate/Undergraduate Credit

500. Topics in Visual Arts and Design. (3). Covers topics of special interest and significance to faculty and students in Studio Art and Design. Content varies in subject matter from one semester to another. Repeatable for credit with departmental consent.

550. Workshop. (3-5). Repeatable for credit. Area covered is determined at the time the course is offered. Prerequisite: appropriate to course offered.

750. Art Studio Workshop. (1-3). Area covered is determined at time course is offered. Repeatable for credit.

Course for Graduate Students Only

800. Seminar in Art Topics. (3). Explores areas of common interest in the arts. Supervised study, research and discussion. Repeatable for credit.

Ceramics

Courses for Graduate/Undergraduate Credit

570. Advanced Ceramics Studio. (3). Lab fee. Advanced studio problems involving forming methods, glaze formulation and firing procedures. Lecture periods involve advanced studies of ceramic materials and glaze formulation. Repeatable for credit. Prerequisites: Art S. 370 and instructor’s consent.


574. Advanced Study of Kiln Methods. (3). Advanced study of kiln design and construction with research in the area of refractory materials. Requires reading assignments, notebook and laboratory work. Prerequisite: Art S. 374.

575. Study of Ceramic Materials II. (3). Lab fee. Lectures and research covering clays, glazes and refractory materials. Reading assignments concerning physical and chemical characteristics of pottery materials. Prerequisites: Art S. 275 and 370.

576. Study of Ceramic Glazes II. (3). Lab fee. The study of glaze formulation and the color and crystalline effects of oxides on base glazes. Requires notebook, formulation records and laboratory work. Prerequisite: Art S. 375.

578. Independent Study in Ceramics. (1-3). A professional emphasis on technical or aesthetic research in the ceramics field. Available only for the advanced ceramics student with instructor’s consent. Statement of intent must be submitted for faculty approval before registration. Prerequisite: departmental consent.

Courses for Graduate Students Only

800. Seminar in Art Topics. (3). Explores areas of common interest in the arts. Supervised study, research and discussion. Repeatable for credit.

870. Special Problems in Ceramics. (1-5). Research in advanced problems in ceramics. Repeatable for credit.

875. Advanced Research of Ceramic Materials. (3). Lectures and advanced research covering clays, glazes and refractory materials. Reading assignments concerning physical and chemical characteristics of pottery materials. Requires notebook and outside lab work.

876. Advanced Study of Ceramic Glazes. (3). The study of glaze formulation and the color and crystalline effects of oxides on base glazes. Requires notebook, advanced formulation records and laboratory work. Prerequisite: Art S. 375.

878-879. Terminal Project—Ceramics. (2, 3 or 5). Requires notebook and/or portfolio. Repeatable for credit. Prerequisites: Art S. 340, 345.

Drawing

Courses for Graduate/Undergraduate Credit

540. Advanced Drawing Studio. (1-3). Drawing with a variety of media. Uses graphic problems relevant to individual and aesthetic development. Critiques are given. Repeatable for credit. Prerequisites: Art S. 340 and 345.

549. Independent Study in Drawing. (3). A professional emphasis on technical or aesthetic research in the drawing area. Available only for the advanced drawing student with instructor’s consent. Statement of intent must be submitted for faculty approval before registration. Prerequisites: Art S. 340, 345 and instructor’s consent.

Courses for Graduate Students Only

840. Special Problems in Life Drawing. (1 or 3). Drawing from life. Requires sketchbooks and/or portfolio. Repeatable for credit.

845. Special Problems in Drawing. (1-3). Advanced drawing in various media emphasizing independent work and the development of personal expression. Repeatable for credit.

Painting

Courses for Graduate/Undergraduate Credit

551. Advanced Watercolor Studio. (3). Requires sketchbooks and/or portfolio. Prerequisites: completion of foundation program and Art S. 251.

553. Independent Study in Painting. (3). A professional emphasis on technical or aesthetic research in the painting area. Available only for the advanced painting student with instructor’s consent. Statement of intent must be submitted for faculty approval before registration. Prerequisite: departmental consent.

554. Advanced Painting Studio. (1-3-6). For the professionally oriented student. Emphasizes independent study. Repeatable for credit. Prerequisites: four semesters of Art S. 354 and interview with instructor.

Courses for Graduate Students Only

800. Seminar in Art Topics. (3). Explores areas of common interest in the arts. Supervised study, research and discussion. Repeatable for credit.

850. Special Problems in Painting. (1-5). Professional and experimental painting emphasizing the development of maturity, ideas, independent thinking and personal expression. Media include oil, watercolor and synthetic media. Repeatable for credit with the consent of the drawing/painting faculty.

858-859. Terminal Project—Painting. (3 or 5; 3 or 5).

Printmaking

Courses for Graduate/Undergraduate Credit

560. Advanced Printmaking Studio—Intaglio. (1-3). Intaglio, collagraph and mixed techniques. For students interested in professional printmaking, course offers specialization in color printing or black and white. Repeatable for credit. Prerequisites: Art S. 260, 262 and 364.

561. Advanced Printmaking Studio—Lithography. (1-3). Lithography, black and white or color. For students interested in professional printmaking, course offers specialization in color printing. Repeatable for credit. Prerequisite: Art S. 364.

565. Independent Study in Printmaking. (3). A professional emphasis on technical and aesthetic research in the printmaking area. Only for the advanced printmaking student with instructor’s consent. Statement of intent must be submitted for faculty approval before registration. Prerequisite: departmental consent.

Courses for Graduate Students Only

860. Special Problems in Printmaking—Intaglio. (1, 3 or 5). Advanced printmaking on an individual basis. Gives encouragement to investigation, combined with a craftsman-like approach. Techniques include all intaglio, relief and combined methods, black and white and color. Repeatable for credit.

862 & 863. Special Problems in Printmaking—Lithography. (1, 3, 5; 3 or 5). Advanced printmaking on an individual basis. Gives encouragement to investigation, combined with a craftsman-like approach. Includes lithography and allied techniques, black and white and color. Repeatable for credit.

868-869. Terminal Project—Printmaking. (3 or 5; 3 or 5).
Sculpture

Courses for Graduate/Undergraduate Credit

580. Advanced Sculpture Studio. (1-3). Sculpture in any medium, emphasizing individual development and creativity. Repeatable for credit. Prerequisite: Art S. 380.

585. Independent Study in Sculpture. (3). A professional emphasis on technical or aesthetic research in the sculpture area. Available only for the advanced sculpture student with instructor's consent. Statement of intent must be submitted for faculty approval before registration. Prerequisite: departmental consent.

Courses for Graduate Students Only

880. Special Problems in Sculpture. (3 or 5). Advanced sculpture emphasizing experimentation and high quality work on an individual basis. Stresses special projects in casting architectural sculpture, mixed media or new materials and techniques. Repeatable for credit.

888-889. Terminal Project—Sculpture. (3 or 5; 3 or 5).

School of Music

Harold A. Popp, Chair
Nicholas Smith, Associate Chair
Coordinator, Graduate Studies

Graduate degree programs in the School of Music are designed to extend and broaden the professional competency of men and women desiring careers in music. Students may pursue graduate studies in history-literature, theory-composition, music education, performance, conducting, and pedagogy. While providing for advanced training in the specific skills of music, these graduate programs help to cultivate the student's capacity to think—to consider impersonally, passionately, and without prejudice any problem related to the art of music.

Master of Music

The Master of Music degree (MM) allows for concentration in history-literature, piano pedagogy, theory-composition, conducting, and performance. The general requirements for the degree are outlined below, while the specific course requirements for each concentration are given in the program sections (music education, musicology-composition, music performance) in which the concentrations are housed.

Admission Requirements

Admission to the MM program requires the completion of an accredited music bachelor's degree that includes a minimum of 60 semester hours in music, with at least 24 hours in basic music studies (history and theory) and 15 hours in a major specialty. Approval of the MM concentration must be acquired during the first semester of enrollment.

Degree Requirements

The MM degree requires completion of a minimum of 32 graduate semester hours, including a thesis or recital as indicated for the respective concentration. Of these hours, 60 percent must be in courses numbered 700 or above. Each Plan of Study must include 852, Introduction to Bibliography and Research; 830, Seminar in Music Theory; and six hours elected from graduate courses in music history and literature (791-792, Seminar in Music History, or elections from the graduate period courses: 893, Music of Antiquity-Renaissance, through 897, Music of the 20th Century). Adviser's approval must be obtained for all courses included in the degree Plan of Study.

Master of Music Education

The School of Music offers the Master of Music Education degree (MME). Areas of concentration and associated requirements are listed under Music Education, below.

Examinations

All degree candidates in the School of Music must pass an oral comprehensive examination. The oral comprehensive examination for thesis candidates includes a defense of the thesis.

Music Education

Graduate Faculty
Professor: Donald Corbett
Associate Professor: Michael Kendall
(graduate, music education)
Assistant Professors: Thomas Fowler, Elaine Bernstoff

Master of Music Education

The Master of Music Education (MME) program allows for concentration in elementary music, choral music, instrumental music (with recital option), music in special education, and voice. Conducting options may be elected (with approval) in the choral and instrumental programs.

Admission Requirements

Admission to the degree program in music education requires the completion of a Bachelor of Music Education (BME) degree, or the equivalent of a BME, from an accredited institution. Students holding bachelor's degrees in music other than the Bachelor of Music Education must satisfy public school certification requirements to qualify for full admission. Applicants without such certification are admitted on a conditional basis pending their attainment of public school teaching credentials. Approval of the MME specialization must be acquired.

Degree Requirements

MME programs range from 32 to 36 hours. The required core is 13 hours; 17 field speciality hours must be decided in consultation with an adviser and the director of music education; five terminal options are available: recital, conducting project, thesis, research seminar, and an extra hour option. Of these hours, 12 must be in courses numbered 700 or 800. Each Plan of Study must include 852, Introduction to Bibliography and Research; 851, Psychology of Music; 871, History and Philosophy of Music Education; and 830, Seminar in Music Theory. Three hours also are required in graduate music history.

Qualified students requesting permission to present a formal graduate recital should obtain approval from the appropriate performance area before completing 12 hours of graduate enrollment. A recital is not a terminal requirement option for the MME in special education.

Courses for Graduate/Undergraduate Credit

606. Music Methods for Early Childhood Education. (2). Methods and materials for teaching music in the preschool and kindergarten classroom. Includes the development of the child's musical growth through singing, listening, rhythmic and creative activities; a survey of available materials, and development of playing, singing and conducting skills.

611. Music for Special Education. (3). Open to upper-division or graduate students and intended for the potential practicing music teacher, classroom teacher or special education teacher. Includes identification of dysfunctional children and their problems and current theory and practices in special music education. Satisfies the requirement, effective September 1, 1981, that applicants for initial certification or renewal of secondary and/or elementary certification shall present a survey course, or equivalent content from other courses, in the subject area of exceptional children. This provision applies to initial certification and recertification of music teachers only, grades K-12.

686. Marching Band Techniques. (2). A systematic approach to the marching band with regard to organization, show development, instrumentation, music adaptation, drill construction and script development. Teaches both traditional drill and corps style marching utilizing manual methods and computer generated graphics. Field observations, films, photographs and live performances by marching
bands complement the class syllabus. Required for all instrumental majors.

732. Music in the Junior High School. (3). Includes administrative structures, the curriculum, adolescent development, teaching as behavior and competencies needed for successful teaching of general and choral music in grades 6-9.

737A. Advanced Woodwind Techniques. (2). Special problems and techniques in the teaching of woodwind instruments. Surveys current materials. Prerequisite: E 237 and 238 or equivalent.

739A. Advanced Brass Techniques. (2). Special problems and techniques in the teaching of brass instruments. Surveys current materials. Prerequisite: E 239 or equivalent.

740A. Advanced Percussion Techniques. (2). Special problems and techniques in the teaching of percussion instruments. Surveys current materials. Prerequisite: E 240 or equivalent.


781. Cooperative Education. (1-8). A field placement which integrates course work with a planned and supervised professional experience designed to complement and enhance the student's academic program. Individualized programs must be formulated in consultation with and approved by appropriate faculty sponsors and cooperative education coordinators. Students enrolled in Co-op 761 may follow one of two scheduling patterns: parallel, enrolling concurrently in a minimum of six hours of course work in addition to their co-op assignment; alternating, working full time one semester in a field study and returning to full school enrollment the following semester; such students need not be concurrently enrolled in any other course. Prerequisite: satisfactory academic standing prior to the first job assignment. May be repeated for credit. Offered C/N/C only.


790. Special Topics in Music. (1-4). For individual or group instruction. Individual study enrollment requires departmental consent. Repeatable with departmental consent.

Courses for Graduate Students Only


822. Advanced Techniques in Special Music Education. (3). For the special music education MME candidates only. Studies research literature and trends in special music education. Includes an evaluation of materials and techniques and special projects exploring the development of musical understanding in the dysfunctionsing child. Course satisfies the requirement, effective September 1, 1981, that applicants for initial certification or renewal of secondary and/or elementary certification shall present a survey course, or equivalent content from other courses, in which the subject area of exceptional children. This provision applies to initial certification and recertification of music teachers only. Prerequisite: E 403 or 404.

823. Special Music Education Practicum. (3). For the special music education MME candidate only. Supervised teaching in special education classrooms. A companion course to Music 822; gives the MME special education candidate experience in teaching in special education classrooms. Prerequisite: E 822 or concurrent enrollment.

831. Developing the Child's Musical Understanding. (3). Definition of understandings necessary for the attainment of musical awareness in the child. Directs the exploration of classroom experiences toward the successful development of understanding through the application of basic learning principles. Prerequisite: E 403.


841. Special Project in Music. (1-3). Individually supervised study or research emphasizing the student's personal needs. Repeatable for credit. Prerequisite: instructor's consent.

842. Special Project in Music. (1-3). Individually supervised study or research emphasizing the personal needs of the student. Repeatable for credit. Prerequisite: instructor's consent.

844. Terminal Conducting Project. (2). Individually supervised project for those accepted for the conducting option on the instrumental or choral emphasis under the MME degree. Prerequisites: instructor and departmental consent.


851. Psychology of Music. (2). An overview of music behaviors from a psychological perspective. Relates recent literature concerning human psychoacoustics; melodic, rhythmic and harmonic perception; and major learning theories to current trends in music education.

852. Introduction to Bibliography and Research. (3). See course listing under musicology-composition area.

854. Research Seminar in Music Education. (3). Continued application of techniques of research. Requires the completion of a major research project. May be selected as the MME terminal requirement for specified programs. Prerequisite: E 403 or 404.

871. History and Philosophy of Music Education. (2). A study of historical trends and contemporary philosophies relevant to music education. Prerequisite: E 851.


876. Thesis. (2).

Music Performance
Graduate Faculty

Professors: Harrison C. Boughton, Joseph C. Combs, Jay C. Decker (director, strings/orchestra), George H. Gibson (director, opera), James W. Jones, Walter J. Myers (dean), Harold A. Popp (chair, music), Frances K. Shelly, Nicholas E. Smith (associate chair and coordinator, graduate studies)

Associate Professors: Julie Bees, Sylvia Coats, Dorothy Crum (director, voice/choral), Robert Glasmann, Nancy Luttrell, Victor A. Markovich (director, winds/percussion and bands), David Perry, Paul E. Reed (director, keyboard), Robert Town, Vernon L. Yenne

Assistant Professors: Deborah E. Baxter, Catherine Consiglio, Robert Grib, Joan Lansing, David Schepps, Andrew Trehak, Russell D. Widener

Master of Music—Performance Concentration

Admission to the Master of Music (MM) program with emphasis in music performance requires a performance background, with a Bachelor of Music (BM) degree in the performance area of specialization or the equivalent of the BM. Background deficiencies must be satisfied before admission to candidacy. All performance degree candidates must complete a satisfactory audition in their performance area of specialization. The audition should be completed as early as possible—but no later than the end of the first semester of enrollment. Permission to pursue the degree/concentration is tentative pending approval of the respective performance faculty.

A formal graduate recital, in lieu of a thesis, must be presented in partial fulfillment of the requirements for the MM degree with emphasis in performance.

In order to receive permission to schedule a degree recital, students must satisfy the expectations of the respective performance area. Permission to schedule the recital must be obtained no later than the semester before the semester in which the recital is to be performed. The student's performance repertoire and the recital
program must be in accordance with the guidelines and expectations established by the respective performance area.

Students studying for the MM degree with emphasis in performance should plan to be in residence during at least one fall or spring semester, since continuous study opportunities may not exist in Summer Session.

Master of Music—Instrumental Conducting Concentration

The Master of Music (MM) degree, instrumental conducting concentration, is designed to accommodate a small number of students (up to four per year) who receive extensive individualized conducting preparation with the University's resident band and orchestra conductors. Candidates have rehearsal/conducting opportunities with both large and small ensembles. The program culminates in a conducting recital utilizing University students and ensembles; metropolitan or ad hoc ensembles may be substituted with faculty approval.

Admission Requirements

Candidates must have completed an accredited bachelor's degree in music or music education, provide evidence of demonstrable success in prior conducting experiences, and obtain approval of the instrumental conducting faculty. All candidates must complete an acceptable conducting audition; admission to the instrumental conducting concentration is tentative pending approval of the audition. Background deficiencies, if noted, must be satisfied before admission to candidacy for the degree.

Degree Requirements

The MM degree, instrumental conducting concentration, requires the completion (minimum) of 36 graduate hours, including a graduate degree recital as the terminal requirement. Of these hours, 20 must be in courses numbered 700-800. The degree must include the following courses:

1. 852, Introduction to Bibliography and Research, 3 hours;
2. 830, Seminar in Music Theory, 3 hours;
3. Election of a minimum of two courses (6 hours) in graduate music history-literature from 893, Music of Antiquity through the Renaissance, through 897, Music of the 20th Century (or 791-792, Seminar in Music History); and
4. Pedagogy and literature courses as specified in the pertinent MM (piano pedagogy) curriculum guide.

Applied Music Private Study

712. Applied Music Instruction for Nonmajors. (2). Basic applied instruction for persons who are not active in a music degree program. May not be used to fulfill music degree requirements. Repeatable for credit.

731. (1). For majors only; study on secondary instruments. Basic instruction. Repeatable for credit. Graduate.

732. (2). For majors only. Repeatable for credit. Graduate.

734. (4). For performance and pedagogy majors or students preparing for master's degree recitals only. Repeatable for credit. Graduate.

Applied Music Media Designations

A Bassoon P Piano
B Cello R String Bass
C Clarinet S Trombone
D Euphonium T Trumpet
E Flute U Tuba
F French Horn V Viola
G Guitar W Violin
H Harp X Saxophone
I Oboe Y Voice
J Organ Z Electric Bass

Applied Music Classes

717W. Violin Class for Adult Beginners. (2). Beginning violin class: violin fundamentals, emphasizing tone and intonation development; basic techniques for reading (notes and rhythm). May not be applied to music major requirements. Repeatable for credit.

717V. Popular Vocal Styles. (2). Class voice instruction for adults emphasizing basic vocal technique and how it can be applied for use in popular styles of singing, including vocal jazz, pop, musical theatre, etc. Gives students an opportunity to explore techniques for developing their own voices and to practice singing in a supportive environment; includes information via lecture, demonstration, listening to recordings related to stylistic differences in the popular idiom. Intended for nonmusic majors; not applicable to music degree requirements. Repeatable.

General Performance

Courses for Graduate/Undergraduate Credit

580. Piano Pedagogy. (2). Primarily concerned with the art and science of teaching. Includes observations of master teachers in the University and community.


620. String Pedagogy: Violin and Viola. (2). Required for violin and viola performance majors. A study of technical techniques for violin and viola, including the teaching of mini-lessons for instructor and class critique. Prerequisite: violin or viola performance capability or instructor's consent.

625. Voice Pedagogy. (2). Acquaints the voice major with vocal techniques, concepts and materials of private and class instruction.

651. Advanced Conducting and Score Reading. (2). Baton technique, score reading and musicianship. Prerequisite: Mus. P. 217 or 218 or equivalent.

680. Woodwind Pedagogy. (2). A comprehensive study of woodwind instrument techniques, concepts and materials of studio instruction for the advanced student, including the teaching of mini-lessons for instructor and class critique. Prerequisite: performance capa-
481. Brass Pedagogy. (2). A comprehensive study of brass instrument techniques, concepts and materials of studio instruction for the advanced student, including the teaching of mini-lessons for instructor and class critique. Prerequisite: performance capability on a brass instrument or instructor's consent.

482. Percussion Pedagogy. (2). A comprehensive study of percussion instrument techniques, concepts and materials of studio instruction for the advanced student, including the teaching of mini-lessons for instructor and class critique. Prerequisite: performance capability on percussion instruments or instructor's consent.

491. Advanced Choral Conducting. (2). A comprehensive study of conducting and rehearsal techniques, analysis and ear training and types of choral composition for the advanced student. Prerequisite: Mus. P. 217 or 218 or equivalent.


710-711-712-713-714. Ensembles. (1-1-1-1-1). (A) Orchestra: (B) Symphonic Band/Wind Ensemble; (D) Gospel Ensemble; (F) A Cappella Choir; (H) La Banda Hispanica; (I) Piano Accompaniment; (J) Opera Theater; (K) Madrigal Singers; (M) Woodwind Ensemble; (O) Saxophone Quartet; (P) Brass Chamber Ensemble; (Q) Percussion Ensemble; (R) Beginning String Ensemble and String Chamber Ensemble; (T) Jazz Arts Ensembles I and II; (U) Guitar Ensemble; (W) International Choir. Prerequisite: audition required. Repeatable for credit.

715V. Voice for Music Theater. (2). Basic repertoire and singing techniques with weekly master class devoted to music theater techniques and concepts. Limited to persons other than vocal majors. Repeatable.


760. Group Piano Practicum. (2). Supervised group piano teaching for graduate students. Prerequisites: Mus. P. 380 and 381.

761. Studio Piano Practicum. (2). Supervised studio teaching for graduate students. Prerequisites: Mus. P. 380 and 381.

790P. Special Topics in Music. (1-4). For individual or group instruction. Repeatable with departmental consent.

Courses for Graduate Students Only

841. Special Project in Music. (1-3). Individually supervised study or research emphasizing the personal needs of the student. Repeatable for credit. Prerequisite: instructor's consent.

842. Special Project in Music. (1-3). Individually supervised study or research emphasizing the personal needs of the student. Repeatable for credit. Prerequisite: instructor's consent.

843. Piano Pedagogy Seminar. (2). Variable topics, such as (1) advanced techniques in class piano or private piano (college curriculums); (2) class piano in early childhood; (3) class piano for leisure-age students; (4) class piano in public (or private) schools, extending the advanced preparation of piano pedagogy students as needed. Repeatable for credit. Prerequisite: Mus. P. 580.

852. Introduction to Bibliography and Research. (3). See course listing under musicology-composition area.

873. Graduate Recital. (2). Performance of a full recital featuring the chief performing medium. Prerequisite: consent of instructors in applied area.

874. Professional In-Service Presentation Project. (2). Planning, organizing and presenting a three-hour in-service presentation (workshop) to in-service private piano teachers, perhaps in conjunction with an established community piano teacher's league, etc. Available as a terminal requirement alternative in lieu of performance recital in the Master of Music (piano pedagogy emphasis). Students approved for this terminal requirement option will be required to perform a major piano work prepared at acceptable recital level, during semester jury examination within the final year (two semesters) of the degree program. Requires approval of piano performance area faculty. Prerequisite: departmental consent.

Musicology-Composition

Graduate Faculty

Professors: William E. Mathis (associate dean), Walter A. Mays, John W. Thompson, Bertil van Boer (director, musicology-composition)

Associate Professor: Katherine Murdock

Assistant Professor: Dean Roush

Master of Music

Emphasis in Music History-Literature

Completion of a Master of Music (MM) degree, history-literature concentration, requires a demonstrated reading proficiency in one of three languages: German, French, or Italian. Students must demonstrate proficiency by satisfactorily completing the Graduate School Foreign Language Test designed by the Educational Testing Service or by completing a departmental language translation exam.

A thesis also is required for the degree. The general requirements for the MM degree are summarized at the beginning of the School of Music section.

Courses for Graduate/Undergraduate Credit

523. Form and Analysis. (2). Extensive analysis of the forms and formal processes of musical literature. Prerequisite: Mus. C. 228.

531. Introduction to Electronic Music. (2). Basic techniques of electronic music. Directed toward musicians who wish to use the electronic medium in teaching, performing or communicating through music in any way.


561. 18th Century Counterpoint. (2). Counterpoint devices of the 18th century as found in the works of J. S. Bach. Prerequisite: Mus. C. 228.


597-598. Organ Literature and Practice. (1-1). Performance and discussion of works for the instrument of all periods; study of organ design and construction; and practice in aspects of service playing, such as hymn playing, modulations, accompanying and improvisation. Required of all organ majors. Repeatable.
Prerequisite: Mus. C. 228 or departmental consent.

616. Symphonic Literature. (3). An advanced course in orchestral literature covering the development of the symphonic music from Baroque to the present day. The course is designed primarily for music majors who have already had Mus. C. 334Q and 335Q.

623. Opera Literature. (3). A comprehensive survey of Italian, German, French, Russian, English and American opera literature from the 17th century to the present. Mus. C. 113 is strongly recommended before taking the course. Should be only upper division or graduate students. Not limited to music majors.

624. Oratorio and Cantata Literature. (3). A study of the solo vocal literature of the larger sacred and secular forms from the 17th century to the present. Not limited to music majors.

641. Orchestration. (2). The study of instrumentation, emphasizing idiomatic scoring for various instrumental combinations with an emphasis on orchestral literature covering the Baroque to the present day. The course is designed primarily for music majors who have consent.

645. Choral Arranging. (2). Scoring for women’s, men’s and mixed choruses. Includes performance and analysis of student’s arrangements in class. Prerequisites: Mus. C. 228 and 230.

659-660. Applied Composition. (2-2). Individual study in musical composition emphasizing writing for both small ensembles and large groups in the larger forms. Repeatable. Prerequisites: Mus. C. 550 and instructor’s consent.

661. 16th Century Counterpoint. (2). Analysis and application of the contrapuntal composition techniques of the 16th century. Prerequisite: Mus. C. 228.

671. Chromatic Harmony. (2). Advanced study of chromatic harmonic materials of all periods with special attention to the 19th century. Emphasizes analysis and creative writing. Prerequisite: Mus. C. 228.

672. Contemporary Techniques. (2). Advanced study of various techniques in music composition emphasizing related literature and creative writing. Prerequisite: Mus. C. 228.

685. String Literature and Materials. (2). A survey and stylistic survey of music for solo strings and chamber combinations, beginning with the early Baroque period.


730. Musicology-Composition Workshop. (1-4). Repeatable for credit. Prerequisite: Instructor’s consent.

733. Choral Literature I. (2). A historical and stylistic survey of choral literature of the Renaissance and Baroque eras.


790. Special Topics in Music. (1-4). For individual or group instruction. Repeatable with departmental consent.

791-792. Seminar in Music History. (3-3). Develops areas of interest in music history as time permits. Makes no effort at a chronological survey. Includes ideas evolving the most interest and considered by the instructor to be of the greatest professional benefit when interest warrants.

Courses for Graduate Students Only

830. Seminar in Music Theory. (3). An analytical study of the materials used in musical composition from antiquity to the present, employing analytical approaches such as Schenker, Hindemith and serial techniques. Develops analytical perspective rather than composition.

840A-C. Seminar in the Techniques of Composition. (2). Examines the nature of compositional techniques through selected works in different media: (A) large ensembles, (B) small ensembles and (C) solo literature. Prerequisites: Mus. C. 671, 672 and 641, or departmental consent.

841-842. Special Project in Music. (1-3; 1-3). Individually supervised study or research emphasizing the professional needs of the student. Repeatable for credit. Prerequisite: Instructor’s consent.

852. Introduction to Bibliography and Research. (3). Techniques of research and development of bibliography in music and music education. Course must be elected the first available semester of enrollment in MM or MME programs.

859-860. Advanced Composition. (2-2). Original work in the large forms and a continuation of Mus. C. 659-660 Prerequisite: Mus. C. 660 or equivalent.


876. Thesis. (2).

893. Music of Antiquity Through the Renaissance. (3).

894. Music of the Baroque Era. (3).

895. Music of the 18th Century. (3).

896. Music of the 19th Century. (3).

897. Music of the 20th Century. (3).

School of Performing Arts

Leroy W. Clark, Chair

Dance

While a formal major in dance at the graduate level is not offered, the following courses are available for graduate credit.

Courses for Graduate/Undergraduate Credit

501. Modern Dance IV. (3). Continuation of Dance 401. Advanced level. Emphasizes professional technique and performance quality. Repeatable for credit. Prerequisite: Instructor’s consent or by audition.

505. Choreography III. (3). Focuses on the choreographic process. Students create choreographic studies for more than one dancer utilizing elements studied in Choreography I and II and exploring different choreographic approaches. Further exploration may include environmental, chance, and collaborative choreographies and multimedia approaches. Prerequisites: Dance 405 and concurrent enrollment in appropriate-level modern dance or ballet technique class.

510. Ballet IV. (3). Continuation of Dance 410. Advanced level. Emphasizes professional technique and performance quality. Repeatable for credit. Prerequisite: Instructor’s consent or by audition.

545. Methods of Teaching Dance. (3). Develops teaching skills for elementary schools, high schools, recreation centers, private and professional schools and universities through lesson planning and in-class teaching practice. Prerequisite: Dance 401 or 410.

565. Choreography IV. (3). Further work on the choreographic process begun in Choreography III. Class produces a concert of the students’ works at the end of the semester. Prerequisite: place in MME programs.

585. Practice in Teaching Dance. (3). Actual placement in teaching situation with responsibility of teaching ballet, modern and/or jazz in private studios, elementary, high schools, Ys or recreation centers. Prerequisite: Dance 453.

690. Special Topics in Dance. (1-6). For individual or group instruction. Repeatable for credit with departmental consent.

750. Dance Workshop. (1-4). Repeatable for credit.

Theatre

Graduate Faculty

Professors: Leroy W. Clark (chair), Bela Kiralyfalvi

Associate Professors: Judith Babnick, Joyce Cavarozzi

Assistant Professors: Jerald D. Blatt, Betty Monroe

Master of Arts in Communication

Wichita State’s Master of Arts in Communication degree program includes an emphasis in theatre/drama. See degree requirements and more information in
the Elliott School of Communication listing in the Fairmount College of Liberal Arts and Sciences section of the Graduate Bulletin.

The following courses may apply for graduate credit.

Courses for Graduate/Undergraduate Credit

510. Design Project. (1). Advanced work in the problems of stage lighting design, costume design or scenic design. With the permission and supervision of the appropriate faculty member, the student designs for specific productions for either Mainstage or Experimental Theatre. Repeatable twice for credit if taken in different design areas. Prerequisite: Instructor's consent.

516 & 517. Playwriting I and II. (3 & 3). Crosslisted as Engl. 517 and 518. The writing of scripts for performance. Emphasizes both verbal and visual aspects of playwriting. If possible, the scripts are performed. Prerequisite: Instructor's consent.

542. Advanced Acting. (3). Continued development of methods established in Thea. 243Q with additional emphasis on contemporary vocal and movement techniques. Prerequisites: Thea. 243Q and sophomore standing.

544. Advanced Stagecraft. (3). R; L arr. Explores advanced construction techniques for the fabrication of stage scenery and stage properties. Such operations may include welding, vacuum forming, carpentry, and working with a variety of new materials. Students complete a research project and presentation/demonstration of research findings. Independent projects relating to materials and techniques studied are pursued in arranged labs. Prerequisite: Thea. 244.

546. Scene Painting. (3). Presented with a lecture demonstration-studio arrangement. Explores various theatre painting materials and techniques enabling the student to develop skill as a scenic artist. Prerequisite: Thea. 244.

559. Directing II. (3). R; L arr. Staging and rehearsal techniques emphasizing the problems of the period and stylized play. Prerequisites: Thea. 259 or departmental consent and junior standing.

560. Theatre: Special Topics. (2-3). Designed to expand and strengthen the experience of the student academically and professionally. Study of developments in theatre that go beyond, or are related to, courses already offered will give students a much richer preparation for their field of study. Topics include new technology, new materials, contemporary explorations in performance, and in-depth study of production methods.

562. Advanced Oral Interpretation. (3). Intensive study and analysis of various forms of literature, the techniques of effective oral communication and the building of the individual or group concert recital. Arranged workshops and festivals. Prerequisites: Thea. 221Q and junior standing.

622. Academic Theatre Practicum. (2). The investigation and exploration of the theatrical act in the classroom situation within the University community. Reinforces the research, writing, directing and performing skills. Enrolled students functioning as a company, produce and perform for various disciplines on campus. Repeatable once for credit.

623Q. Development of the Theatre I. (3). Division A course/elective. The history of theatrical activity as a social institution and an art form from its beginnings to the 17th century. Includes representative plays, methods of staging and theatrical architecture of various periods.

624Q. Development of the Theatre II. (3). Division A course/elective. History of theatrical activity as a social institution and an art form from the 17th century to the present. Includes representative plays, methods of staging and theatrical architecture of various periods.

643. Styles in Acting. (3). Training in, and development of, the special techniques required for period or stylized plays with special emphasis on Greek, Shakespearean, and Restoration styles. Prerequisites: Thea. 243Q, 542 and junior standing.

647. Scene Design II. (3). Continuation of Thea. 344 with more advanced work in designing settings for the stage and including studies in scenicographic techniques and exercises in model building. Student designs settings for a production having a single set, a production requiring a simultaneous setting and a production using multiple settings. Requires no laboratory work in theatre production. Prerequisites: Thea. 244 and 344.

649. Stage Lighting II and Theatre Sound. (3). Continues the study and application of the theories and techniques of Thea. 345, emphasizing advanced concepts of design, and provides an introduction to theatre sound production. Prerequisite: Thea. 345.

511. History of Costume. (3). R; L arr. Historical and individual research of dress from ancient Egypt to present day emphasizing social, political, economic and religious influences. Theory and practice of adapting period styles to the stage. Prerequisite: Thea. 253 or departmental consent.

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

725. Dramatic Theory. (3). Critical examination of selected aesthetic theories of the theatrical arts and the relationship of the theories to major dramatic works and theatrical periods. Prerequisite: Thea. 623Q, 624Q or departmental consent.

728. Playscript Analysis. (3). Develops students' abilities to analyze playscripts from the point of view of those who face the task of staging them. Focuses on studying and testing practical methods of analysis developed by outstanding theatre directors, teachers and critics. Collective analysis and individual projects are part of the course work. Prerequisite: Thea. 623Q or 624Q.

580. Theatre Internship. (3-15). Advanced theatre production work as arranged by students in directing, acting, scenery, and lighting; costume design and construction; or theatre management with a professional theatre company. Prerequisite: junior standing or departmental consent. Total of internship activity applicable toward graduation is 15 credits.

Courses for Graduate Students Only

820. Investigation and Conference. (2-3). Cross-listed as Comm. 820. Directed research and experimentation for graduate students in some phase of (a) public address, (b) theatre history and production, (c) radio-television or (d) the teaching of speech. Repeatable for credit up to a total of six hours.

823. History of Dramatic Criticism. (3). A survey and analysis of major critical theories from Aristotle to the present.

824. Development of Modern Theatre Styles. (3). An examination of the major movements in the modern theatre since 1870. Emphasizes both literary and physical elements of styles.

The following abbreviations are used in the course descriptions: R stands for lecture and L for laboratory. For example, 4R; 2L means four hours of lecture.
agencies such as state health department, PRO agency, HSA. More emphasis on microcomputers than on larger computers with more statistical and graphical capacity. Prerequisite: HAE 605 or instructor’s consent.

686. Seminar in Health Care Administration. (3). In-depth discussion and analysis of selected topics in health care administration. Topics vary from semester to semester and include examination of specific financial, managerial and operational problems and characteristics of health service organizations and agencies. Prerequisites: HAE 503 and at least one other HAE course.

Course for Graduate Students Only

808. Epidemiology of Chronic Disease. (3). The study of the distribution and determinants of chronic diseases and injuries in human populations. The frequencies and types of illnesses and injuries in groups of people and the factors that influence their distribution. Prerequisites: graduate school enrollment, HAE 605 or instructor’s consent.

Health Science
Although there is no graduate degree in health science, the following courses are available for graduate credit.

Courses for Graduate/Undergraduate Credit

501. Instructional Design in Health Education. (3). Assists health professionals construct health science curriculum. Emphasizes identifying various curriculum models and applying educational principles, writing behavioral objectives and the acquisition of supplementary materials. Special emphasis to program development in school, community and patient education settings. Prerequisite: junior, senior or graduate standing in one of the professional programs or instructor’s consent.

510. Clinical Departmental Management. (3). Presents concepts and methods of clinical departmental management through lectures, discussion, group interaction and individual problem solving and situational analysis projects. Provides information pertinent to management majors, department directors, shift supervisors and staff personnel who need an understanding of departmental management of clinical revenue generating departments. Prerequisites: senior standing or greater in health professions and Mgmt 360 or instructor’s consent.

511. Neuroanatomy and Neurophysiology. (3). 2R; 2L. Study of the structure, physiology and functions of the central and peripheral nervous systems. Prerequisite: HS 310 or CNS 214.

521. Independent Study. (1-6). Offers reading and conference experience to complete a course requirement or provide enrichment in a specific area. Prerequisite: upper-division or graduate standing or program chairperson’s consent.

531. Applied Principles of Nutritional Support and Therapy. (3). A study of the principles of nutritional support and diet therapy. Investigates the dietary concerns of a variety of clinical disorders including gastrointestinal disorders, diabetes mellitus, cancer, burns, obesity and weight loss, kidney and cardiovascular disease, parenteral and enteral nutrition and surgical conditions. Discusses nutritional assessment, data interpretation, case plan development, record keeping and client communications. Prerequisite: HS 331Q or instructor’s consent.

575. Special Topics or Selected Topics. (1-4). Lecture/discussion; focuses on a discrete area content relevant to the health disciplines. In-depth study of particular topic or concept, including didactic and current research findings and technological advances relevant to the topic. Open to nonmajors. Repeatable up to six credit hours with program consent.

700. Gross Anatomy. (6). 3R; 9L. For students in the physical therapy program. Study of the structure of the human body including embryology; emphasizes integration of embryological and anatomical information with human functional abilities. Prerequisite: four semesters of biological sciences or program consent.


705. Health Services Research. (3). An examination of statistical research methods used by health care professionals and organizations. Includes presentation of information, measures of location and variation, probability, expectation, sampling distributions, hypothesis testing, analysis of variance and simple research designs. Prerequisite: upper-division statistics course or consent of MHS graduate coordinator.

706. Characteristics of the Adult in Professional Education. (3). Helps students understand the process of accomplishing professional development throughout the lifespan of the individual. Students explore the concept of professionalization and study the processes of health education, the demands of practice and the learners themselves. There are opportunities to apply knowledge, skills and abilities to real life situations through discussions, readings and reports in class. Prerequisites: HS 501 and 708.

708. Teaching and Learning Strategies in Health Science. (3). Examines the various means of presenting health knowledge and couples these teaching strategies with the audiences and types of student bodies that will receive this knowledge. Examines the nature of health care curriculum in depth, and procedures for developing and improving them. Explores health education curricula. Prerequisite: program consent.
712. Administration of Hospital-Based Education. (3). 2R. 2L. Historical perspective of hospital health education, resources and requirements for providing institution-wide educational services. Identification and analysis of educational needs, hospital's role in community health planning and program evaluation.

720. Neurosciences. (3) 3R; 2L. Integration of embryology, anatomical structure, physiology and functions of the central and peripheral nervous systems with human functional abilities. Prerequisite: HS 700 or program consent.

750. Workshop in Health Related Professions. (1-4). An examination of relevant topics directly and/or indirectly related to the delivery of health care service.

Courses for Graduate Students Only

802. Introduction to Public Health. (3). Introduction to the organization and activities of the public health system, its roles and problems. Introduction to administrative problem-solving as a structured process. Prerequisite: instructor's consent.

804. Principles of Statistics in the Health Sciences. (3). An introductory graduate level course concerning the concepts of statistical reasoning, statistical principles, and their role as the scientific basis for clinical research, and public health research and practice. Prerequisite or corequisite: HS 802.

808. Principles of Epidemiology. (3). An introductory graduate level course concerning epidemiologic principles and how these form the scientific basis for public health. Prerequisite or corequisite: HS 802.

814. Social and Behavioral Aspects of Public Health. (3). Examines the characteristics beliefs and behaviors of individuals and groups involved in the process of health care. Draws on concepts and principles of the social, behavioral, and clinical sciences, especially dynamics that define the interactions of providers and consumers of health care. Explores why people react to perceived symptoms the way they do, the reasons providers respond as they do to patients, different social attributes, the factors which predispose individual reactions to illness and its correlates, and the effects on health of societal agreements and expectations. Prerequisite or corequisite: HS 802.

815. Environmental Health. (3). A survey course in environmental health designed to provide an understanding of the fundamental theory and methods for the control of disease. Includes environmental law, disease systems, water supplies, plumbing, waste water treatment, food sanitation, vector control, recreation sanitation, solid waste disposal, housing sanitation, and air pollution. Prerequisite or corequisite: HS 802.

818. Fundamental Research Methods in Public Health. (3). Stresses mastery of basic concepts and techniques of research methodology used in the health professions. Focuses on acquisition of the generic tools of research design and application to the attack of real-world problems confronting those who deliver health care, those who facilitate and/or manage the delivery of care, those who conduct clinical and health services studies, and those who make policy affecting the delivery arrangements. Prerequisites: HS 804 and 808.

820. Advanced Research Methods in Community and Clinical Settings. (3). Study research methods for use in any of the health science disciplines. Topics include power and sample size, randomized control trials, and integrated qualitative-quantitative techniques. Prerequisites: HS 814 and 818.

822. Advanced Research Methods. (3). Advanced topics in health services research: advanced descriptive analysis, advanced multivariate analysis, modeling, causal interpretation, issues in evaluation, proposal writing, special issues in research in health are settings, and problems encountered on research projects. Prerequisite: HS 818.

824. Advanced Epidemiological Methods. (3). Additional statistical techniques and their application in the analysis of public health data are presented with special emphasis on the analysis of cross-sectional, retrospective, longitudinal, and case-control data. Prerequisites: HS 804 and 808.

825. Health Care Advertising. (3). An examination of marketing principles as applied in the health care sector. Recognize, discuss, and apply marketing principles to health care environments. Prerequisite: Mkt. 800.

826. Health Policy. (3). Examines the forces shaping key aspects of health care policy. Analyzes the political, economic, social, clinical, and scientific factors which result in given policy decisions. Particular attention is paid to the pivotal role that health services research plays in the process, including its centrality to the link between policy and the management of public health problems.


830. Issues in Health Services. (3). An in-depth look at current issues facing health professionals. Topics, presented in lecture and student presentations and discussed in small groups, include health reform, access to care, other system issues, and organizational trends and strategies. Topics are critiqued with regard to public and private goals, consumer and provider interests, and ethics.

832. Quality Assurance of Health Care. (3). Covers issues of quality assurance in health care provision, including definition and measurement of quality.

834. Financing Health Care Services. (3). Provides an examination of the principles of financial analysis and management used in health care institutions which are most useful to non-financial personnel. It emphasizes understanding and application of general financial concepts to the health setting and includes consideration of financial organization, sources of operating revenues, budgeting, and cost allocation methods.

840. Practicum/Project. (6). Academic studies are linked with actual practice through observation and participation in the administrative and educational processes of public, voluntary, and private health organizations, under the direction of a preceptor from the host agency.

875. Special Topics. (3) New or special topics presented based on sufficient demand. Prerequisite: instructor's consent.

885. Thesis. (1-3). Repeatable to a maximum of six hours. Prerequisite: consent of thesis advisor.

Health Services Organization and Policy

Graduate Faculty
Professor: Michael Long (chairperson, program director, MPH)
Associate Professors: Diane Roberts (dean, College of Health Professions), James H. Swan
Assistant Professors: Stephen Gladhart (assistant dean), Mary Lescoe-Long, Ruth B. Pickard

Master of Public Health (MPH)
MPH Kansas is a joint degree program of Wichita State University and the University of Kansas which offers an opportunity to actively involve current public health practitioners, other health profes-
sionals, and physicians specializing in preventive medicine in a manner that enhances the quality of instruction and provides a greater depth of expertise and experience. It is designed to meet the needs of working health care professionals in the state who may complete the degree on either a part-time or full-time basis through evening course work.

The program at WSU is a 36 credit-hour program with the thesis option and 39 credit hours with the practicum-project option. The MPH student will develop competencies in the five basic public health specialty areas, including health services administration, epidemiology, biostatistics, social/behavioral sciences, and environmental health. The student must complete 15 core course hours and the six-hour block of the thesis or nonthesis option, as well as 15 to 18 additional credit hours in one area of concentration, as follows:

<table>
<thead>
<tr>
<th>Course courses</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>HS 804, Principles of Statistics in the Health Sciences</td>
<td>3</td>
</tr>
<tr>
<td>HS 808, Principles of Epidemiology</td>
<td>3</td>
</tr>
<tr>
<td>HS 812, Health Care Policy and Administration</td>
<td>3</td>
</tr>
<tr>
<td>HS 814, Social and Behavioral Aspects of Public Health</td>
<td>3</td>
</tr>
<tr>
<td>HS 816, Environmental Health</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

**Program electives** .................................. 15-18

**Thesis option**

<table>
<thead>
<tr>
<th>Course codes</th>
<th>Hrs.</th>
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</thead>
<tbody>
<tr>
<td>HS 818, Fundamental Research Methods in Public Health</td>
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</tr>
<tr>
<td>HS 885, Thesis</td>
<td>1-3</td>
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<td><strong>Total</strong></td>
<td><strong>36-39</strong></td>
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</table>

**Practicum-project option**

<table>
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<tr>
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<th>Hrs.</th>
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<tbody>
<tr>
<td>HS 840, Practicum/Project</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>6</strong></td>
</tr>
</tbody>
</table>

**Degree Requirements**

The award of the MPH degree requires 36 or 39 credit hours plus successful completion of the thesis or practicum-project, respectively, and successful completion of the student portfolio (pass/fail). Students are expected to maintain a B average or better to remain a degree candidate.

**Admission Requirements**

Admission to the MPH degree program requires that the applicant:

1. **Have a bachelor's degree (or its equivalent) and a grade point average of 3.000 or its equivalent, awarded by a regionally accredited institution of higher learning or a foreign university with substantially equivalent requirements for the bachelor's degree.**

2. **Demonstrate one or more years of responsible work experience in the health field, or a degree in a recognized health profession, or other evidence of training and/or experience indicative of adequate preparation for the curriculum. Assessment of work experience will be conducted on the basis of written job description(s) or other description(s) of the scope of duties obtained from prior or current employer(s).**

3. **Has obtained an averaged percentile score of 50th percentile or better on the Graduate Record Examination (GRE) or has successfully completed a postbaccalaureate degree program.** Scores from other nationally recognized tests of aptitude for postbaccalaureate study may be substituted for the GRE, e.g., Medical College Admissions Test (MCAT), Law School Aptitude Test (LSAT), Graduate Management Admission Test (GMAT), Dental School Admission Test (DSAT).

4. **Submit an official report of completion of the Test of English as a Foreign Language (TOEFL) with a composite score of 570 or better if the native language is not English. This report must be no more than two years old at the time it is reviewed by the MPH admissions committee.**

To be considered for admission, applicants should assure receipt of the following at the institution to which the application is addressed:

1. **Official transcript(s) from all institutions of higher learning attended.**
2. **Official report of Graduate Record Examination scores.**
3. **Three (3) letters of recommendation from employers, instructors, or other persons with knowledge of the applicant that is pertinent to an assessment of their potential for success in the MPH program and/or subsequent career in public health or a related discipline.**
4. **A properly completed Application for Admission to MPH Program of Study.**
5. **A resume or curriculum vita.**
6. **A completed graduate school application for the University of Kansas or Wichita State University, as appropriate.**

**Courses for Graduate/Undergraduate Credit**

<table>
<thead>
<tr>
<th>Course codes</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>638. Concepts of Quality</td>
<td>3</td>
</tr>
<tr>
<td>641. Health Care for Special Populations</td>
<td>3</td>
</tr>
</tbody>
</table>

**Medical Technology**

Graduate Faculty

**Professor:** James A. Jackson (assistant dean, Graduate School)

**Associate Professor:** Mary Conrad (chairperson)

**Assistant Professors:** Jo Lynne Campbell, Diana Cochran, Linda S. Hogan

Although there is no graduate degree in medical technology, the following courses are available for graduate credit.

**Courses for Graduate/Undergraduate Credit**

<table>
<thead>
<tr>
<th>Course codes</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>550. Clinical Endocrinology</td>
<td>3</td>
</tr>
</tbody>
</table>

**Description:**

Endocrine hormone functions and the practical application of modern clinical laboratory methods for the diagnosis of functional hormonal disorders. Open to nonmajors in medical technology. Prerequisites: BIOL 223 or equivalent and CHEM 101Q or 111Q or equivalent or instructor's consent. An understanding of biochemistry is recommended.
Method Evaluation and Selection. (3). Presents an objective, practical approach to the evaluation of laboratory methodologies. This approach incorporates the use of statistical analysis evaluation of technology and clinical application. Prerequisites: Med. T. 459, 469, 479 and 498, or equivalent, HS 705 or instructor's consent.

Hematologic Neoplasms. (3). Deals and 498, or equivalent, -IS 705 or instructor's consent.

Method Evaluation and Selection. (3). Presents an objective, practical approach to the evaluation of laboratory methodologies. This approach incorporates the use of statistical analysis evaluation of technology and clinical application. Prerequisites: Med. T. 459, 469, 479 and 498, or equivalent, HS 705 or instructor's consent.

Hematologic Neoplasms. (3). Deals and 498, or equivalent, -IS 705 or instructor's consent.

Admission Requirements
Admission to the program requires that the student:
1. Have a bachelor's degree from an accredited four-year institution acceptable to the Graduate School.
2. Have a cumulative grade point average of 3.000 in the last 60 hours of graded undergraduate courses, in prerequisite courses, and in all math and science courses.
3. Show evidence of completing the following:
   - Biology—two semesters of introductory biology (which would lead to a biology major) with a laboratory
   - Anatomy and Physiology—eight to 10 semester hours with laboratory
   - College Chemistry—two semesters with laboratory
   - College Physics—two semesters with laboratory
   - English Composition—two semesters
   - Computers—one semester computer applications course or the equivalent
   - Speech—one semester
   - Mathematics—college trigonometry or equivalent
   - Statistics—one semester
   - Social Sciences—psychology, sociology, plus four more courses in any social science area
   - Humanities—ethics, plus four more courses in humanities area
4. Show evidence of 20 hours of observation or work in one or more physical therapy settings.

To be reviewed for admission, applicants should do the following:
1. Seek an application packet from the Department of Physical Therapy.
2. Submit the designated Application for Admission and supporting transcripts to the Graduate School.
3. Submit the designated Physical Therapy Application, along with three references by the published deadlines.

Applications are reviewed on a rolling admissions basis. Applicants will be notified of their admission status by the Graduate School. Applicants should be aware that their records can only be reviewed when all materials have been submit and they have met eligibility rules. Once an applicant has been admitted, he or she will be asked to submit a $100 nonrefundable tuition deposit to reserve a space for the fall admission. Once the student enrolls, this money will be counted toward payment of tuition.

Degree Requirements
The student must maintain a 3.000 grade point average and a C or better in each of the following courses:

First Year

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>Fall</td>
<td>HS 700, Gross Anatomy</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>PT 705, Clinical Medicine I</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>PT 710, Principles of Physical Therapy I</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>PT 712, Research I</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>PT 720, Neurosciences</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PT 715, Seminar II</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>PT 722, Research II</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>PT 726, Clinical Medicine II</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>PT 730, Principles of Physical Therapy II</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>PT 735, Physical Therapy Theory Procedures I</td>
<td>4</td>
</tr>
<tr>
<td>Summer</td>
<td>PT 800, Clinical Education I</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>PT 810, Principles of Physical Therapy III</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>PT 815, Physical Therapy Management I</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PT 820, Physical Therapy Management II</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>PT 825, Seminar II</td>
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<tr>
<td></td>
<td>PT 826, Clinical Medicine III</td>
<td>2</td>
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<td></td>
<td>PT 835, Physical Therapy Theory and Procedures II</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>PT 840, Independent Study</td>
<td>1</td>
</tr>
</tbody>
</table>
| Second Year
| Fall     | PT 820, Physical Therapy Management II            | 2       |
|          | PT 830, Principles of Physical Therapy IV         | 3       |
|          | PT 840, Independent Study                         | 1       |
|          | PT 843, Seminar III                              | 1       |
|          | PT 850, Clinical Education II                     | 6       |
| Summer   | PT 860, Clinical Education III                    | 6       |
|          | PT 870, Clinical Education IV                     | 6       |

The program prepares individuals to enter beginning practice as a physical therapist. The graduates are prepared to evaluate neuromuscular, musculoskeletal, sensorimotor, and related functions to determine the degree of muscle strength, motor development, motion, respiratory ventilation, or peripheral circulatory efficiency of individuals. Following referrals from physicians, podiatrists, or dentists, the physical therapist plans and implements appropriate treatment programs for their clients. Graduates are prepared to work in preventive health care as well as rehabilitative care. The program requires full-time study for a period of 24 consecutive months. Students enter the program in the fall semester only.

Physical Therapy
Graduate Faculty
Associate Professors: Mohsen El-Sayyad, Barbara Smith
Assistant Professor: Susan Hanrahan

Master of Physical Therapy
The program prepares individuals to enter beginning practice as a physical therapist. The graduates are prepared to evaluate neuromuscular, musculoskeletal, sensorimotor, and related functions to determine the degree of muscle strength, motor development, motion, respiratory ventilation, or peripheral circulatory efficiency of individuals. Following referrals from physicians, podiatrists, or dentists, the physical therapist plans and implements appropriate treatment programs for their clients. Graduates are prepared to work in preventive health care as well as rehabilitative care. The program requires full-time study for a period of 24 consecutive months. Students enter the program in the fall semester only.

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</tr>
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<td>PT 870, Clinical Education IV</td>
<td>6</td>
</tr>
</tbody>
</table>
Special Requirements

Students will be required to purchase uniforms and other clinical apparel, professional liability insurance, health insurance coverage and specified immunizations as well as submit evidence of an annual physical examination while in the program. Students must also be certified in cardiopulmonary resuscitation (CPR) prior to entering the clinical rotations.

Students are expected to provide their own transportation to and from the health care facilities used for clinical experiences. During clinical assignments outside Wichita, students may be required to pay all living and travel expenses.

Students are referred to the Department of Physical Therapy Student Handbook for more details on special departmental policies and procedures.

Courses for Graduate/Undergraduate Credit


710. Principles of Physical Therapy I. (5). 3R; 4L. Development of ability to differentiate causes of musculoskeletal problems and development of basic treatment programs using scientific rationale for treatment selection. Prerequisite: program consent.

712. Research I. (1). 1R. Discussion and application of principles of critiquing scientific literature. Prerequisite: program consent.

715. Seminar I. (1). 1R; 5L. Discussion of information from readings and other sources regarding the profession, settings for health care delivery, professionalism, and psychosocial aspects of health care. Prerequisite: program consent.

722. Research II. (1). 1R. Continuation of PT 712: development of the research proposal. Prerequisite: PT 712.

726. Clinical Medicine II. (2). 2R. Survey of medical conditions seen by physical therapists emphasizing causes, effects and treatments. Emphasizes medical model. Coordinated by program. Prerequisite: PT 705.

730. Principles of Physical Therapy II. (5). 3R; 4L. Continuation of PT 710, adding, advanced concepts and techniques to differentiate causes of musculoskeletal problems and to develop treatment programs using scientific rationale for selection of programs. Prerequisite: program consent.


790. Selected Topics in Physical Therapy. (1-4). Intensive study of current issues, technology, research, and application of selected topic. Repeatable up to 6 credits. Prerequisite: program consent.

799. Experimental Courses. (1-4). One-time course offerings. Prerequisite: program consent.

Courses for Graduate Students Only

800. Clinical Education I. (6) 4P. Introduction to physical therapy care in varied settings requiring communication and interpersonal relationship skills; application of basic physical therapy procedures; beginning professional socialization; beginning development of a generalist in physical therapy. Prerequisite: program consent.

810. Principles of Physical Therapy III. (4). 2R; 6L. Correlation of previous course materials and the use of scientific rationale to develop physical therapy evaluations and treatments for patients with specific orthopedic medical diagnoses. Also discusses prevention of musculoskeletal problems and utilization of appliances. Prerequisite: program consent.

815. Physical Therapy Management I. (3). 3R. Study of payment systems, legal aspects of physical therapy, assurance of quality physical therapy care. Includes peer review, documentation, legal and ethical aspects, fiscal considerations, marketing, communication with the public, private sector and government officials. Prerequisite: program consent.

820. Physical Therapy Management II. (2). 2R. Study of management systems including assessment, planning, organization, control and evaluation methods. Includes personnel management, fiscal considerations, electronic device utilization and management styles. Prerequisite: program consent.

825. Seminar II. (1). 1R; 5L. Discussion of teaching and learning theories as they apply to physical therapy education of patients, students, health professionals, and community. Includes methods of evaluating instruction, content, strategies, and learners. Prerequisite: program consent.

826. Clinical Medicine III. (2). 2R. Continuation of PT 726. Prerequisite: PT 726.

830. Principles of Physical Therapy IV. (3). 2R; 2L. Integration of evaluations, treatment modalities and program planning previously presented in the curriculum to develop and to evaluate specialty services in physical therapy including arthritis, diabetes, burns and obstetrics-gynecology; developmental investigation of clinical protocols to screen well babies, work situations for injury prevention and children for scoliosis. Prerequisite: program consent.

835. Physical Therapy Theory and Procedures II. (4). 2R; 2L. Development of physical therapy evaluations and treatment programs for cardiopulmonary, neurologic and other long-term rehabilitation patients. Assistive devices, home evaluations and problems with architectural barriers are incorporated into discharge planning. Prerequisite: program consent.

836. Physical Therapy in Pediatrics. (2). Provides supplemental skills for the entry-level physical therapist in the area of pediatrics. Also includes psychosocial elements, medical complications, health promotion and prevention information as it pertains to the three special populations listed. Prerequisite: PT 730.

837. Special Populations. (3). Expands upon basic evaluation and treatment skills of geriatrics, women's health, and industrial medicine regarding physical therapy practice. Also includes psychosocial elements, medical complications, health promotion and prevention information as it pertains to the three special populations listed. Prerequisite: PT 735.

840. Independent Study. (1). Individual study with objectives developed in collaboration with a departmental faculty member. Repeatable for credit with program consent. Prerequisite: program consent.

845. Seminar III. (1). 1R; 5L. Discussion of information from readings and other sources regarding employment, psychosocial and international aspects of physical therapy. Prerequisite: program consent.

850. Clinical Education II. * (6). 4OP. First in a series of three courses offering continued development of clinical management of patients in varied clinical settings. Includes managerial aspects of care, teaching and some opportunities for clinical research. Prerequisite: program consent.


890. Thesis. (1-6). Repeatable to a maximum of six hours. Prerequisites: enrollment in graduate studies and consent of thesis advisor.

In the series of three clinical courses, students experience four different settings including general and rehabilitation practices and a selected area of specialization not limited to pediatrics, geriatrics, and orthopedics. The order of the settings is flexible. There is an increase in the level of expectation of performance with each clinical course which is guided by the evaluation process.

School of Nursing

Graduate Faculty
Professor: Donna Hawley (director of graduate program)
Associate Professor: Alicia Huckstadt,
Master of Science in Nursing

The program is individualized to meet the needs and professional goals of each student. The curriculum has been developed to accommodate part-time study (six or fewer credit hours), as well as full-time study (9-12 credit hours). The purpose of the graduate program is to prepare advanced practitioners who function as clinical nurse specialists, nurse practitioners, administrators, and educators.

Admission Requirements

In addition to the general University requirements for admission to graduate studies, the School of Nursing requires:

1. A bachelor’s degree with a major in nursing from an NLN-accredited school. Applicants with degrees in other disciplines will be considered and counseled on an individual basis.
2. Admission to the Graduate School at Wichita State University.
3. Cumulative grade point average of 3.000 or better in the last 60 hours for full standing.
4. School of Nursing approval.
5. Evidence of Registered Nurse licensure.
6. Coverage by professional liability insurance in the amount of $1/3 million individual/aggregate, to be renewed annually.
7. One year of nursing practice following professional licensure is recommended.
8. Admission to the Family Nurse Practitioner concentration requires a separate application.

Students will be admitted conditionally until all requirements for admission are completed. Items 5 and 6 must be completed before a student begins any clinical course and prior to filing the plan of study. Approval of the plan of study will clear the admission status from conditional to full standing.

Prerequisites: A course in statistics accepted by the School of Nursing and an undergraduate research course are required. Prerequisite courses are not credited to the degree.

Degree Requirements

Satisfactory completion of the following courses is the minimum requirement for the MSN degree (with the exception of Family Nurse Practitioner):

**Phase I (Core)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurs. 701, Advanced Health Assessment</td>
<td>2</td>
</tr>
<tr>
<td>Nurs. 702, Lab for Advanced Health Assessment</td>
<td>2</td>
</tr>
<tr>
<td>Nurs. 703, Scientific Inquiry I</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 705, Scientific Inquiry II</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 715, Advanced Nursing Practice: Roles and Issues</td>
<td>3</td>
</tr>
</tbody>
</table>

**Phase II (Concentration and Role)**

1. Clinical Concentrations: Student selects one (12 hours)

**Medical/Surgical**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurs. 831, Clinical Concepts and Outcomes of Care</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 834, Adult Nursing Practicum (may be divided into two three-hour courses)</td>
<td>6</td>
</tr>
<tr>
<td>Nurs. 839, Adult Nursing II</td>
<td>3</td>
</tr>
</tbody>
</table>

**Community Health**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
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</thead>
<tbody>
<tr>
<td>Nurs. 805, Primary Care I: Health Promotion throughout the Lifespan</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 831, Clinical Concepts and Outcomes of Care</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 834, Adult Nursing Practicum (may be divided into two three-hour courses)</td>
<td>6</td>
</tr>
</tbody>
</table>

**Parent/Child**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurs. 829, Parent-Child Nursing: The Individual as the Client</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 832, Parent-Child Nursing Practicum I</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 835, Nursing the Family as the Client</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 836, Nursing the Family: Practicum</td>
<td>3</td>
</tr>
</tbody>
</table>

**Psychiatric/Mental Health**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurs. 819, Foundations of Psychiatric/Mental Health Nursing</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 822, Psychiatric/Mental Health Nursing: Practicum I</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 843, Perspectives in Psychiatric/Mental Health Nursing</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 844, Psychiatric/Mental Health Nursing: Practicum II</td>
<td>3</td>
</tr>
</tbody>
</table>

**Administration**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurs. 811, Foundations of Nursing Administration</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 812, Nursing Administration Practicum</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 827, Resource Management in Nursing</td>
<td>3</td>
</tr>
</tbody>
</table>

2. Functional Roles: Student selects one (6-12 hours)

**Administration**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurs. 811, Foundations of Nursing Administration</td>
<td>3</td>
</tr>
</tbody>
</table>

**Education**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurs. 813, Foundations of Nursing Education</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 814, Nursing Education Practicum</td>
<td>3</td>
</tr>
</tbody>
</table>

**Clinical Nurse Specialist**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurs. 715, Advanced Nursing Practice: Roles and Issues (core course)</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 808, Clinical Nurse Specialist: Practicum</td>
<td>3</td>
</tr>
</tbody>
</table>

*For Administration majors only*

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurs. 812, Nursing Administration Practicum</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 845, Seminar in Nursing Administration</td>
<td>3</td>
</tr>
</tbody>
</table>

**Informatics**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DS 875, Computer-Based Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>DS 884, Database Planning and Management</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 817, Health Care Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 818, Health Care Information Systems: Practicum</td>
<td>3</td>
</tr>
</tbody>
</table>

**Phase III (Final Core)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurs. 851, Clinical Data Management</td>
<td>3</td>
</tr>
<tr>
<td>Electives or selected courses</td>
<td>0-6</td>
</tr>
<tr>
<td>Total hours required</td>
<td>36-42</td>
</tr>
</tbody>
</table>

Supporting hours option: These hours must support the student’s clinical concentration or functional role. Students electing not to do a thesis or project complete 42 hours rather than 36 hours.

Electives: 0-6

Total hours required: 36-42

Phase I courses must be completed before beginning Phase II courses. The student, with an academic adviser, will determine the subsequent sequencing of coursework. Prerequisite courses are completed prior to enrollment in nursing courses; elective courses may be taken, with department approval, prior to enrollment in nursing courses.
Family Nurse Practitioner Concentration

Students completing the 40 hours of prescribed courses (all courses listed below except Nurs. 703 and Nurs. 705) are eligible for certification as an ARNP-Nurse Practitioner in Kansas. Students completing the 46 hours listed will receive a Master of Science in Nursing and are eligible for certification in Kansas as both an ARNP-Nurse Practitioner and as an ARNP-Clinical Nurse Specialist in primary care.

An additional application is required by the School of Nursing for admission to this specialty.

The curriculum plan follows:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurs. 701, Advanced Health Assessment</td>
<td>2</td>
</tr>
<tr>
<td>Nurs. 702, Lab for Advanced Health Assessment</td>
<td>1</td>
</tr>
<tr>
<td>Nurs. 703, Scientific Inquiry I</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 704, Scientific Inquiry II</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 715, Advanced Nursing Practice: Roles and Issues</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 793, Advanced Pathophysiology</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 795, Applied Drug Therapy</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 796, Nursing in Specialized Setting</td>
<td>2</td>
</tr>
<tr>
<td>Nurs. 804, Primary Care I: Practicum</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 805, Primary Care I: Health Promotion throughout the Lifespan</td>
<td>4</td>
</tr>
<tr>
<td>Nurs. 809, Primary Care II: Management of Common Health Problems</td>
<td>4</td>
</tr>
<tr>
<td>Nurs. 810, Primary Care II: Practicum</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 831, Common Concepts and Clinical Outcomes</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 849, Preceptorship</td>
<td>6</td>
</tr>
<tr>
<td>Nurs. 851, Clinical Data Management</td>
<td>3</td>
</tr>
</tbody>
</table>

**Concentration Total:** 46

Comprehensive Examination

A comprehensive written examination is required of all graduate nursing students and generally is completed during the student's last semester.

Courses for Graduate/Undergraduate Credit

505. Directed Study in Nursing. (1-4). Elective. Individual study of the various aspects and/or problems of professional nursing. Repeatable. Prerequisite: school consent.


531. Nursing and Computer Technology. (3). Focuses on basic terminology and use of computer software for nursing education, practice and administration. Opportunity for hands-on experience with microcomputers. Prerequisite: admission to the nursing program or instructor's consent. Previous knowledge of computers or computer technology is not required.

543. Women and Health Care. (3). Cross-listed as Wom. S. 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 nonnursing majors.

700. Assessment of Pediatric and Adolescent Clients. (3). 2R; 3L. A theoretical and clinical laboratory experience in the assessment of pediatric and adolescent clients. Open admission to RN and graduate students.

701. Advanced Health Assessment. (2). Designed to assist students to refine history taking, psychosocial assessment and physical assessment skills. Content focuses on assessment of individuals throughout the life span. Emphasis on detailed health history taking, differentiation, interpretation and documentation of normal and abnormal findings. Includes lecture, discussion, demonstration and practice. Prerequisite: admission to graduate nursing program.

702. Advanced Health Assessment Laboratory. (1). Companion laboratory course for Nurs. 701. Apply history taking and assessment skills within a laboratory setting. Emphasizes differentiation, interpretation and documentation of normal and abnormal findings. A complete history and physical examination of a client will be required. Prerequisite: admission to graduate nursing program.

703. Scientific Inquiry I. (3). Emphasizes the role of theory in scientific inquiry in nursing. The evolution of nursing theory is traced and projections for the future are explored. Relationships among theory, research and practice are addressed. Selected models/frameworks relevant for nursing are analyzed. Prerequisite: admission to graduate nursing program.

704. Health Maintenance of the School Age Child. (3). 2R; 3L. Examines and applies major theories, clinical concepts and research studies related to school health nursing. Open to RN and graduate students.

705. Scientific Inquiry II. (3). Builds on Scientific Inquiry I. Discusses the research process in relationship to concepts, frameworks/theories. Various methodological approaches to research are explored. Consideration is given to current issues in nursing research. The research process is demonstrated in a preliminary proposal related to student's practice area. Prerequisite: Nurs. 703 or departmental consent.

706. Organization and Management of the School-Health Program. (3). 2R; 3L. Examines and applies concepts of organization and management to the school-health delivery system.

Explores political, economic and social factors which influence the school-health delivery system. Open to RN and graduate students.

707. Analysis of Complementary Health Care Modalities. (3). Analyzes the theoretical and empirical basis for various complementary modalities. Includes an exploration of issues involved with the use of specific modalities within today's health care environment. Research-based discussion focuses on how to best prepare the health care professional to provide guidance to a client and the family to best achieve a physiological, mental and emotional state most responsive to therapeutic interventions. Emphasizes total evaluation and support of health influences on lifestyle, environment, culture and other cognitive and affective factors. Prerequisite: instructor's consent.

708. School Nurse Practicum. (2). 6L. An intensive clinical experience, students analyze, design, implement and evaluate nursing systems to promote the health of individuals in the school-health delivery system and the broader community system. Open to RN and graduate students.

709. Health Problems in Family Violence. (3). Develop understanding of human responses to family violence across the life span, including spouse abuse, child witnesses, and elder abuse. Identify a physical, emotional, or social health problem and formulate a strategy for primary, secondary, or tertiary prevention based on a conceptual framework. Prerequisite: graduate level or instructor's consent.

711. Issues in Nursing. (3). Analyzes various issues in professional nursing. Focuses on issues ranging from concerns within the local practice setting to national policy issues. Examines theories uniquely suited to policy formation in health care systems. Prerequisite: admission to Graduate School.

715. Advanced Nursing Practice: Roles and Issues. (3). Designed for student preparing for advanced practice. Historical development of advanced practice role, the ethical, legal, political and economic trends and future directions are discussed. Focuses on issues ranging from concerns within the local practice setting to national policy issues related to advanced nursing practice. Prerequisite: admission to graduate nursing program.

721. Epidemiology: A Data-Based Method for Decision-Makers. (3). Introduces the basic epidemiologic approach used to assess and make decisions about the health of the community. Prepares students to use this methodology in the planning, delivery and evaluation of health services as they work with consumers and public policy makers. Prerequisite: graduate standing or instructor's consent.

733. Diabetes Mellitus Nursing. (3). Exploration of clinical theories; identifies and studies appropriate nursing systems for clients with diabetes mellitus. Emphasizes attaining and maintaining optimal levels of functioning and...
the psychological adjustment of the client and family to a potentially devastating disease.

734. Diabetes Mellitus Nursing Practicum. (3). An intensive clinical experience: the student studies, designs and implements nursing systems for individuals or groups in the area of diabetes mellitus nursing management. A weekly one hour seminar accompanies the practicum.

750. Workshops in Nursing. (1-4). An opportunity for intensive study of special topics related to nursing practice, education or research. Open to nonmajors.

757. Clinical Teaching Strategies. (3). An exploration of alternative teaching strategies for the clinical educator to accommodate the changing health care scene. Discusses clinical teaching methods. A clinical rotation plan with accompanying clinical evaluation tool is constructed after the student, subject and setting are delineated. Investigates roles of the educator in teaching clinically.

791. Special Studies in Nursing. (1-6). Students engage in extensive study of particular content and skills directly or indirectly related to nursing practice. Repeatable. Prerequisites: admission to Graduate School and school consent.

793. Advanced Pathophysiology. (3). Explore in-depth scientific knowledge base relevant to selected pathophysiological states confronted in primary care. This provides the basis for the foundation of clinical decisions related to diagnostic tests and interventions of pharmacological regimens. Age specific and developmental alterations are correlated with clinical diagnosis and management. Application is made through age appropriate examples. Prerequisites: admission to graduate nursing program and permission of the school.

795. Applied Drug Therapy. (3). Discusses the clinical application of specific categories of drugs, commonly encountered in primary care settings. Explains the use of protocols, prescription writing and the ethical/legal and economic issues surrounding the advanced nurse's role in prescribing and monitoring pharmacological therapies in the ambulatory setting. Discusses factors such as age-appropriate content related to pharmacokinetik, dosages, expected outcomes and side effects of the drugs. Address first line versus second line drugs, alternate drugs, drug interactions, adjusting drug dosages, patient education and compliance issues related to drug therapy. Explore the nurse's role and responsibility related to data collection, problem identification and consultation with the physician. Application is made through age appropriate case studies. Prerequisites: admission to graduate nursing program, NURS 701, 703, 704 and 705.

796. Nursing Practicum in Special Settings. (1-6). Directed practice in various settings, including clinical specialties, nursing administration, nursing education and consultation. Student plans, in collaboration with major adviser and preceptor, objectives and evaluative criteria for the experience. Prerequisites: admission to Graduate School and school consent.

799. Directed Readings in Nursing. (1-2). Student engages in critical search of the literature in areas related to the profession and practice of nursing. Prerequisites: admission to Graduate School and school consent.

Courses for Graduate Students Only

804. Primary Care I: Practicum. (3). Concentrated clinical practicum in a primary care setting that addresses individuals and families throughout the life span within the context of the community. Theory and research used in clinical settings. Health promotion, maintenance, and prevention interventions emphasized. Prerequisites: NURS 701, 793, 795. Open to Nurse Practitioner students only, concurrent with or subsequent to NURS 805.

805. Primary Care I: Health Promotion Throughout the Life Span. (4). Focuses on the wellness of individuals and families through the life span seeking to maintain or improve health and prevent illness. Interventions reflect a preventative framework, enhanced by theory and research that provide an understanding of health and lifestyle behaviors. Prerequisite: admission to Nurse Practitioner specialization or instructor's consent.

808. Clinical Nurse Specialist Practicum. (3). Second of a two-course series for the student preparing for the clinical specialist role. An intensive practicum experience; the student works with a clinical nurse specialist preceptor in a selected clinical setting. Emphasizes role development and analysis of strategies to improve nursing practice. Prerequisite: NURS 715 (or concurrent enrollment).

809. Primary Care II: Management of Common Health Problems. (4). Addresses conditions germane to people across the life span, especially in rural populations. Focuses on prevention of infectious diseases, management of common illnesses, acute problems and chronic conditions. Applies underlying concepts related to community, pathophysiology and changes in health care status. Lecture, discussion, seminar and clinical applications constitute major teaching methods. Presents developmental plans for management, including collaborative, therapeutic protocols. Prerequisites: graduate core courses, and previously required courses in Family Nurse Practitioner concentration—NURS 701, 703, 804 and 805. Corequisites: NURS 810.

810. Primary Care II: Practicum. (3). Emphasizes assessment and management of common health problems across the life span, based upon knowledge of theory and research. Primary care clients with common conditions affecting major body systems assessed and managed. Focus upon analysis and evaluation of clinical situations and cases. Prerequisites: NURS 701, 793, 795, 804, 805. Corequisites: NURS 809.

811. Foundations of Nursing Administration. (3). Assists the student in acquiring theoretical knowledge of organizations. Considers current issues and research in nursing administration and impact on nursing practice. Prerequisite: school consent prior to registration. Prerequisites or corequisites: NURS 701, 702, 703, 705 and 715.

812. Nursing Administration Practicum. (3). Practicum in a nursing administration setting; student, under professional guidance, becomes directly involved. A seminar accompanies the field experience. Types of experience may include roles in nursing education or service, mid-level nursing administration, staff development or community health. May be repeated twice. Prerequisite: NURS 811 or 827 or concurrent enrollment.

813. Foundations of Nursing Education. (3). Assists the student explore theoretical and practical aspects to curriculum development and teaching of nursing in higher education and continuing education. Prerequisite: school consent. Prerequisites or corequisites: NURS 701, 702, 703, 705 and 715.

814. Nursing Education Practicum. (3 or 6). Student, under professional guidance becomes directly involved in clinical and classroom teaching, curriculum development and participation in other faculty functions in higher education and continuing education. A seminar accompanies the field experience. Prerequisites: school consent and NURS 813.

817. Health Care Information Systems. (3). Examines information systems as they relate to health care. Examines information systems in clinical management, administration, education and research. Emphasizes issues surrounding information systems and hands-on experience with selected health care information management exercises. Prerequisite: DS 874.

818. Health Care Information Systems Practicum. (3). Provides an individualized opportunity to apply the concepts/theories of information systems to a health care setting. Projects include analyzing existing information programs, identifying applications for automation and undertaking small-scale development efforts. Prerequisites: DS 874, 884 and NURS 817.

819. Foundations of Psychiatric/Mental Health Nursing. (3). Evaluates major therapeutic, clinical concepts and current research in psychiatric/mental health in relation to formulating a conceptual model for nursing practice. Prerequisites: NURS 701, 702, 703, 705 and 715.

821. Theses (1-6). Graded S/U only. Student, in conjunction with the academic adviser and a three-member thesis committee, designs and conducts a formal research project. Prerequisites: admission to Graduate School and school consent prior to registration.

822. Psychiatric/Mental Health Nursing Practicum. (3). Intensive clinical experience; student plans, implements and evaluates nurse-therapist strategies with individual clients/patients. A seminar accompanies the practicum. Prerequisite or corequisite: NURS 819.

823. Graduate Project Alternative to Thesis. (1-3). Graded S/U only. An opportunity to
develop and pursue a scholarly project other than a thesis. This may take the form of a position paper, a historical study, a philosophical paper or other type project developed in conjunction with the student's faculty advisor. Prerequisites: admission to Graduate School and school consent.

825. Independent Study. (1-6). Provides opportunity for the student to develop, in collaboration with a school faculty member, objectives and protocol for independent work related to the practice of nursing. Prerequisites: admission to Graduate School and school consent.

827. Resource Management in Nursing. (3). Focuses on the assessment of human and material resources and informational systems needed to manage nursing care delivery. Emphasizes nursing personnel management, patient classification systems, costing out of nursing services, strategic planning and marketing. Prerequisites: NURS 701, 702, 703, 705 and 715.

829. Parent-Child Nursing: The Individual as the Client. (3). Provides the foundation for all courses in the parent-child clinical concentration. Seminars enable students to investigate major theories, clinical concepts, research, and political/legal/ethical issues related to parent-child nursing with focus on individual client. Prerequisites: NURS 701, 702, 703, 705 and 715.

831. Clinical Concepts and Outcomes of Care. (3). Examines important concepts, theories, and related problems that are important to advanced clinical nursing practice. Areas studied include health status of the population, family theories, developmental disabilities throughout the life span, pain, sleep, stress, and crisis theories. Research and documentation of clinical outcomes will be evaluated. Prerequisites: NURS 701, 702, 703, 705 and 715.

832. Parent-Child Nursing: Practicum I. (5). An intensive clinical experience; student focuses on the process of systematic assessment of individuals. Prerequisites: NURS 701, 702, 703, 705 and 715; NURS 829 may be concurrent.

834. Adult Nursing Practicum. (3 or 6). An intensive clinical experience; student designs, implements and evaluates nursing care for adults. Selects specialized areas of study; may include health maintenance or illness care of acutely or chronically ill adults. Practicum sites may include hospitals, extended care facilities, rehabilitation centers, community health agencies. A seminar is part of the practicum. Prerequisites: NURS 701, 702, 703, 705 and 715 or instructor's consent; NURS 831 or 839 may be concurrent.

835. Nursing the Family as the Client. (3). Focuses on nursing of the family as client. Seminars enable students to investigate major theories, clinical concepts, research, and political/legal/ethical issues related to nursing of the family as the client. Prerequisites: NURS 703, 705, 711, 829 and 832.

836. Nursing of the Family: Practicum. (3). An intensive clinical experience; student analyzes, designs, implements, and evaluates nursing systems for individuals and groups within a family system. Prerequisites: NURS 701, 702, 703, 705 and 715; NURS 835 may be concurrent.

837. Perspectives in Gerontological Nursing. (3). Emphasizes the synthesis of concepts and theories into a functional theoretical framework of gerontological nursing. This basis is utilized to identify health problems of older adults and to plan appropriate preventive, rehabilitative or restorative approaches to those problems. Attention on social, economic, political, ethical and legal aspects as they impinge upon the well-being of older adults. Prerequisites: NURS 831 and 834 or instructor's consent.

839. Adult Nursing II. (3). Examines clinical concepts and issues related to major disruptions in the health status of adults. Emphasizes assessment, measurement, and interventions related to these concepts. Prerequisites: NURS 701, 702, 703, 705 and 715.

841. Foundation of Community Health Nursing. (3). As the health care system broadens its base to community settings, an appraisal of historical development, trends and issues related to community health nursing is investigated. Analyzes conceptual models and theories as related to nursing practice and research in the community. Prerequisite: NURS 701, 702, 703, 705 and 715.

843. Perspectives in Psychiatric/Mental Health Nursing. (3). A critical examination of the delivery of mental health nursing. Emphasizes practitioner roles and therapeutic nursing modalities. Analyzes the effect of historical, social, political, economic and ethical-legal factors. Prerequisite: NURS 819.


845. Seminar in Nursing Administration. (3). An in-depth study and analysis of the roles of nurse managers in various health care settings. Discusses special problems, current topics and issues in nursing administration. Prerequisites: NURS 811 or 827 and at least 3 hours of NURS 812.

849. Family Nurse Practitioner Preceptorship. (6). An intensive clinical experience that serves as the final course for the family nurse practitioner concentration. Students, working one-to-one with an experienced preceptor, provide primary health care for clients in an ambulatory clinic setting. Emphasizes application of knowledge and skills learned in previous courses to provide primary care to clients across the life span. A seminar is part of the course. Prerequisites: All previous required courses in the FNP concentration.

851. Clinical Data Management. (3). Management of clinical data and its relationship to advanced nursing practice. Existing data from clinical practice settings identified and analyzed for presentation both verbally and in report form. Emphasizes using existing data both to determine health care outcomes and to evaluate delivery of care. Communication of findings will occur. Prerequisites: completion of core courses and at least 6 hours of clinical concentration. Computer literacy is an expectation.

The following abbreviations are used in the course descriptions: R stands for lecture and L for laboratory. For example, 4R, 2L means four hours of lecture and two hours of lab. P stands for practicum/clinical hours: 40P means 40 hours of practicum per week.
Fairmount College of Liberal Arts and Sciences

Offices: 200 LAS
David C. Glenn-Lewin, dean
Carol Konek, associate dean
John Koppenhaver, interim acting associate dean
Gerald Lichti, assistant dean

Departments
Anthropology, (316) 689-3105—Clayton A. Robarchek, chairperson; Arthur Rohn, graduate coordinator
Biological Science, (316) 689-3111—Wendell Lewitt, chairperson; William Hendry, III, graduate coordinator
Chemistry, (316) 689-3120—D. Paul Rilla, chairperson; Ram Singhal, graduate coordinator

Elliott School of Communication, (316) 689-3185—Vernon Keel, director; Susan M. Huxman, graduate coordinator

Computer Science, (316) 689-3156—Suad Alagic, chairperson; Prakash Ramanan, graduate coordinator

English, (316) 689-3130—Larry Davis, chairperson; Sarah Daugherty, graduate coordinator

Geology, (316) 689-3140—William D. Bischoff, chairperson and graduate coordinator

History, (316) 689-3150—John Dreifort, chairperson; John D. Born, graduate coordinator

Liberal Studies, (316) 689-6694—Tina Bennett-Kastor, graduate coordinator

Mathematics, (316) 689-3160—Bunna L. Friedman, chairperson; Kenneth Miller, graduate coordinator

Modern and Classical Languages and Literatures, (316) 689-3180—Dieter Saatmann, interim chairperson; Eunice Myers, graduate coordinator

Philosophy, (316) 689-3125—Robert Feleppa, chairperson

Physics, (316) 689-3190—David Alexander, chairperson; Pawan Kohol, graduate coordinator

Political Science, (316) 689-3165—James Sheffield, chairperson; Kenneth N. Cibeski, graduate coordinator

Psychology, (316) 689-3170—Charles Burdell, chairperson; Gary Greenberg, graduate coordinator

Sociology, (316) 689-3280—Kathleen M. O'Flaherty, chairperson; John Hartman, graduate coordinator

Women's Studies, (316) 689-3358—Gayle Davis, chairperson

Urban and Public Affairs, Hugo Wall School of, (316) 689-3737—Joseph P. Pisciotto, director

Administration of Justice, (316) 689-3710—Galan M. Janekela, director; Delores Craig, graduate coordinator

Gerontology, (316) 689-3713—Ellen C. Holmes, director; William C. Hayes, graduate coordinator

Minority Studies, (316) 689-3380—Anna Chandler, director

Public Administration, (316) 689-3737—Samuel J. Yeager, director and graduate coordinator

Social Work, (316) 689-3287—Elwin M. Barrett, director

Administration of Justice
See Urban and Public Affairs, Hugo Wall School of.

Anthropology
Graduate Faculty
Professors: Arthur H. Rohn (graduate coordinator)
Associate Professors: Dorothy Billings, Donald Blakeslee, Robert Lawless, Clayton Robarchek (chairperson), James Thomas
Assistant Professors: David Hughes, Peer Moore-Jansen

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. At least 60 percent (18) of these hours must be in courses numbered 700 and above. The 30 hours must include a core course in archaeology (501 or 736), cultural anthropology (503 or 746), physical anthropology (505 or 756), and two seminars. Students may substitute other appropriate courses if they can show proof of having taken one or more of the core courses as undergraduates. Track 2 requires the completion of 33 semester hours, including the three core courses and two seminars and the presentation of a thesis or approved project or internship. Track 3 requires the completion of 36 semester hours, at least 21 in anthropology including the three core courses and seminars, and at least 12 in (an) other discipline(s). Either an examination or a thesis, project, or internship is also required.

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

501. Approach to Archaeology. (3). Lab fee. An introduction to the problems of studying past cultures. Focuses special attention on methodology, field techniques, and archaeological 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 or 124Q.

502. Introduction to Archaeological Laboratory Techniques. (1-3). Maximum of three hours. An introduction to the laboratory processing of archaeological 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. 124Q or 305Q.

503. Approach to Cultural Anthropology. (3). Fall semester only. An overview of major current directions in the study of culture and of cultures: symbolic systems which structure social, political, economic and religious institutions, personality, the arts and bodies of knowledge. Explores etiology and culture change. Emphasizes contemporary culture change and the role of anthropological theory. Prerequisites: Anthr. 102Q, 124Q or equivalent.

505. Approaches to Biological Anthropology. (3). Spring semester only. An intensive study of three central topics in biological anthropology: evolutionary theory, paleoanthropology, and modern human variation. Emphasizes cur-
rent theories, methods and issues. Required of all graduate students in anthropology. Prerequisites: Anthr. 101Q or equivalent.


508Q. Ancient Civilizations of the Americas. Division B course/ elective. A cultural survey of the Aztec, Maya and Inca. Prerequisite: Anthr. 124Q or instructor's consent.


519. Applying Anthropology. (3). The application of anthropological knowledge in the solution of social problems in industry, public health and public administration. Prerequisites: Anthr. 102Q or 124Q.

522Q. Art and Culture. (3). A survey of the visual and performing arts of nonwestern peoples with special attention to their relationships in the cultural setting. Prerequisite: Anthr. 102Q or 124Q.

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: six hours of anthropology.

528. Medical Anthropology. (3). 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.

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 contact between eastern Asia and North America. Prerequisites: Anthr. 124Q or 351Q.

540. The Indians of the United States: Conquest and Survival. (3). An anthropological inquiry into four centuries of cultural contact, conflict, resistance and resilience. Prerequisites: Anthr. 102Q or 124Q or instructor's consent.

542. Women in Other Cultures. (3). 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.

555. 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 Biol. 203Q or equivalent.

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.


577. Topics in Anthropology. (3). Detailed study of topics in anthropology with particular emphasis being established according to the expertise of the various instructors.

580. Forensic Anthropology. (Cross-listed as A J 602. 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.

582. Archaeological Laboratory Analysis. (3). Studies 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 meaning cultures of the American Southwest and its prehistoric origins. Course includes the use of departmental laboratory equipment and the use of archaeological techniques. Prerequisites: Anthr. 582 and instructor's consent.

586. 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.

597. 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.

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

611. Southwestern Archaeology. (3). A comprehensive survey of the prehistoric and historic cultures of the American Southwest, particularly emphasizing the cultural continuities and changes over 11,000 years. Prerequisite: one introductory course in anthropology or departmental consent.

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: six hours of anthropology and departmental consent.

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

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

651. Language and Culture. (3). Cross-listed as Ling. 651. An introduction to historical and descriptive linguistics. Deals with the ethnography of communications, lexicostatistics and linguistic determination. Prerequisite: six hours of anthropology.

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.

690. Field Methods in Anthropology. (3-6). A maximum of six 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.

704. Directed Readings in American Studies. (1-3). Prerequisites: six hours of American studies course work or equivalent and instructor's consent.
847. Colloquium in Anthropology. (1-2). S/U grade only. Repeatable for a maximum of three 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 two credits. Prerequisite: graduate standing in anthropology.

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

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

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

Biological Sciences

Professors: L. Raymond Fox, Wendell W. Leavitt (chairperson)
Associate Professors: Karen L. Brown, Donald A. Distler, William J. Hendry III (graduate coordinator)
Assistant Professors: George R. Bousfield, Michael J. Lydy, J. David McDonald, John W. Schmidt, M. Alan Taylor, Debra A. Wollner, 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 student 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 student's first language is not English. 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. They are also required to take the research methods course (Biol. 740). 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 may 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

509C. Foundations of Human Heredity. (3). Division C course/elective. 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 and 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.
Major Courses
(Used to satisfy the requirements for the major)

Courses for Graduate/Undergraduate Credit

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: Biol. 204 or instructor's consent.

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 Chautauqua Hills provide an opportunity to collect specimens and to observe ecology and distribution of native species of flowering plants. Prerequisite: Biol. 204 or instructor's consent.

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: Biol. 204. Biol. 527 also is recommended.

526. Endocrinology. (4). 3R; 3L. The hormonal regulation of bodily functions is considered 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: Biol. 204.

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: Biol. 204.

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.

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 systems project. Prerequisite: Biol. 204.

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 a library research on a topic in mammalian physiology chosen in consultation with the instructor. Prerequisite: Biol. 204 and Chem. 531 or instructor's consent.

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: concurrent or prior enrollment in Biol. 534.

540. Developmental Biology. (4). 2R; 4L. Developmental processes in animals emphasizing vertebrates. Centered on the cell interactions controlling differentiation and morphogenesis. Graduate students will be expected to utilize the primary literature with a higher level of sophistication. Prerequisite: Biol. 204. Biol. 420 recommended.

600. 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: Biol. 418 or instructor's consent.

573. Statistical Applications in Biology. (3). Supplements Stat. 570 by providing experience with statistical analysis of 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.

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: Biol. 418 or instructor's consent.

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.

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: Biol. 204 and Chem. 531.

591. Immunobiology Laboratory. (3). 6L. Methods of immunization and techniques for qualitative and quantitative determinations of antibody production and antigen-antibody reactions. Students earning graduate credit produce a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisites or corequisites: Biol. 590, Chem. 531 or instructor's consent.

610. Topics in Botany. (3-4). Selected offerings in botany. Consult the Schedule of Courses for current offerings. 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. Prerequisite: Biol. 204 and instructor's consent.

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

640. Topics in Zoology. (3-4). See Biol. 610. Prerequisite: Biol. 204 and instructor's consent.

660. Topics in Microbiology. (2-4). See Biol. 610. Prerequisite: Biol. 330 and instructor's consent.

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: Biol. 420, Chem. 662 and either Chem. 653 or 664.

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
neural based on the technical literature on a topic
choosen in consultation with the instructor. 
Prerequisite: Biol. 419 or 584.

790. Advanced Immunology. (3). Contem-
porary problems in immunologic research. 
Includes lectures, assigned readings and re-
ports. Students earning graduate credit pro-
duce a term paper based on the technical li-
iterature on a topic chosen in consultation 
with instructor. Prerequisites: Biol. 550 and 
instructor’s consent.

797. Departmental Seminar. (1). A forum 
for the weekly presentation and discussion of 
ongoing research projects performed by de-
partmental faculty, graduate students, and 
guest scientists from outside departments and 
institutions. All degree-bound graduate stu-
dents are required to attend the seminar each 
semester and must also give at least two pre-
sentations.

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

Courses for Graduate Students Only

890. Research. (2-5). 
Courses for Graduate Students Only

890. Research. (2-5). S/U grade only. Students 
performing research on their thesis projects should 
able to present a thesis before a grade is assigned.

890. Research. (2-5). S/U grade only. Students must 
be enrolled in this course during the semester in 
which the thesis is defended.

Chemistry

Graduate Faculty

Professors: William R. Carper, William C. 
Groustas, B. Jack McCormick, D. Paul 
Rilllema (chairperson), Ram P. Singhal 
(graduate coordinator), William T.K. 
Stevenson, Ereh R. Talaty, Phillip G. 
Wahlbeck

Associate Professors: Melvin E. Zandler 
Assistant Professors: Dennis H. Burns, 
Francis D’Souza, Kandaitgie Wimalasena

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.

Admission Requirements

To enroll in the graduate program in 
chemistry, students must follow the 
admission procedures required by the 
Graduate School. The chemistry depart-
ment 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 recommenda-
tion from individuals familiar with the 
applicant’s academic background, and a 
one page typed statement of goals and 
research interests. International students 
must have a minimum TOEFL score of 
570. For the PhD program, the Graduate 
School requires submission of test scores 
from the general aptitude portion of the 
GRE by the end of the first semester in 
residence. Students also are encouraged 
to submit test scores from the analytical 
and chemistry portions of the GRE as 
well. Students deficient in any of the 
requirements may be admitted condition-
ally provided they follow the specified 
procedures required to remove any defi-
ciences.

When admitted to the graduate pro-
gram in chemistry, students are required to 
take proficiency examinations based on 
undergraduate chemistry curricula. The 
results are used by an advising commit-
tee of the department to counsel graduate 
students about which courses are appro-
riate.

Students must select a faculty member 
to be their research adviser by the begin-
inning of their second semester in the grad-
uate program. The research adviser 
guides the students in their research.

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 six credit hours in 
research, Chem. 890. Also, at least 15 
credit hours in chemistry courses num-
bered above 701 must be taken, including 
at least one 700-level course from four of 
the following five areas: analytical chem-
istry, inorganic chemistry, organic chem-
istry, physical chemistry, and biochem-
istry. Students must successfully com-
plete Chem. 700 once, and full-time stu-
dents must register each semester in 
Chem. 701. Additional courses, which 
may be outside the major field, are select-
ed by students in consultation with their 
adviser and the department’s advising 
committee.

Chemical Physics Option. Students who 
have a particular interest in chemical 
physics may follow a special option. They 
must take at least one 700-level course 
from four of six areas, including physics 
as the sixth area. Physics courses that 
may be taken include Phys. 631, 714, 811, 
881, or other approved courses. It is rec-
ommended that students in this option 
take Chem. 642. Additional information is 
available in the chemistry department 
office.

Examinations. Master’s students must 
pass qualifying examinations, which are 
the same as orientation examinations, in 
four areas of chemistry.
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. Students are required to begin cumulative examinations at the beginning of their second year. These examinations follow the proficiency exams in the areas of analytical, inorganic, organic, physical, and biochemistry, four of which the student must take and pass (three attempts permitted) during the first 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.

Courses for Graduate/Undergraduate Credit

501. Acids, Bases and pH. (1). The study of properties characteristic of acids and bases, typical acid-base reactions, indicators, pH, solution concentration, titration and buffers. Begins with a study of Lewis structures of atoms, molecules and ions. Prerequisite: In-service elementary teacher or departmental consent.

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.

514. Inorganic Chemistry. (3). 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 grade of C or better.

523. Analytical Chemistry. (4). 2R; 6L Lab fee. Evaluation of data, theory and application of gravimetric analysis and precipitation, neutralization and oxidation-reduction volumetric analysis. Prerequisite: Chem. 112Q with a grade of C or better.

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

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

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. 511.

533. Elementary Organic Chemistry. (3). 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. 533 if 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.

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.

545. Physical Chemistry. (3). Thermodynamics. Studies gases, first law, thermodynamics, second and third laws, phase equilibria, solutions, chemical equilibrium, electrochemistry and surface chemistry. Prerequisites: Chem. 112Q, Math. 344 or its equivalent and one semester of college physics.

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.

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.

561. Introduction to Biochemistry. (3). A brief history of biochemistry, emphasizing the development of molecular biology, chemistry of biomolecules—proteins, carbohydrates, lipids, nucleic acids and vitamins, molecular basis of bioenergetics and metabolism and storage, transfer and control of genetic information. Course meets the needs of majors from health related programs and science education curricula. Prerequisite: Chem. 531 or 533 or one semester of organic chemistry.

603. Industrial Chemistry. (3). Bridges the industrial-academic gap. Includes petroleum chemistry and major processes in industrial inorganic chemistry. Also discusses some aspects of environmental chemistry such as hazardous and nuclear waste disposal and air pollution. Topics in polymer chemistry include major synthetic routes to high polymers and reaction mechanisms, polymer characterization, structure property correlations and methodology in plastics and composites processing. Prerequisite: Chem. 532 or concurrent enrollment.

605. Medicinal Chemistry. (3). For students interested in chemistry related to the design, development and mode of action of drugs. The primary purpose of the course is to describe those organic substances that are used as medicinal agents and to explain the mode of action and chemical reactions of drugs in the body; to illustrate the importance and relevance of chemical reactions as a basis of pharmacological activity, drug toxicity, allergic reactions, carcinogenicity, etc.; and to bring 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. 561 or 662) and a year of biology are strongly recommended.

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

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.

625. Electronics. (2). 1R; 4L. Lab fee. Provides a working knowledge of electronic devices and circuits for the student or research worker who has little or no background in electronics. Prerequisite: Instructor's consent.

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

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.

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 oxidation.
663. Biochemistry of Cell Metabolism. Biosyntheses, Structure, Function and Regulation of Proteins and Nucleic Acids. (3). Study of metabolism and control of carbohydrates, lipids, phospholipids, 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.

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.

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.

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 weekly report summarizing the research. May be repeated once for credit. Prerequisites: Biol. 500 and Chem. 662 or 663 and 664.

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 three credit hours may be counted toward graduation. Prerequisite: departmental consent.

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.

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


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.

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, catalysts and solid-state phenomena. Prerequisite: Chem. 615 or equivalent.

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. Emphasizes interpretation of results for understanding the electronic and molecular structure of compounds. Prerequisite: Chem. 705 or equivalent.

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

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.


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, electronic spin, Hartree-Fock and configuration-interaction methods, molecular orbital and valence-bond wave functions and virial and Helmann-Feynman theorems. Prerequisites: Chem. 546, Math. 344 or equivalent. Corequisite: Chem. 705 or equivalent.

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

752. Step Growth Polymerization. (3). Polymerization processes which proceed by a step growth or ring-opening mechanism. Preparation of thermoplastics, including relationships between molecular weight and reaction conditions. Preparation of thermostetting monomers and relationships between structure, conversion and gelation. Discusses individual systems such as nylon, epoxy resin and polypeptides in some detail. Prerequisites: Chem. 531 and 545.

764. Physical Biochemistry I: Principles. (3). An examination of the physical principles that form the basis for the structure and activity of biological macromolecules. Includes the conformational analysis of molecular building blocks and its relation to the higher order structural properties of proteins, nucleic acids, lipids and carbohydrates, energetics and bonding interactions, solution thermodynamics, elementary treatment of chain statistics and macromolecular flexibility, transport processes and multiple binding equilibria. Prerequisites: Chem. 545, 546 and 662 or equivalent.

Courses for Graduate Students Only

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.

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.

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.

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. or equivalent.

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.

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 spectrometry; X-ray methods. Lectures and discussions on theory and practice. Particular emphasis on instrumentation and the acquisition of artifact-free data. Prerequisite: Chem. 924 or equivalent.

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

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

832. Modern Synthetic Methods. (3). Discussion of retrosynthetic analysis, applications,
asymmetric syntheses and stereo-chemistry. Prerequisite: Chem. 732.

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.

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

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 665 and 732.

836. Advanced Quantum Chemistry. (3). Consider 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.

837. Chemical Kinetics. (3). A description of reaction 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.

838. 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.

839. 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.

840. Molecular Spectroscopy. (3). The theoretical basis for spectroscopy and spectroscopic determinations of molecular structure. Includes polyatomic electrons, 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.

841. Physical Spectroscopy. (3). An examination of the physical techniques used to study the structure, properties and reactions of biological molecules and macromolecules. Includes vibrational and electronic molecular spectroscopy, scattering of radiation, nuclear and electron magnetic resonance, sedimentation and electric field techniques. Uses examples from the research literature to illustrate specific applications.

842. 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.

843. 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 Graduate Faculty
Professor: Philip Gaunt, Vernon Keel (director, Elliott School)

Associate Professors: Katherine Hawkins (associate director)
Assistant Professors: Les Anderson, Richard Armstrong, Susan Huxman (graduate coordinator), Sharon Iorio, Frank Kelly, Christopher Leland, Keith Williamson

Master of Arts in Communication and Areas of Emphasis
The Master of Arts in Communication (MAC) 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 in several departments and disciplines throughout the University. The degree includes two areas of interest: Communication and Theatre/Drama.

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 270 on the TSE.

Degree Requirements
Program Core (Required) Courses.

MAC students emphasizing the Communication area must complete the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>Comm. 702</td>
<td>Contemporary Theories of Oral Communication</td>
<td>2</td>
</tr>
<tr>
<td>Comm. 801</td>
<td>Introduction to Communication Research</td>
<td>3</td>
</tr>
<tr>
<td>Comm. 802</td>
<td>Historical and Qualitative Methodologies in Communication Research</td>
<td>3</td>
</tr>
<tr>
<td>Comm. 803</td>
<td>Empirical/Quantitative Methodologies in Communication Research</td>
<td>3</td>
</tr>
<tr>
<td>Comm. 865</td>
<td>Organizational Communication</td>
<td>3</td>
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</tbody>
</table>

MAC students emphasizing the Theatre/Drama area must complete the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hrs.</th>
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</thead>
<tbody>
<tr>
<td>Comm. 803</td>
<td>Introduction to Communication Research</td>
<td>3</td>
</tr>
</tbody>
</table>
Comm. 802, Historical and Qualitative Methodologies in Communication Research ................................3
Thea. 623Q, Development of the Theatre I ............................................3
Thea. 624Q, Development of the Theatre II .................................3
and either Thea. 823, History of Dramatic Criticism ..................3 or 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 adviser, 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.

Master of Education
The following courses may apply toward a Master of Education (MEd) degree with intensive study in secondary education and content specialization in speech and drama, offered by the Department of Curriculum and Instruction, College of Education. Prospective candidates are advised jointly by representatives of the Department of Curriculum and Instruction and the Elliott School of Communication. (See requirements for the MEd degree in the College of Education section of the Graduate Bulletin.)

These courses also may apply toward other master's degree programs or may be taken by students in nondegree status if approved by the faculty advisers, the director of the Elliott School of Communication, and the dean of the Graduate School.

Courses for Graduate/Undergraduate Credit

500. Advanced Reporting I. (3). Jr; 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 and includes the study and practice of journalistic interviewing. Prerequisites: junior standing, Comm. 301 and either 401 or 422.

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 in this course are valuable in writing grant proposals, committee reports, pamphlets and journal articles. Prerequisites: Comm. 301 with a grade of C or better, junior standing or departmental consent.

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 grade of C or better.

522. Advanced Broadcast News. (3). Sr; 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.

525. Advertising Copywriting. (3). Detailed practice at writing various kinds of advertising copy, including print and broadcast forms. Emphasizes tense, precise writing that evokes response sought by advertiser. Prerequisite: Comm. 324 or departmental consent.

526. Media Buying and Selling. (3). Principles, methods, and strategies of buying and selling media for advertising, including such topics as 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.

530. Media Performance. (3). Provides experience in various areas of electronic media performance, including newscasts, radio drama, interviews, sports and commercials. Extends through simulated experiences as well as on-air work, student performance skills, capabilities and knowledge of audio and video media. Prerequisites: Comm. 111 and 221Q, 222 or Thea. 243.

550. Editorial Writing. (3). A study of editorial judgment, including practice in the writing of editorials and editorial page features and a study of research materials available to editorial writers. Prerequisites: Comm. 301 and junior standing.

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.

571. Magazine Writing. (3). Writing for magazines; emphasizes analyzing the market and patterning articles to fit the needs of specific magazines. Prerequisites: Comm. 301 and departmental consent.

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.

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.

607. Electronic Media Programming. (3). Planning, developing and scheduling based upon audience and market analysis, program ratings, principles of evaluation and criticism.

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

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.

622. Practicum in Broadcast Journalism. (3). Reporting and writing about events in the University and community. Story assignment and preparation under the instructor's guidance; story broadcast over WSU Cable Channel 13. May be repeated for credit with adviser's consent. Prerequisite: Comm. 522 or instructor's consent.

625. Public Relations Campaigns. (3). Instruction and practice in planning and developing total public relations campaigns. Prerequisites: Comm. 330 and 502 or instructor's consent.

626. Advertising Campaign Research. (2). Introduction to primary and secondary research for advertising campaign development. Includes empirical approaches, market analysis, advertising evaluation, product and market testing, consumer analysis, questionnaire construction, and methods of sampling. Prerequisite: Comm. 324 or instructor's consent.

627. Advertising Campaign Production. (2). Work in this course builds on research conducted in Comm. 626 for planning and developing a complete advertising campaign. Students design and develop a national campaign and an audio-visual presentation for the regional and national collegiate competition sponsored by the American Advertising Federation. Prerequisite: Comm. 626 or instructor's consent.

632. American Public Address. (3). 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.

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

636. Advanced Public Speaking. (3). Theory and practice in the various forms of platform speech, processes, technologies, and strategies related to training and development. Includes such special forms as the after-dinner speech and speeches of goodwill, tribute, keynote and courtesy.

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

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.

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.

665. Communicative Disorders. (3). A survey of speech, language, and hearing disorders; their identification and treatment; and consideration of the roles of health and educational specialists in the total habilitative process. Provides background in normal communicative structures, processes and acquisition for understanding communicative disorders. Areas introduced include language disabilities in children, adult aphasia, articulation disorders, voice disorders, cleft palate, laryngectomy, stuttering, cerebral palsy and hearing impairment.

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

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 four credits in Comm. 690 and Comm. 481. Graded Cr/NCr. Prerequisite: departmental consent.

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

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.

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.

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

722. The Art of Conversation. (3). Conversational forms of communication people engage in most naturally and frequently, but about which they seldom think seriously. Course 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, comparison and direction in the media and conversation analysis. Prerequisites: Comm. 302 and junior standing or departmental consent.

737. Processes and Effects of Mass Communication. (3). An exploration into the effects of mass communication at the individual social and cultural levels.

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

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

801. Introduction to Communications 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. Course should be taken at the beginning of the graduate program.

802. Historical and Qualitative Methodologies in Communication Research. (3). An introduction to historical, critical and observational methodologies in communication research. Emphasizes historical, critical and observational research, particularly those forms of research common to communication studies. Prerequisite: Comm. 801.

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.

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

830. Theories of Rhetoric Classical. (3). Cross-listed as Eng!. 855. 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.

831. Theories of Rhetoric: Renaissance to Early Modern. (3). Cross-listed as Eng!. 826. 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.

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.

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.

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

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

Computer Science

Graduate Faculty

Professor: Suad Alagic (chairperson), Jan Zytkow
Associate Professor: Shang-Ching Chou, Prakash Ramanan (graduate coordinator), Rakshekar Sundaraman
Assistant Professors: Rajiv Bagai, Vram Kouramajian, Xumin Nie, Ashvin Radia

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

Candidates are expected to meet the Graduate School requirements, including the completion of a bachelor's degree with a minimum GPA of 2.750 in the last
Degree Requirements
The MS degree requires 30-32 credit hours of graduate-level work, as follows:

1. Foundation courses (6 credit hours)—Must complete some of the foundation courses (see listing above), as determined at the time of admission, to remedy background deficiencies. Must secure a B average in these courses. None of these courses counts toward graduation.

2. Computer theory (3 credit hours)—CS 720, Theoretical Foundations of Computer Science.

3. 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/Course Work (6-8 credit hours)—One of the following three options:

   A. Thesis (6 credit hours)—Six 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. Must 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.

   B. Project (6 credit hours)—Three credit hours of Practicum/project (CS 891) and one computer science course at the 600-level or above. The project must be supervised by a computer science graduate faculty advisor, and can be job-related. Must write a report on the project. Must pass an oral final examination by an ad hoc faculty committee headed by the project advisor. This examination will pertain to, but is not limited to, the subject matter of the project.

   C. Course Work (8 credit hours)—One computer science course numbered 800-889 or 898; one computer science course at the 600-level or above; and two credit hours of Graduate Seminar (CS 890), specifically approved for this purpose. Must pass a final comprehensive written examination. This examination will cover a variety of topics addressed in the foundation, theory, and advanced courses.

Courses for Graduate/Undergraduate Credit

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.

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. Introduces the concepts of different styles of languages—imperative languages, functional languages, logic languages, object-oriented languages, etc. Prerequisite: CS 410 with a grade of C or better.

540. Operating Systems. (3). 3R; 1L. Covers the fundamental principles of operating systems: process synchronization, scheduling, resource allocation, deadlock, memory management, virtual memory systems. Studies different operating systems in depth. Programming assignments consist of modifications and enhancements to the operating system studied. Prerequisites: CS 410 and 440 with a grade of C or better in each.

560. Data Structures and Algorithms II. (3). 3R; 1L. Design and analysis of algorithms. Techniques for 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 and 350; and Math 344 or 511, and Stat. 460 with a grade of C or better in each.
Software Project Management. (3). Presents the knowledge, techniques and tools necessary to manage the development of software products. Topics include 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.

Topics in Software Engineering. (3). An in-depth study of one or more topics in software engineering, such as Configuration Management, Quality Assurance, Formal Specifications, or Real-Time Software Development. Actual topics vary with instructor's area of expertise. May be repeated for credit with different topics, but topics taken under previous course numbers may not be repeated. Prerequisite CS 680.

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 advisers. Repeatable up to four credit hours. Graded S/U only. Prerequisite: departmental consent.

Practicum. (3). An intensive applied learning experience, involving the analysis and solution of a significant practical problem and appropriate documentation of the work done. Students are required to participate in a department seminar where their practicum experiences are shared with other students and faculty. Graded S/U only. Prerequisite: departmental consent.

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

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

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

English

Graduate Faculty

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

Professors: Sarah B. Daugherty (graduate coordinator), Lawrence M. Davis (chairperson), Frank S. Kastor, Philip H. Schneider, William P. Woods

Associate Professors: Tina Bennet-Kastor, Jeanine M. Hathaway, W. Stephen Hathaway, Diane D. Quante, Richard S. Spillman, Frances C. Stephens, Harold A. Veeser, Donald R. Winike, Peter T. Zoller

Assistant Professors: Roger A. Berger, Bruce Bond, Christopher K. Brooks, Margaret Dawe, Alvin L. Gregg, Nancy M. West

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 knowledge 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 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 nine hours of credit on the Plan A program and up to six 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 the Graduate School Foreign Language Test (GSFLT) in the elected foreign language, with a successful score determined by the English department.
4. By submitting a transcript showing successful completion of six hours of linguistics.

Master's candidates with a creative writing emphasis (Plan C) have the additional choice of successfully completing six semester hours of foreign language 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, 665, 666, 667, and 672. Engl. 515 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 and independent study. It is especially recommended for those who intend to pursue the PhD degree, but teachers may also find it particularly suitable. 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; four period courses in the Eng. 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 rhetorical theory (Eng. 825 or 826); one course in composition theory and pedagogy (Eng. 680 or 780); and two 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 adviser 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 nine courses plus a master's essay for a total of 30 semester hours distributed as follows: Engl. 800 (Introduction to Graduate Study in English), two genre courses, two major author or special topics courses, two period courses, two optional courses, and Engl. 870 (Master's Essay). Regents' rules require that at least six courses be at or above the 700 level. 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 adviser. The first two examination fields should also be consistent with the subject of the master's essay. In consultation with the candidate, an adviser 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 nine semester hours in the graduate creative writing sequence. The final comprehensive examination will be based on a list of 40 book-length works that the student will be held accountable for; the list will be drawn up by the student 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 an exclusively 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 substantial thesis: 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 the in-service training course 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 have 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 after consultation with 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 three hours per semester in Eng. 801 (Creative Writing: Fiction) or 805 (Creative Writing: Poetry) to a maximum of 12 semester hours.

2. Three hours in Eng. 800 (Introduction to Graduate Study in English) or the equivalent, required of all graduate students. Eng. 860 normally should be included in the student's first semester of graduate study.

3. Three hours in Eng. 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 six hours credit.

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

5. Two to six hours in Eng. 875 (Master's of Fine Arts Essay).

6. For purposes of enrichment, candidates must take at least three 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 the in-service training course, Eng. 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 electives 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 nine hours total of Eng. 880 (Writer's Tutorial: Fiction), Eng. 881 (Writer's Tutorial: Poetry), and Eng. 855 (Directed Reading) may be taken.

Comprehensive Examination. All candidates are required to pass a comprehensive examination in the final semester of their course work. This examination is based on a reading list of 40 books chosen by the candidate's thesis director and the director of creative writing consultation with the candidate.

Thesis. The MFA thesis 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 must preface their theses with short introductions.

Oral Examination. Once a candidate has submitted the thesis, a committee is appointed to meet with the candidate and examine the work in the manner specified by the Graduate School.

Composition

Courses for Graduate/Undergraduate Credit

680. Theory and Practice in Composition. (3). Introduction to 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 Eng. 780.

685Q. Advanced Composition. (3). Division A course/elective. Explores the relationships among contemporary issues, problem-solving and communication. The first objective is to 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. The second objective is to develop students' abilities to communicate their knowledge and assumptions about this issue to a variety of audiences and for a variety of purposes. Prerequisites: Eng. 101 and 102 and upper-division standing.

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

517-518. Playwriting I and II. (3-3). Cross-listed as Thea. 516 and 517. Not repeatable for credit.


Courses for Graduate Students Only

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

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.

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

875. Master of Fine Arts Essay. (1-6).


Linguistics

Courses for Graduate/Undergraduate Credit

665. History of the English Language. (3). Cross-listed as Ling. 665. Linguistic and cultural investigation of the development of English. Prerequisite: Eng. 315 or departmental consent.

667. English Syntax. (3). Cross-listed as Ling. 667 and Anthr. 667. A study of the basic princi-
ples 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.

672. Studies in Language Variety. (3). Cross-listed as Ling. 672. An introduction to 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: Engl. 315 or departmental consent.

727. Teaching English as a Second Language. (2-3). Cross-listed as Ling. 727 and CDS 676. 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.

740. Graduate Studies in Linguistics. (3). Cross-listed as Ling. 740. Selected topics in theory of language and methods of linguistic study. With departmental consent, the course is repeatable for credit.

Literature

Courses for Graduate/Undergraduate Credit

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.

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.

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


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

515. Studies in Shakespeare. (3). Subjects announced each semester. Repeatable for credit, except by students who take Engl. 340Q. Prerequisites: junior standing and one college literature course or instructor's consent.

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.

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.

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.

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.

527. Readings in Victorian Literature. (3). Authors 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.


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 focusing on women's roles in society. Materials analyzed both as literary works and as expressions of women's differences from one another. Works selected on the specific attention to the question of gender as it interacts with other elements of culture.

536. Writing by Women. (3). Cross-listed as Wom. S. 536Q. Explores various techniques 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.

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.

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

610. Old English. (3). Cross-listed as Ling. 610.

615. Chaucer. (3). Chaucer's Canterbury Tales, Troilus and Cressida and selected lyrics, with a few works by other later 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.

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

Courses for Graduate Students Only

800. Introduction to Graduate Study in English. (3). Prepares students to perform effectively in graduate classes in English. Concerned with: (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. Throughout the semester a balance between criticism and research is maintained.

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

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

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


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, Finelon, Bulwer, Sheridan, Steele, Rush, John Quincy Adams, Blair, Campbell and Whately.

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

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

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


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, but with change of content and departmental consent, it will be repeatable for credit.

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.

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.

860. Graduate Seminar in Special Topics. (3). Intensive study of selected texts, writers or literary problems. Seminar discussions, reports and research projects. Repeatable for credit with departmental consent.


Geology
Graduate Faculty
Professors: James N. Gundersen, Salvatore J. Mazzullo, Peter G. Sutterlin
Associate Professors: William D. Bischoff (chairperson and graduate coordinator), Collette D. Burke, William E. Pull, John C. Gries

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 geological 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, graduates 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 six 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—Geol. 590—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

501. Raw Materials of Antiquity. (3). 2R; 2L. Nature of rocks, minerals and metallic ores used in prehistory and ancient times. Also environmental management problems; elements of stratigraphy; geologic history of the Pleistocene and Recent Epochs, relative and absolute age dating; mineralogy of clays and ceramics; and mining and metallurgical processes of antiquity. Prerequisite: Anthr. 501 or equivalent or instructor's consent.

520. Optical Mineralogy. (3). 1R; 1L. Optical properties of amorphous and crystalline materials in polarized light. Introduces use of the petrographic microscope in the quantitative determination of rock-forming minerals and mineraloids in thin section and immersion oil methods. Prerequisite: Geol. 320.

525. Sedimentary Geology. (3). 2R; 3L. Origin, classification, primary structures and physicochemical processes controlling deposition of sedimentary rocks, especially carbonates. Includes an analysis of modern and ancient sedimentary depositional environments and a systematic petrographic study of sedimentary rocks in thin section, insoluble residues and heavy-mineral analysis. May require field trips. Prerequisite: Geol. 324.

540. Field Mapping Methods. (3). 9L. Field mapping methods with special reference to use of level, compass, barometer, alidade, and airphotos. Field trips required. Prerequisite: Geog. 201 or Geol. 111Q.

541. Plate Tectonics. (3). The mathematical treatment of plate tectonics including aspects of spherical geometry necessary to understand the movement of plates over the earth's surface. Includes earthquake focal mechanisms and paleomagnetic interpretations of plate movements; dynamic forces of plate motion, the history of the development of plate tectonic theory. Prerequisites: Geol. 111Q and Math. 112 or 123 or equivalent mathematical background.

552. Physical Stratigraphy. (3). 2R; 3L. Description, classification, correlation and relative ages of stratigraphic rock units and the origin of primary structures of clastic sedimentary rocks. Laboratory emphasis on bioclastic carbonate characterization and physical properties of unconsolidated sediments and clastic sedimentary rocks. Requires field instruction in stratigraphic mapping methods. Prerequisites: Geol. 312, 320 and 540 or equivalent.

560. Geomorphology and Land Use. (3). 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; land 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 Geol. 101Q or Geol. 305G with a grade of B or better.

562. Regional Geology of the United States. (3). A detailed regional survey of the general geology, geomorphology, stratigraphy and structural geology and their interrelationships in the United States. Requires field trips (instructor's option). Prerequisite: Geol. 560 or instructor's consent.

584. 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. Prerequisites: Geol. 111Q, Geol. 201 or equivalent.

587. Biogeology. (3). 2R; 3L. Systematic survey of major fossil biogeological materials, analysis of the origin and evolution of life and paleo-
ecological interpretation of ancient environments and climates. Includes handlers and binocular microscopic examination of major fossil biogeochemical materials. Includes application of analyzed fossil data to the solution of problems in biogeochronology, paleoecology, paleoclimatology and paleogeography. Cites examples from fields of invertebrate, vertebrate and micropaleontology, and palynology. May require museum and field trips. Prerequisite: Geol. 312 or 552.

574. Special Studies in Biogeology. (3). 2R; 3L. 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 systematic, taxonomy and biogeographical relationships within the selected fields listed. May require field trips. Repeatable for credit to cover all five areas listed.

581. Numerical Geology. (3). 2R; 3L. Introduce applications of numerical methods to problems in geology and environmental geology. Discuss algorithms and computer software for the analysis of numeric data and multivariate and determinative techniques. Also, applications of a higher order computer language (FORTRAN, C/C++, Pascal) for the manipulation of measurements. Study principles of mapping data modeling, quantification, and analysis of geologic images and models of simulating geologic phenomena. Prerequisites: Stat. 370 or equivalent, AE 227 or demonstrated knowledge of a higher order programming language, Math. 344 or 555 recommended or instructor's permission.

602. Laboratory Methods in Geology. (3). Methods of data collection and analysis of geologic samples; special instruction in the use of the scanning electron microscope, atomic absorption spectrophotometer, cathodoluminescence, X-ray diffraction equipment, computer-assisted image analysis system, particle size description by sieving methods, and staining techniques for qualitative and semi-quantitative mineral identification. Prerequisites: Geol. 312, 320; or instructor's consent.

621. Geochemical Cycling. (3). The chemistry 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. 111Q and Chem. 111Q or instructor's consent.

630. Field Studies in Geology. (2-6). Off-campus, systematic field study in a selected area of geological significance. Course given upon demand and may be repeated for credit when locality and content differ. Where appropriate, travel, lodging and board costs are charged.

640. Field Geology. (6). 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 professionally written report are due on campus during the sixth week. Prerequisite: 12 credits of advanced geology or instructor's consent.

645. Geoscientific Presentation. (2). Essential elements of effective communication of geoscience information in both written and oral formats. Students prepare original manuscripts on results of geologic research and make numerous in-class presentations utilizing professionally acceptable visual displays. Prerequisites: Geol. 312, but course restricted to juniors, seniors, and graduate students; or instructor's consent.

650. Geohydrology. (3). 2R; 3L. 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. 352 and Math. 243 or instructor's consent.

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. Prerequisites: senior standing and department chairperson's permission.


678. Geologic Perspectives on Climatic Change. (3). 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. Prerequisite: Geol. 312.

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, properties, processing, reclamation, and future demand of water and soil resources, and fossil and nuclear fuels. Study environmental aspects of resource exploitation and use, generation and disposal of waste, environmental hazards and reclamation. May require field trips. Prerequisite: Geol. 224.

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: Geol. 525 and 552.

684. Methods of Subsurface Analysis. (3). 2R; 3L. Methods of remotely logging and describing the geologic occurrence of subsurface strata, including laboratory analysis of recovered subsurface samples; application to petroleum geology, mineral resource evaluation, and environmental geology. Prerequisites: Geol. 312; Phys. 214Q or equivalent.

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

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

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.

725. Clay Mineralogy. (3). 2R; 3L. An evaluation of compositional and structural elements of clay-mineral families, related phyllosilicates and associated diagenetic-aughthenic minerals in sedimentary environment. Also laboratory identification and classification of minerals by x-ray powder diffraction and thermal analysis. Prerequisite: Geol. 526.

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: Geol. 526, 550 or equivalents.

727. Carbonate Diagenesis. (3). 2R; 3L. An in-depth analysis of diageneric of carbonate sediments and rocks. Includes mineralogic 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. Prerequisites: Geol. 520 (unless waived by instructor) and 216.

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 resources; use of water, minerals, and fuel resources; population growth and resource availability; the Greenhouse effect, global climate change, and sea level rise and their effects on populations; future trends in environmental management and remediation of environmental problems of geologic scope. Prerequisites: Geol. 312, 680; or instructor's consent.

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 hydrocarbon maturation history. Includes compilation of existing data to deter-
mine geologic evolution of basins. Prerequisites: Geol. 682, 684 or instructor's consent.

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: Geol. 312, 526 and 726.

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

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. Topics include cover 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 wherever practical along with detailed analysis of case histories, including those related to environmental geoscience. Prerequisites: Geol. 650, 681, Math. 344 or instructor's consent.

760. Exploration Geophysics. (3). An introduction to the theory and application of geophysical techniques for hydrocarbon, mineral, and groundwater prospecting. Topics include 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; Geol. 324 and 544; and instructor's consent.

781. Advanced Numerical Geology. (3). Involves practical implementation of algorithms and computer codes. Includes the analysis of multivariate techniques and the development of the computer/algorithm skills needed to handle very large databases. Topics include standard statistical approaches to data analysis; treatment of applied linear algebra and matrix theory, and the application of linear and non-linear discriminant analysis, various factor analytic techniques, hard and fuzzy clustering, linear and non-linear unmixing analysis, and other forms of data modeling. Prerequisites: Geol. 581 or equivalent, competence in one or more high level computer languages, Math. 344 or 555, and instructor's consent.

Courses for Graduate Students Only

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, (h) stratigraphy, (i) geophysics and (k) petroleum. Requires a written final report. Prerequisite: consent of sponsoring faculty.

808. History of Geology. (1-3). Selected events and personalities in geology that have led to our present understanding of geology's place in science. Prerequisite: instructor's permission.

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

821. Special Studies in Geology. (3). A systematic study in selected areas of geochronology. Content differs upon demand to provide in-depth analysis in fields of (a) sedimentary carbonate and silicate geochronology and mineralogy, (b) organic geochronology, (c) high pressure and temperature thermodynamics of earth materials, (d) exploration geochronology, (e) xenogenic geochemical cycling, (f) stable isotopic geochronology. Prerequisite: consent of sponsoring faculty. May require some laboratory work. Prerequisite: Geol. 720 or instructor's consent.

823. Igneous and Metamorphic Petrology. (3). 1R: 6L. Mineral paragenesis, bulk chemical compositions, compositions, 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: Geol. 520.

825. 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: Geol. 526.

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 and may be repeated for credit when locality and content differ. Where appropriate, local field and travel costs are charged. Prerequisites: summer field geology (or equivalent) and instructor's consent.

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.

852. Field Stratigraphy. (3). 2R; 3L. Advanced concepts and principles of stratigraphic analysis and interpretation emphasizing original source material or current research investigations. Required field problem and field trips. Prerequisites: Geol. 544 and 552 or instructor's consent.

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 estimates, shallow aquifer geophysical modeling, geophysical basin modeling, and regional and global environmental modeling. Prerequisites: Geol. 581, 760; Math. 344 or 555; or instructor's consent.

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

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-variate linear and non-linear unmixing, extrapolation and interpolation techniques, quantitative isotope chronostatigraphic techniques, modeling global phenomena, and simulations of multiphase flow in aquifers and reservoirs. Prerequisites: Geol. 581, 761; and Math 344 or 555, or instructor's consent.

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

Gerontology
See Urban and Public Affairs, Hugo Wall School of.

History
Graduate Faculty
Distinguished Professors: H. Craig Miner (Willard W. Garvey Distinguished Professor of Business History), William E. Unrau (Endowment Association Distinguished Research Professor)

Professors: John E. Dreifort (chairperson), James C. Duram, Phillip D. Thomas
Associate Professors: John D. Born, Jr. (graduate coordinator), Anthony P. Gytihel, Richard A. Todd
Assistant Professors: Rebecca Conard, Helen Hundley, Judith R. Johnson, Willard Klunder, Craig L. Torbenson

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., European, 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
One of three plans may be followed for a graduate degree in history. Plan 1 is a thesis program in American or European history. Plan 2 is a nonthesis program in American or European history. Plan 3 is a thesis program in public history.

Plan 1, Thesis Program. In Plan 1 students must complete a minimum of 31 hours, including Hist. 725, which must be taken during the first year of enrollment. Thesis students must take 19 semester hours numbered 700 or above.

Students following the American history emphasis must take the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hist. 725, Advanced Historical Method</td>
<td>3</td>
</tr>
<tr>
<td>Hist. 777, Readings in History</td>
<td></td>
</tr>
<tr>
<td>Hist. 729-730, American history seminars</td>
<td>3</td>
</tr>
<tr>
<td>Hist. 733-734, European history seminars</td>
<td></td>
</tr>
<tr>
<td>(includes ancient, medieval, and modern European history)</td>
<td>3</td>
</tr>
<tr>
<td>Hist. 801, Thesis Research</td>
<td>2</td>
</tr>
<tr>
<td>Hist. 802, Thesis</td>
<td>2</td>
</tr>
</tbody>
</table>

A majority, but not all, of the remaining hours must be taken in American history courses for a total of 31 credit hours. Students also must satisfy the foreign language requirement, pass a written examination in one comprehensive field, and pass an oral examination in defense of the thesis. A written examination must precede the oral examination.

Students following the European history emphasis must take the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hist. 725, Advanced Historical Method</td>
<td>3</td>
</tr>
<tr>
<td>Hist. 727, Readings in History</td>
<td></td>
</tr>
<tr>
<td>Hist. 729-730, American history seminars</td>
<td>6</td>
</tr>
<tr>
<td>Hist. 733-734, European history seminars</td>
<td>3</td>
</tr>
<tr>
<td>(includes ancient, medieval, and modern European history)</td>
<td>6</td>
</tr>
<tr>
<td>Hist. 725, Advanced Historical Method</td>
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<td>6</td>
</tr>
<tr>
<td>(includes ancient, medieval, and modern European history)</td>
<td>6</td>
</tr>
</tbody>
</table>

A majority, but not all, of the remaining hours must be taken in European history courses for a total of 36 credit hours. Students also must satisfy the foreign language requirement and pass written examinations in three comprehensive fields. One of these fields must be in American history.

Students following the European history emphasis must take the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hist. 701, Introduction to Public History</td>
<td>3</td>
</tr>
<tr>
<td>One course selected from the following:</td>
<td></td>
</tr>
<tr>
<td>Hist. 702, Historic Preservation</td>
<td>3</td>
</tr>
<tr>
<td>Hist. 703, Museum Administration</td>
<td>3</td>
</tr>
<tr>
<td>Hist. 705, Introduction to Archive</td>
<td>3</td>
</tr>
<tr>
<td>Hist. 704, Interpreting History to the Public</td>
<td>3</td>
</tr>
<tr>
<td>Hist. 725, Advanced Historical Method</td>
<td>3</td>
</tr>
<tr>
<td>*Hist. 729-730, Seminar in American History</td>
<td>6</td>
</tr>
<tr>
<td>Hist. 801, Thesis Research</td>
<td>2</td>
</tr>
<tr>
<td>Hist. 802, Thesis</td>
<td>2</td>
</tr>
<tr>
<td>**Hist. 803, Internship in Public History</td>
<td>2-4</td>
</tr>
</tbody>
</table>

Courses for Graduate/Undergraduate Credit
501. The American Colonies. (3). Colonization of the New World emphasizing the British colonists and their development.

502. The American Revolution and the Early Republic. (3). Examination of selected phases of the revolutionary, confederation and federal periods.

503. The Age of Jefferson and Jackson. (3). 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.

504. Civil War and Reconstruction. (3). A study of the origins and military events of the American Civil War and the political and social ramifications of the conflict through 1877.

505. America's Gilded Age, 1877 to 1900. (3). Emphasizes roots of urban problems, foundations of dissent policy toward minority groups and evaluation of imperial expansion.

507. The United States: the 20th Century, 1900-1945. (3). Examines political, social, and economic issues from the Progressive Era through World War II.


515. Economic History of the United States. (3). Cross-listed as Econ. 627.
516. History of American Business. (3). A history of American business enterprise from colonial times to the present, with special emphasis on 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.


523. American Military History. (3). 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.


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

529. Indians of Kansas. (3). History of Indian occupation of the Kansas region from initial white contact to the present. Emphasizes Indian-white relations in the 19th century, forced removal of the emigrant tribes, inter tribal and intra tribal relations and consequent legal and cultural problems.


531. American Environmental History. (3). Examination of the historical, physical, economic, scientific, technological, and industrial interactions of the peoples of America with their environment. Particular emphasis on the period from 1800 to the present.

532. The American City: from Village to Metropolis. (3). A study of urbanization and urban life from colonial times to the present—changing life-styles 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.

533. The American City: from Village to Metropolis. (3). A study of urbanization and urban life from colonial times to the present—changing life-styles 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.

534. History of the Old South. (3). An examination of Southern civilization prior to the American Civil War.

535. History of Kansas. (3). Division A course/elective. History of the Kansas region from Spanish exploration to the present, emphasizing the period after 1854.

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.

538. The American West in the Twentieth Century. (3). Explores the growth of the trans-Mississippi West in the 20th century, with particular attention to political development, economic growth, cultural manifestations, the role of minority groups and the impact of science and technology.

539. Indian-White Relations in North America. (3). Indian life, culture and history from the early 16th century to the present emphasizing the impact of federal Indian policy since 1800.

541. Modern France. (3). 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.

545. Neither War Nor Peace: The World Since 1945. (3). Division A course/elective.

553. History of Mexico. (3). Pre-Columbian Mexico; the Spanish conquest and the colonial period; the independence movement; Juarez, the Reform and the French intervention; the Porfiriate; the Mexican Revolution; Mexico in recent years.

558. The Ancient Near East. (3). Political and cultural history of ancient Mesopotamia, Iran, Egypt, Palestine, Syria and Asia Minor to the death of Alexander the Great.

559. Greek History. (3 & 3). 559Q: Greek History. (3 & 3). 559Q: Division A course/elective: the Hellenic world from prehistoric times to the end of the Peloponnesian War. 560: the 4th century and the Hellenistic period.


566 & 567. Medieval History. (3 & 3). 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.

575. The Italian Renaissance. (3). Division A course/elective. Italian history from the 14th through the 16th centuries emphasizing cultural achievements.

576. The Reformation. (3). Cross-listed as Rel. 476. The great religious changes in the 16th century in the political, social and intellectual contexts.

581. Europe, 1815-1870. (3).

582. Europe, 1870-1914. (3).


588. History of Early Russia. (3). Covers the social, political, and cultural history of Kiev and Muscovite Russia.

591. History of Imperial Russia. (3). A survey of the political, social, and cultural history of Imperial Russia.


593. Former Soviet Union. (3). An examination of contemporary life in the former USSR: historical background, Marxist/Leninist 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.

594. European Diplomatic History. (3). 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.

598. Economic History of Europe. (3). Cross-listed as Econ. 625. An analysis of the development of economic institutions; the rise of capitalism and its influence on overseas expansion, technology, precious metals, politics and war; changes in economic ideologies; and cultural effects of economic change. Prerequisites: Econ. 201Q and junior standing.

607. The Holocaust. (3). Division A course/elective. The origins and development of the concentration camp system in Nazi Germany and its transition into a death camp system.

617Q. The Holocaust. (3). Division A course/elective. The origins and development of the concentration camp system in Nazi Germany and its transition into a death camp system.

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.

701. Introduction to Public History. (3). Introduces the various areas of public history including historic preservation, archival administration, museum studies, litigation 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.

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.

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.

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 way they reach audiences. Students 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.

705. Introduction to Archives. (3). Introduce 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. Learn the theory and skills necessary to understand and apply basic archival functions. Prerequisite: graduate standing and/or instructor's consent.

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.

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

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

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

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

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

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


802. Thesis. (2).

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 MA thesis. Prerequisites: Hist. 701 and consent of public history faculty.

810. Special Topics in History. (1-3). Open only to graduate students. Repeatable for credit to a maximum of six hours.

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

Courses for Graduate/Undergraduate Credit

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.

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


542. Geography of Europe. (3). Physical, political, economic, historical and human geography of Europe.

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

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

630. Geography of Mexico. (3). Physical, human and cultural geography of Mexico, including important archaeological and historical settings. Relations of sources to arts, crafts, industry and architecture.

670. Urban Geography. (3). 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.

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 and is repeatable for credit when content differs. May require field trips. Prerequisite: junior standing.

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

Course for Graduate Students Only

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

Hugo Wall School of Urban and Public Affairs

See Urban and Public Affairs, Hugo Wall School of.

Liberal Studies

Graduate Coordinator: Tina Bennett-Kastor
Supervisory Committee: Collette Burke (geology), John Gries (geology), Judith Johnson (history), James Snyder (psychology), Michael Vincent (modern languages).

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 should have a bachelor's degree from an accredited institution and, generally, a grade point average of 3.00 or better. Usually no more than six hours of graduate credit from another program may be transferred into the liberal studies program.

When submitting an application to the Wichita State Graduate School, students should include a brief essay describing their reasons for selecting the liberal studies program and their educational goals for the program. Applications are reviewed in April for the following fall semester.

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

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

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 Advisory Committee and the MALS Supervisory 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 38 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 23 of the 38 total hours in courses numbered 700 or above.
5. Three of the 38 hours must be taken in LAS 800. Research Goals and Strategies, which should be taken within the first 12 hours of course work in the MALS program. Two hours of LAS 825, Research Proseminar, must be taken in subsequent semesters.

The terminal project, required of all students, may be a master's report for three to six hours' credit, a master's thesis for six hours' credit, or a practicum or internship for either three or six hours' credit.

The specific nature of the terminal project must be described in the Plan of Study.

Courses for Graduate Students Only

800. Research Goals and Strategies. (3). Introduces research goals, methods, and sources in the humanities, social sciences, and natural sciences, emphasizing the opportunities and problems of integrating research activities involving more than one discipline. Required of all students in the Master of Arts in Liberal Studies program.

825. Research Proseminar. (1). Repeatable for up to 2 hours. Introduces the student to the varieties of research methods which are represented among the disciplines, as well as to applications of those methods outside the academy. Student will obtain experience in the critical evaluation of research design and methodology, utilizing newly published research papers from a range of disciplines, as well as presentations of original research by faculty and more advanced students. Students develop and deliver presentations of both research reviews and original research, particularly in interdisciplinary areas. Two hours required of all MALS students. Prerequisite: LAS 800.

875. Thesis. (2-6). For students who are finishing the Master of Arts in Liberal Studies (MALS) and involved in a terminal project. The terminal project may have many aspects such as field work, practicum, internship, research report, or any other individualized activity, but the scope of it must be approved by the student's advisory committee. The student involved in a project must have enrolled in this course until the project is completed and all project requirements have been satisfied. Prerequisite: Consent of student's degree committee chairperson and instructor.

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, internship, research report, or any other individualized activity, but the scope of it must be approved by the student's advisory committee. The student involved in a project must have enrolled in this course until the project is completed and all project requirements have been satisfied.

Linguistics

Graduate Faculty

Professor: Lawrence M. Davis
Associate Professor: Tina L. Bennett-Kastor
Assistant Professor: Alvin L. Gregg

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


682. Linguistics. Structure of a Selected Non-Indo-European Language. (3). Language offered depends on student demand and availability of staff. Course may be conducted as a field methods course and is 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


505. Russian. Russian Phonology. (2). Cross-listed as Russ. 505.


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


Others

Courses for Graduate/Undergraduate Credit

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.


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

Associate Professors: Prem N. Bajaj, Stephen W. Brady, Gary D. Crown, Thomas Delillo, Kirk E. Lancaster, Kenneth G. Miller (graduate coordinator), Hari Mukerjee, Phillip E. Parker, William H. Richardson, Ziqi Sun, Han-Kun Wang

Assistant Professors: Shahar Boneh, Lop-Hing Ho, Xiaomei Hu, Zhiren Jin, Daowei Ma, Vasilis Papanicolaou

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.

**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 3.00 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 thesis) 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 and Numerical Linear Algebra in their MS program of study.

Generally not more than six hours of approved course work may be transferred from another university. Students may take either a thesis or non-thesis option. Students electing to write a thesis should enroll in Math. 885 for up to six 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 Numerical Linear Algebra are required of all students who plan to enter the PhD program in applied mathematics. Students who do not plan to enter the PhD program may be required to complete the following two sets of courses:

**Course Requirements:**

A total of at least 24 semester hours of graduate credit is required.

**Partial Differential Equations for Engineers (757) and Complex and Vector Analysis for Engineers (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 700 (exclusive of PhD Dissertation). 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 and Numerical Linear Algebra are required of all students. In addition a student must complete one of the following two sets of requirements:


**Language Requirements:**

The student must demonstrate proficiency in two foreign languages or in one foreign language and one high level computer language. The foreign languages are 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 and Numerical Linear Algebra.

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, will recommend to the departmental PhD Advisory Committee a PhD committee for the student. The student's PhD committee will consist of the student's dissertation adviser 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 will serve 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 will 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 all language requirements must be met. The preliminary exam should be passed before beginning work on the dissertation. 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.

501. Elementary Mathematics. (3). 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 a grade of C or better or departmental consent.

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 grade of C or better.

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

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 grade of C or better.

531. Introduction to the History of Mathematics. (3). 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.

545. Integration Techniques and Applications. (3). A study of 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 grade of C or better.

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 or C or better in each.

550. Ordinary Differential Equations. (3). Includes separation of variables, integrating factors, variation of parameters, undetermined coefficients, Laplace transforms, power series substitution, linear algebra, eigenvalue problems, and linear systems. Credit not allowed in both Math. 550 and 555. Prerequisite: Math. 243 with grade of C or better or departmental consent.

555. Ordinary Differential Equations with Linear Algebra. (4). Includes separation of variables, integrating factors, variation of parameters, undetermined coefficients, Laplace transforms, power series substitution, linear algebra, eigenvalue problems, and linear systems. Credit not allowed in both Math. 550 and 555. Prerequisite: Math. 243 with grade of C or better or departmental consent.

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

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

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

564. Advanced Calculus II. (3). A continuation of Math. 547. Prerequisites: Math. 511 and 547 or grade of C or better or departmental consent.

567. 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.

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

673. Real Analysis I. (3). Includes a study of the foundations of analysis and the fundamental results of the subject. Prerequisite: Math. 660 with C or better or departmental consent.

754. Complex Analysis I. (3). Studies the theory of analytic functions. Prerequisite: Math. 660 with C or better or departmental consent.

750. Workshop. (1-3). Topics appropriate for mathematics workshops that are not in current mathematics courses. May be repeated to a total of six hours credit with departmental consent. Prerequisite: departmental consent.

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 or C or better in each, or departmental consent.

753. Ordinary Differential Equations. (3). Covers existence, uniqueness, stability and other qualitative theories of ordinary differential equations. Prerequisite: Math. 545 or 547 or C or better or departmental consent.

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.

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. 550 or 555 or C or better.

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. No credit for this course toward a graduate degree in mathematics. Prerequisite: Math. 550 or 555 or C or better.

Courses for Graduate Students Only


818. Selected Topics in Number Theory. (2-3). Repeatable with departmental consent. Prerequisite: departmental consent.

825. Topology II. (3). A continuation of Math. 725. Prerequisite: Math. 725 or equivalent.

828. Selected Topics in Topology. (2-3). Repeatable with departmental consent. Prerequisite: departmental consent.

829. Selected Topics in Geometry. (2-3). Repeatable with departmental consent. Prerequisite: departmental consent.

839. Selected Topics in Foundations of Mathematics. (2-3). Repeatable with departmental consent. Prerequisite: departmental consent.
843. Real Analysis II. (3). A continuation of Math. 743. Prerequisite: Math. 743 or equivalent.

845. Complex Analysis II. (3). A continuation of Math. 745. Prerequisite: Math. 745 or equivalent.

848. Calculus of Variations. (3). Includes Euler-Lagrange equations, variational methods and applications to extremal problems in continuum mechanics. Prerequisite: Math. 547 or 757.

849. Selected Topics in Analysis. (2-3). Repeatable with departmental consent. Prerequisite: departmental consent.


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.


857-858. Selected Topics in Engineering Mathematics I and II. (0-3). 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.

859. Selected Topics in Applied Mathematics. (2-3). Repeatable with departmental consent.

860. Proseminar. (1). Oral presentation of research in areas of interest to the students. Prerequisite: major standing.

880. Individual Reading. (1-5). Prerequisite: departmental consent. Repeatable up to a maximum of six hours with departmental consent.

881. Thesis. (1-4). May be repeated to a maximum of six hours credit. Prerequisite: departmental consent.


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. 744 with a grade of C or better.

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.

958 & 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.

981. Advanced Independent Study in Applied Mathematics. (1-3). Arranged individually directed study in an area of applied mathematics. Repeatable to a maximum of six hours. Prerequisites: must have passed the PhD qualifying exam and instructor's consent.

985. PhD Dissertations. (1-9). Repeatable to a maximum of 24 hours. Prerequisites: must have passed the PhD preliminary exam.

Statistics

Courses for Graduate/Undergraduate Credit
Credit in courses numbered below 600 is not applicable toward the MS in mathematics.

570. Special Topics in Statistics. (3). Covers topics of interest not otherwise available. Prerequisite: departmental consent.

571-572. Statistical Methods I and II. (3-3). 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.

574. Elementary Survey Sampling. (3). Reviews basic statistical concepts. Covers simple, random, stratified and cluster sampling, along with selection of sample size, ratio, estimation costs. Applications studied include problems from the social and natural sciences, business and other disciplines. Prerequisite: any elementary course in statistics, such as Stat. 310, Soc. 501 or Psy. 401 with a C or better.

576. Applied Nonparametric Statistical Methods. (3). 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 Psy. 401 with C or better.

576. 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.

576. 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 problems. Prerequisites: Stat. 371 and Math. 344 and 511 with C or better in each or departmental consent.

771-772. Theory of Statistics I and II. (3-3). An examination of stochastic dependence distributions, inferential techniques, the law of large numbers and central limit theorem, order statistics, theory of statistical inference, nonparametric tests and analysis of variance and covariance. Prerequisite: Math. 549 or 547 with grade of C or better or departmental consent.

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.

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 a grade of C or better or departmental consent.

778. 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 a grade of C or better or departmental consent.

Courses for Graduate Students Only

861. Theory of Probability. (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.

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.

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.

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.


878. Special Topics. (2-3). Repeatable with departmental consent. Prerequisite: departmental consent.

879. Individual Reading. (1-5). Prerequisite: departmental consent.

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.

971 & 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.

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. Prerequisite: must have passed the PhD qualifying exam and instructor’s consent.

986. PhD Dissertation. (1-9). Repeatable to a maximum of 24 hours. Prerequisite: must have passed the PhD preliminary exam.

Minority Studies
See Urban and Public Affairs, Hugo Wall School of.

Modern and Classical Languages and Literatures
Graduate Faculty
Professors: Pedro Bravo-Elizondo, Dieter Saalman
Associate Professors: Ginette Adamson, Wilson Baldridge, John Koppenhaver (chairperson), Eunice Myers (graduate coordinator), Gary Toops, Michael Vincent
Assistant Professors: Carl Adamson, Judy Berry-Bravo, Wilma Detjens, Patrick E. Kehoe

French
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 adviser, 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. prereq. 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.


515. Major Topics. (1-4). Special studies in (a) language, (b) literature, (c) commercial French, (d) the language laboratory, (e) music, (f) composition, (g) problems in teaching French, (h) civilization, (i) translation, (j) conversation and (m) phonetics. Repeatable for credit. Prerequisite: departmental consent.

525. Advanced Conversation. (3). Designed to increase proficiency in spoken French. Assignments include oral reports, dialogues, and work in the language laboratory. Prerequisite: Fren. 227 and either 220 or 225, or departmental consent.

526. Advanced Composition and Grammar. (3). Emphasizes theme writing, original compositions and detailed study of modern French grammar. Prerequisites: Fren. 220 or departmental consent.

540Q. French Literature in English Translation. (3). Division A course/elective. 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.

541Q. French Literature of Africa and the Caribbean in English Translation. (3). Division A course/elective. 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. Course may count toward a French major or minor if readings and papers are done in French.

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 and history, social evolution and intellectual traditions. Course is interdisciplinary in nature and is designed to complement studies in French language and literature. Includes slide demonstrations, guest speakers on special topics and films. Most classes and required readings are in French. Prerequisite/corequisite: Fren. 300.

623. Seminar in French. (3). Seminar in French literature, language or civilization. Prerequisite: Fren. 300. Repeatable for credit.


631. 17th Century French Literature. (3). Prerequisite: Fren. 300.

632. 18th Century French Literature. (3). Prerequisite: Fren. 300.


634. Contemporary French Literature. (3). Prerequisite: Fren. 300.

635. Introduction to Romance Language Linguistics. (3). Cross-listed as Span. 635 and Ling. 635. An introduction to the historical phonology and morphology of the romance languages emphasizing French and Spanish. Prerequisite: departmental consent.

636. 20th Century French Literature. Reading and discussion of major works of French fiction, poetry and drama from 1900 to 1960. Prerequisite: Fren. 300.

726. 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. Prerequisites: Fren. 526 or departmental consent.
Course for Graduate Students Only

815. Special Studies in German. (3). Prerequisites: German 324 or Instructor's consent.

German

Although a complete graduate program is not available currently in German, the following courses may apply toward a master's degree: (a) survey of the literatures of the German-speaking countries; (b) special topics in literature or culture. May be repeated for credit when the topic changes. Prerequisites: graduate standing or departmental consent.

Courses for Graduate/Undergraduate Credit

524. Advanced Conversation and Composition. (3). Prerequisites: German 324 or Instructor's consent.

650. Directed Study. (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 II: eighteenth-century literature; (c) contemporary literature: the literature of both Germany and Austria since 1945; (d) special topics in literature, repeatable once for credit; (e) special topics in language, repeatable once for credit. Prerequisites: German 344C or Instructor's consent.

726. Advanced Stylistics. (3). Offers advanced 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. Prerequisites: German 524 or departmental consent.

750. Workshop in German. (2-4). Repeatable once for credit.

751. German Civilization since the Middle Ages. (3). Survey of German civilization from the Middle Ages to the present. Emphasizes the social, political, historical and intellectual evolution of the German-speaking countries. Special attention paid to the foundation of the German Reich in 1871, World War I, the Weimar Republic, National Socialism and the Holocaust, the creation of the Federal Republic and the German Democratic Republic in 1949, and the unification process initiated in 1989. Prerequisites: German 4410 or departmental consent.

752. German Literature from the Eighteenth Century to the Present. (3). The following offerings are available: a) Genres: studies: novel, novella, prose, and poetry; b) Literary Movements: storm and stress, classicism, romanticism, realism, fin de siècle, expressionism, post-1945 literary trends; c) Major Authors: e.g. Goethe, Schiller, Rilke, Kafka, Boll, Grass, Wolf; d) Special Topics: intellectual life in Weimar Germany, literature and exile, literature and film, writers in East and West Germany: Two Literatures? Prerequisite: German 650 or departmental consent.

Course for Graduate Students Only

815. Special Studies in German. (3). Readings in German literature or culture. May be repeated for credit when the topic changes. Prerequisites: graduate standing or departmental consent.

Greek (Ancient Classical)

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

515. Major Topics. (2-4). Special Studies in Italian literature and civilization. Repeatable for credit. Prerequisite: departmental consent.

Italian

Although a complete graduate program is not available currently in Italian, the following courses may apply toward a master's degree.

Courses for Graduate/Undergraduate Credit

515. Major Topics. (2-4). Special Studies in Italian literature and civilization. Repeatable for credit. Prerequisite: departmental consent.

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

515. Major Topics. (2-4). Special Studies in Italian literature and civilization. Repeatable for credit. Prerequisite: departmental consent.

Courses for Graduate/Undergraduate Credit

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 morphonemics, as well as the study and production of intonation contours (intonationsyme konstrukt). Prerequisite: any 200-level course or instructor's consent.

515. Special Studies. (1-3). Specialized topics in Russian literature. Prerequisite: Graduate Standing or departmental consent.

Spanish

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, eight hours of which have been on the junior-senior level.
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, 631, or 832—that require research papers. Of these hours, 20 must be in courses numbered 700 or above.

Each program must include nine hours of related fields and 23 hours of Spanish, including Span. 526 and three of the following surveys 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 grade of 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 and the graduate coordinator.

Special recommendation is strongly made that all MA candidates in Spanish earn a minimum of four 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.

505. Spanish Phonetics. (2). Cross-listed as Ling. 505. Prerequisite: any 200-level course or departmental consent.

515. Major Topics. (1-4). Special studies in (a) language, (b) literary reports, (c) commercial Spanish, (d) language laboratory, (e) music, (f) composition, (g) problems in teaching Spanish, (h) advanced conversation. Repeatable for credit. Prerequisite: departmental consent.

525. Spanish Conversation III. (2). Prerequisite: Span. 325 or departmental consent.

526. Advanced Grammar and Composition. (3). Prerequisite: Span. 220 or departmental consent.

531. Survey of Spanish Literature. (3). Main currents of Spanish literature from 1700 to the present. Prerequisite: Span. 300 or departmental consent.

532. Survey of Spanish Literature. (3). Spanish literature from the beginning to 1700. Prerequisite: Span. 300 or departmental consent.

534. Contemporary Spanish Theater. (3). Prerequisite: Span. 300 or departmental consent.

536. Contemporary Spanish Novel. (3). Prerequisite: Span. 300 or departmental consent.

540Q. Contemporary Spanish Literature in English Translation. (3). Division A course/elective. Content may vary from semester to semester, including Spanish and/or Latin-American literature. No knowledge of a foreign language is necessary. Course may count towards a Spanish major or minor with departmental consent if reading is done in Spanish and prerequisite of Span. 300 is met. Repeatable for credit. Prerequisite: departmental consent when counted toward a Spanish major or minor.

552. Business Spanish. (3). Provides the opportunity to learn and practice commercial correspondence, business vocabulary, translation and interpretation of business texts. Prerequisite: Span. 526.

557. Literary and Technical Translating. (3). Extensive translation of literary works and technical documents from Spanish to English and English to Spanish. Prerequisite: Span. 526 or departmental consent.

620. Survey of Latin-American Literature. (3). Main currents of Latin-American literature from 1500 to 1800. Prerequisite: Span. 300 or departmental consent.

621. Survey of Latin-American Literature. (3). Main currents of Latin-American literature from 1800 to present. Prerequisite: Span. 300 or departmental consent.

622. Special Studies. (1-4). Topic for study chosen with aid of instructor. Repeatable for credit. Prerequisite: instructor's consent.

623. Seminar in Spanish. (1-5). Special studies in (a) language, (b) Spanish and Latin-American literature, (c) Spanish and Latin-American culture and civilization and (d) methods of teaching Spanish in the elementary and secondary schools. Repeatable for credit. Prerequisite: departmental consent.

625. Contemporary Latin-American Novel. (3). Prerequisite: Span. 300 or departmental consent.

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.

628. Contemporary Latin-American Theater. (3). A study of contemporary theater from 1900 to present. Prerequisite: Span. 300 or departmental consent.

631. Latin-American Short Story. (3). Study of the main writers in contemporary Latin-American literature. Prerequisite: Span. 300 or departmental consent.

635. Introduction to Romance Linguistics. (3). Cross-listed as Fr. 635 and Ling. 635. An introduction primarily to the historical phonology and morphology of the romance languages emphasizing French and Spanish. Prerequisite: departmental consent.

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.

653. South America: Its People and Culture. (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.

720. Theory and Practice for University Teaching. (2). Deals with recent theories of language acquisition and their application to the teaching of Spanish. Required for teaching assistants. Prerequisite: graduate standing.

750. Workshop in Spanish. (2-4). Repeatable for credit.

Courses for Graduate Students Only


826. Grammar and Stylistics. (3). Intensive study of advanced grammar and stylistic usage.

827. Latin American Civilization and Culture. (3). Introduction to historical and cultural development in Latin America, exploring the legacy of the Spanish encounter/conquest. Emphasis is on Spanish colonialism. Prerequisite: graduate standing.

831. Seminar in Spanish Literature. (3). (a) Middle Ages, (b) Renaissance, (c) Golden Age theater, (d) Cervantes, (e) modern novel, (f) Generation of '98, (g) romanticism, (h) 20th century poetry, (i) criticism, (j) literature, (m) 20th century theatre, and (n) contemporary Spanish novel.

832K. Seminar in Latin-American Literature. (3). (a) colonial period, (b) contemporary novel, (c) short story, (d) poetry, (e) modernism, (f) essay, (g) theater, (k) Latin-American literature.

842. Seminar in Hispanic Studies. (3). (a) travel writing, (b) literature, (c) oral traditions, (d) sociology, (e) anthropology, (f) colonial history, (g) modern history, (h) politics, (i) economics, (j) literature, (k) Latin-American literature, (l) ethnic studies, (m) Latin-American studies.
Philosophy

Graduate Faculty
Professor: Gerald H. Paske
Associate Professors: Robert Feleppa (chairperson), A. J. Mandt, Ben F. Rogers, David Soles, Deborah H. Soles
Assistant Professor: I. W. Mallory

Although there is no graduate degree in philosophy, the following courses are available for graduate credit.

Courses for Graduate/Undergraduate Credit

538. 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.

539. 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 philosophy of Hobbes, Locke, Berkeley, Hume and Mill.

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.

541. Rationalism. (3). A study of the philosophical views that emphasize reasoning rather than sensory experience as the source of knowledge with particular attention paid to the philosophy of Descartes, Spinoza, and Leibniz.

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 of the 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.

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.

557. Contemporary European Philosophy. (3). An examination of a theme, issue, philosopher or movement in contemporary European philosophy. Includes such philosophers as 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.

558. 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.

560. Special Studies. (3). Topic for study announced by instructor. Repeatable for credit. Prerequisite: instructor's consent.

647. Artificial Intelligence and Philosophy. (3). A study of the relationship of artificial intelligence and philosophy. The course examines the problems of artificial intelligence and their applications 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. Prerequisite: at least one 300-level course in computer science or philosophy, Math. 243 and five hours toward the major in any one of the physical or biological sciences with grades of C or better or departmental consent.

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

865. Business and Morality. (3). A critical examination of 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.

850. Directed Reading. (2-3). For the graduate student desiring independent study and research in an area of special interest. May be repeated for credit. Prerequisite: departmental consent.

Physics

Graduate Faculty
Professor: James C. Ho
Associate Professors: David R. Alexander (chairperson), Elizabeth Behrman, Pawan K. Kohal (graduate coordinator), Gerald D. Loper, Jr., Syed M. Taheer
Assistant Professor: Hussein Hamdeh

Master of Science

The physics department offers courses of study leading to the Master of Science (MS) degree.

Admission Requirements

Admission to the MS program in physics requires the completion of 24 hours of undergraduate physics, including three semester hours of mechanics and three 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 program approved by the student's adviser and the department chairperson. Two options are available to the student: (1) the thesis option requires the completion of 30 semester hours of graduate course work, which includes the presentation of a thesis, and (2) the nonthesis option requires the completion of 36 semester hours of graduate work. In both options at least 12 hours must be in courses numbered 800 or above. The department recommends that each Plan of Study include Phys. 821, Classical Mechanics; Phys. 871, Statistical Mechanics; Phys. 811, Quantum Mechanics I, and either Phys. 812, Quantum Mechanics II or Phys. 813, Quantum Mechanics III. Up to nine semester hours of course work may be taken outside the department under the thesis option. For the nonthesis option up to 12 semester hours may be taken outside the department.

An MS degree in physics with a chemical physics option is available. Requirements are those listed above, with nine hours of chemistry chosen from Chem. 615, 641, 741, 846, 847, or other approved chemistry courses. Students should take Phys. 642 unless they took it 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. A qualifying examination must be passed at least one semester before graduation and an oral defense of the thesis also is required.
Courses for Graduate/Undergraduate Credit

501. Special Studies in Physics for Educators. (1-3). * 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.

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 eight credit hours. Corequisite: Phys. 551.

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.

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.

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.

590. Stellar Astrophysics. (3). Focuses on the application of basic physical principles to the study of stars. Includes stellar atmospheres, the structure of stars, formation and evolution of stars, nuclear reactions and nucleosynthesis, unusual stars, the death of stars and the interstellar medium. Prerequisite: Phys. 551.

595. Galactic and Extragalactic Astronomy. (3). Primary topics are galaxies and the structure of the universe. Includes the constituents and dynamics of our galaxy, the characteristics of normal galaxies, active galaxies and quasars, and cosmology. Prerequisite: Phys. 551.

600. Individual Readings in Physics. (1-3). Repeatable but total credit may not exceed six hours for physics majors. Prerequisite: departmental consent.

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 six hours. Prerequisite: Instructor's consent.

611. Modern Physics I. (3). Introduction to quantum mechanics, the Schroedinger equation, elementary perturbation theory and the hydrogen atom. Prerequisite: Phys. 551.


616. Computational Physics Laboratory. (3). 2R; 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. 550 or 555.

621. Elementary Mechanics I. (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.

625. Electronics. (2). 1R; 4L. Provides a working knowledge of electronic devices and circuits for the student or research worker who has little or no background in electronics. Prerequisite: instructor's consent.

631. Electricity and Magnetism I. (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.

632. Electricity and Magnetism II. (3). A continuation of Phys. 631. Prerequisite: Phys. 631 or instructor's consent.

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. Chemists and physicists discuss standard experimental and theoretical techniques used in chemical physics research. Prerequisites: Chem. 641 or instructor's consent.

671. Thermodynamics. (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.


*Course may not be counted for credit toward a graduate physics major.

Courses for Graduate Students Only

800. Individual Readings. (1-3). Repeatable for credit up to three hours. Prerequisites: 30 hours of physics and departmental consent.

801. Selected Topics in Physics. (2-3). Repeatable for credit up to six hours. Prerequisite: departmental consent.

807. Seminar. (1). Review of current periodicals; reports on student and faculty research. Repeatable for credit up to two hours. Prerequisite: 20 hours of physics.

809. Research. (1-3). Repeatable for credit up to six hours.

811. Quantum Mechanics I. (3). The Schroedinger and Heisenberg formulations of quantum mechanics. Applications include rectangular potentials, central forces and the harmonic oscillator. Also include spin, time independent and time dependent perturbation theory. Prerequisites: Phys. 621 and 611 or departmental consent and Math. 550.

812. Quantum Mechanics II. (3). Applications of quantum mechanics including the WKB approximation, scattering, transformation theory, interaction picture, molecules and relativistic quantum mechanics. Prerequisite: Phys. 811.

813. Quantum Mechanics III. (3). Applications of quantum mechanics including the N-body problem, second quantization photons, the electromagnetic field, superconductivity and magnetism. Prerequisite: Phys. 811.


871. Statistical Mechanics. (3). An introduction to the basic concepts and methods of statistical mechanics with applications to simple physical systems. Prerequisites: Math. 550 and Phys. 621.

881. Solid State Physics I. (3). The basic knowledge of the nature and properties of the solid state, including the structural, thermal, mechanical, electrical and magnetic properties. Also studies the electron theory of metals and band theory of solids. Prerequisites: Phys. 551 or departmental consent and Math. 550.


Political Science

Graduate Faculty

Professors: David N. Farnsworth, Melvin A. Kahn
Associate Professors: Kenneth Ciboski (graduate coordinator), James W. McKenney, John E. Stanga, Jr. (chairperson), James P. Sheffield, Jr.
Assistant Professor: David Ericson

Master of Arts

And Areas of Specialization

The political science department offers the Master of Arts (MA) degree with specializations in political science and public administration. A joint emphasis in either health administration and education or urban studies also is available.
Admission Requirements
All applicants are expected to meet Graduate School standards for admission. In addition, the department requires students to have a B average in their major field and a B average over their last 60 hours of academic credit. Students who fail to meet these requirements may be admitted if the department’s Graduate Studies Committee is satisfied that previous grades do not reflect the student’s present capability for graduate study; one source of evidence is scores on the aptitude portion of the Graduate Record Examination (GRE). GRE scores are required only of those who are applying for departmental assistantships, however.

In addition to satisfactory undergraduate grades, all students are expected to have previously earned credit in Pol. S. 121Q or its equivalent. Students entering the political science specialization also must have earned three hours of credit in upper-division (300 or higher) political science and three additional hours in any social science. Students who plan to specialize in public administration must have earned credit in Pol. S. 321 and Econ. 201-202 or their equivalents.

Degree Requirements
The MA degree requires 30 or 33 hours of credit, depending upon the option selected. All students must complete Pol. S. 701 and a course in statistics that is approved by the department. (An alternative research skill may be substituted with approval of the department.) At least six hours of credit must be earned in political science courses at the 800 level. Up to nine hours of credit in courses outside of political science may be applied toward the degree with the adviser’s approval, and up to nine hours of graduate credit earned at other universities may be transferred into this program with the approval of the department’s Graduate Studies Committee. All graduate students must complete satisfactorily at least 60 percent of the course work numbered at the 700 level and above.

Political Science Specialization. Students in the political science specialization should choose a major field from these alternatives: American government and politics, comparative politics, international relations, and political philosophy. Students are strongly encouraged to earn credit in fields other than their major.

Public Administration Emphasis. In addition to courses required of all students, students in the public administration emphasis must complete one seminar from Pol. S. 841, 851, and 856 and two optional courses from Pol. S. 560, 564, 580, 587, 760, 821, 842, and 855. These students should choose one of the following tracks to complete degree requirements. Only the general track can be completed within the 30-33 hour minimum required for the MA degree.

1. General Track. Students must complete three hours of electives and appropriate hours to complete the thesis, intern, or nonthesis option (nine additional hours of electives in the latter case).

2. Social Service Track. Students must take three of the following: HAE 503, 505, 507, Econ. 663 or 665, SW 502, AJ 866 or 833. They must complete the thesis, intern, or nonthesis option. Courses should constitute a structured area, and other courses may be substituted with adviser’s approval.

3. Health Care Administration Track. Students may take HAE 605 to fulfill the research requirement. HAE 503 and 505 are required, as is HAE 507 or Pol. S. 560. Completion of the thesis, intern, or nonthesis option with appropriate courses also is required. Students choosing the latter must choose six hours in health care administration and three hours in political science.

4. Urban Studies Track. Pol. S. 841 is required, as is either Pol. S. 580 or 760. Students must elect three of the following: P. Adm. 700, Econ. 688, Soc. 534, and Soc. 834. Students must complete the thesis, intern, or nonthesis option with appropriate courses.

5. Finance Track. Pol. S. 760 and 821 are required. Students must choose three of the following: Econ. 653, Econ. 853, Acct. 690, and Pol. S. 855 and complete the thesis, intern, or nonthesis option.

6. Gerontology Track. Pol. S. 506 and Geron. 800 are required. Students must choose two of the following: Geron. 513, 514, 518Q, 731, or 801. Students enrolled in this program must have a minimum of nine undergraduate hours in gerontology as a prerequisite for admission.

Completion Options
Students may complete their degree programs using any one of the following options:

1. Thesis Option. This option is designed for students planning graduate work beyond the MA degree or careers in research. Students must complete 30 hours for the degree, six of which relate to writing an acceptable thesis (Pol. S. 875-876). Candidates must pass an oral defense of a thesis prospectus and the thesis.

2. Nonthesis Option. This option is appropriate for students not planning further graduate work or research careers. It requires completion of 33 hours of credit and passing a written examination in the major field of study.

3. Intern Option. This option is for students seeking an intensive, applied learning experience. The MA degree requires 30 hours, up to six of which may be earned in the process of completing an internship (Pol. S. 874). Students must write and orally defend an intern report before being granted internship credit. Intern positions are awarded on a competitive basis and thus cannot be guaranteed.

Courses for Graduate/Undergraduate Credit

505. The Politics of Health. (3). Cross-listed as HAE 505. 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.

523Q. Government and Politics of Latin America. (3). Division B course/ elective. 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.

524. Politics of Modern China. (3). Emphasizes study of 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 of 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; political communications and socialization; legal developments; policy choices; and major events, such as the Hundred Flowers Campaign, Great Leap Forward and the Proletarian Cultural Revolution.


534. Problems in Foreign Policy. (3). Examines domestic and international problems associated with U.S. foreign policy.

547. Contemporary Political Theory. (3). 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, Friedrich Nietzsche and John Dewey. Gives attention to the importance of these new philosophies upon political structures and issues.

551. Public Law. (3). 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.

552Q. Civil Liberties. (3). Division B course/elective. 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.

560. The Planning Process. (3). 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 relationships between specialists, citizens and elective officials as participants in the planning process.

561. Public Management of Human Resources. (3). Surveys the major areas of management of human resources in the public sector. Includes hiring, training, evaluation and pay promotion policies. Special emphasis on 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.

564. Comparative Public Administration. (3). Studies the administrative system of selected developed and developing countries emphasizing the various methods and approaches of comparative analysis and the role of the governments in the administrative systems of their environmental settings.


587. Administrative Theory and Behavior. (3). A study of organization theory and the various approaches to the study of organization.

700. Advanced Directed Readings. (3). Repeatable for credit. Prerequisite: departmental consent.

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.

710. Scope of Public Administration. (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.

750. Workshop. (2-4). Prerequisite: instructor's consent.

760. Local Government Finance. (3). Cross-listed as Econ. 760. An analysis of state and local government expenditure and revenue systems with an introduction to state and local financial administration. Prerequisites: Econ. 202Q and a course in statistics or instructor's consent.

Courses for Graduate Students Only

810. Seminar in Comparative Government. (3). The comparative study of selected aspects of the politics and institutions of foreign governments. Prerequisite: departmental consent.

821. The Budgetary Process. (3). Analysis of the development and utilization of the budgetary process in government administration emphasizing the budget in its role in policy formulation. Prerequisite: departmental consent.

835. Seminar in International Relations. (3). Analysis of special problems in, and approaches to, the study of international relations. Prerequisite: departmental consent.

841. Seminar in Urban Politics. (3). An intensive analysis of urban politics emphasizing individual research projects. Prerequisite: departmental consent.

842. Administration in Local Government. (3). 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, interlocal cooperation, affirmative action requirements and service contracting. Prerequisite: Pol. S. 317.

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.

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.

855. Seminar in Public Finance Systems. (3). An analytical study of selected topics in the politics and administration of revenue, expenditure and borrowing policies of governmental organizations. Prerequisite: departmental consent.

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.

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.

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.

876. Thesis. (1-3).

Psychology

Graduate Faculty

Professors: Charles A. Burdts, Jr. (chairperson), Darwin Dorr, Gary Greenberg (graduate coordinator), Charles Holcomb, James J. Snyder


Assistant Professors: Paul D. Ackerman, Darryl G. Humphrey, M.J. Klingors, Louis J. Medvne, Marilyn Turner

Degrees Offered

The psychology department offers courses of study leading to the Doctor of Philosophy in Human Factors Psychology and Community/Cl!nical Psychology.

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 admission requirements, the following are required: (1) four letters of reference from people acquainted with the applicant's academic background and potential; (2) a brief biographical statement describing particular interests, experiences, and goals related to academic and professional work in psychology; and (3) scores on the Graduate Record Exam (GRE: verbal, quantitative, and advanced). 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 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: Biological Foundations of Behavior, Cognitive Foundations of Behavior, Personality and Individual Differences, Social/Developmental Foundations of Behavior, Advanced Research Methods I and II.

- **Human Factors:** The following additional courses are required for students enrolled in the human factors doctoral degree program: Seminar in Human Factors Psychology, Aerospace Psychology, Psychological Principles of Human Factors, and Seminar in Software Psychology. Each student must take 24 hours of elective courses, 12 of which will be outside of the human factors program, selected in consultation with his or her advisor. Students must complete a Research Internship of three hours per semester over a period of two semesters for a total of six hours and must enroll in Graduate Research each semester for a total of 16-18 credit hours.

- **Community/Clinical:** The following additional courses are required for each student enrolled in the community/clinical doctoral degree program: Advanced Abnormal Psychology, Applied Research Methods in Community Settings, Seminar in Cognitive-Behavioral Assessment, Seminar in Cognitive-Behavioral Therapy, Seminar in Community and Organizational Intervention, Seminar in Community-Clinical Psychology I and II, Seminar in Prevention. Each student will enroll in three semesters each of the Practicum in Clinical and in Community Psychology.

Students in both programs must complete a predoctoral research program before admission to doctoral candidacy. Students will take a comprehensive examination prior to acceptance for doctoral candidacy and the onset of data collection for the dissertation.

All doctoral degree students are required to complete a dissertation with enrollments in Psy. 910. The dissertation will ordinarily be 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.

**Courses for Graduate/Undergraduate Credit**

- **Psy 502Q.** Comparative Psychology. (3) Division B course/elective. Compares and contrasts psychological and ethological analyses of behavior. Surveys the evolution and development of behavior. Includes a critique of the instinct doctrine and sociological interpretations of behavior. Field trips supplement lectures. Prerequisite: one course from Group One.

- **Psy 508.** Psychology Tutorial. (3) Selected topics in psychology. Repeatable for a maximum of six hours’ credit. Instructor’s consent may be required. Check Schedule of Courses. Prerequisite: Psy. 111Q.

- **Psy 512.** Primateology. (3) A survey of the primates (including humans) and their behavior. Includes principles of evolution and taxonomy, the transition to homo sapiens, the evolution of behavior, the development of language, learning in the primates and the development of behavior. Prerequisite: Psy. 111Q.

- **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: Psy. 111Q.

- **Psy 516.** Drugs and Human Behavior. (3) 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: Psy. 111Q.

- **Psy 522.** Biological Psychology. (3) A review of the biological foundations of behavior. Includes the evolutionary basis of behavior, behavior genetics, a critical analysis of brain-behavior relationships, neuropharmacology of hormones in behavior and neurochemical correlates of behavior. Prerequisite: Psy. 111Q.

- **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) 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: Psy. 111Q.

- **Psy 534.** Psychology of Women. (3) Cross-listed as Wom. S. 534. Psychological assumptions, research and theories of the roles, behavior and potential of women in contemporary society. Prerequisite: Psy. 111Q.

- **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: Psy. 111Q 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. Gives attention to various theories of abnormality, research evidence and various methods of diagnosis and treatment. Presents hypotheses regarding prevention of abnormality. Prerequisite: Psy. 324Q.

- **Psy 546.** Practicum in Applied Behavior Analysis and Social Learning. (3) R. 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 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) "causal" statistical programs, 5) word processing and 6) other current computer
applications. Prerequisites: nine hours in the social sciences.

601. Systems and Theories in Psychology. (3). Includes behaviorism, Gestalt psychology,
structuralism and others. Makes an attempt 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.

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 six credit hours. Requires consultation with and
approval by appropriate adviser prior to registration. Prerequisites: nine hours in psychology
and instructor's consent.

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 natural
assumptions and research methods on 20th century psychology. Prerequisites: nine
hours of psychology or instructor's consent.

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 psychological
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. Prerequisites: 15
hours of psychology or instructor's consent.

750. Psychology Workshop. (1-3). Specialized instruction, using various formats in selected
topics and areas of psychology.

Courses for Graduate Students Only

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 BIOMED statistical routines. Prerequisite: instructor's consent.

811. Advanced Research Methods II. (4). 3R; 3L. Continuation of Psy. 810. Statistical tech-
niques emphasized are a continuation of multiple regression, structural analyses including Path Analysis and LISREL factor analysis, canonical correlation and discriminant analy-
sis. 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: Psy. 810 and instructor's consent.

812. Biological Foundations of Behavior. (3). Reviews various biological influences on
behavior and evolution genetics, biochemistry and physiology. A consideration of the develop-
ment and anatomy of the nervous system forms the core of the course. The position developed is that behavior depends on biological as well as experiential factors. Prerequisite: instructor's consent.

813. Cognitive Foundations of Behavior. (3). Focuses on human beings as information proc-
cessing systems. This approach views the individual as an active, constructive and planning
person in remembering and organizing new and prior learned knowledge. Includes the study of memory, language, speech, thought, decision making and problem solving processes. Prerequisite: instructor's consent.

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.

815. Social and Developmental Foundations of Behavior. (3). Examines basic assumptions, theories and methods in social and development 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.

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 Psychol-
ogy doctoral courses; for doctoral students from other disciplines, instructor's consent after an interview.

830. Seminar in Community-Clinical Psychology I. (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 knowl-
edge and the application of that knowledge to human psychosocial problems. Prerequisite: instructor's consent.

831. Seminar in Community-Clinical Psychology II. (3). Introduces methods of assessment and intervention used to promote human functioning in the contexts of primary and sec-
dondary prevention and clinical treatment of human psychosocial problems. Describes and integrates theories and methods relevant to the assessment of persons, environments, agencies and communities. Details theories and methods of intervention, including psychotherapy, consultation, social action and organizational development. Students apply these theories and methods to selected psychosocial problems. Prerequisite: Psy. 830.

840. 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 ther-
apeutic approaches and a survey of common issues in psychotherapy, such as process and
outcome, and client and therapist variables in the therapeutic process. Prerequisites: Psy.
111/1Q and instructor's consent.

841. Seminar in Motivation and Emotion. (3). Intensive study of theory and research in moti-
ational and emotional processes. Prerequisite: instructor's consent.

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: Psy. 302 and instructor's consent.

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 ther-
apeutic approaches and a survey of common issues in psychotherapy, such as process and
outcome, and client and therapist variables in the therapeutic process. Prerequisites: Psy.
111/1Q and instructor's consent.

910. Doctoral Dissertation. (1-3). Graded S/U only. Repeatable up to 6 hours. Requires com-
pletion of a dissertation under the supervision of an advisor. Adviser's consent and graduate standing.

911. Graduate Research. (1-3). Individual research. Graded S/U only. Prerequisites: advisor's consent and graduate standing.

920. Internship in Human Factors Psychology. (1-3). Repeatable up to 6 hours. A planned
placement experience in an off-campus setting, designed to give the doctoral human factors
psychology student an opportunity to apply the principles of human factors psychology. Prerequisite: advisor's consent.

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. Prerequisite: completion of undergraduate course in cognitive psychology or Psy, 615, and instructor's consent after interview for doctoral students from other disciplines.

922. Seminar in Software Psychology. (3). Intensive study of principles and methods of engineering psychology (human factors) applied to the design and evaluation of computer software. Topics include 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.

930. Advanced Abnormal Psychology. (3). An overview of major categories of abnormal behavior consistent with the most recent edition of the Diagnostic and Statistical Manual of Mental Disorders. Review descriptive features of each diagnostic category and information on the clinical course and etiology. Examine differing definitions of "abnormal behavior" and paradigmatic approaches to the study of psychopathology. Prerequisite: instructor's consent.

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 the role of collection and strategies used to assess community needs. Examine 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.

932. Internship in Community-Clinical Psychology. (1-3). Graded S/U only. A planned placement experience in an off-campus setting, designed to give the doctoral community-clinical psychology student an opportunity to further develop and apply skills in community-clinical psychology. Repeatable for a maximum of nine credit hours. Prerequisite: advisor's consent.

933. Practicum in Clinical Psychology. (3). Give 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. Prerequisites: Psy, 955 and 936.

934. Practicum in Community Psychology. (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. And, services may be prevention oriented. May be repeated a maximum of three times. Graded S/U only. Prerequisite: instructor's consent.

935. Seminar in Cognitive-Behavioral Assessment. (4). Surveys issues of reliability and validity; provides description, critical analysis and practice in clinical use of such psychologi­
cal 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.

936. Seminar in Cognitive-Behavior Therapy. (4). 3R, 3L. A review of 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.

937. Seminar in Community and Organizational Intervention. (3). 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. Intended to help 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 implementers, and program managers. Prerequisite: instructor's consent.

938. Seminar in Prevention. (3). Reviews the historical, theoretical and empirical bases of prevention psychology. Presents contemporary models of prevention psychology including the biological, 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.

940. Development of Abnormal Behavior. (3). A consideration of 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.

941. Measurement of Human Performance. (3). The logic of fundamental measurement is developed and applied to human performance from detection to decision. Signal Detection Theory (SDT) is developed and compared with threshold theory. Demonstrates procedures for assessing both detection and discrimination under both SDT and threshold theory. Information measurement and utility theory is developed and applied to the transmission and coding of information and to decision making respectively. Examines measures of work reliability and well-being. Prerequisite: instructor's consent.

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 biological, psychological and anthropological perspectives. Also critically evaluates various theories of human development. Prerequisite: instructor's consent.

943. Seminar in Comparative Psychology. (3). Intensive study of psychological and ethological research and theories of behavior. Oriented around the evolution and development of behavior. Includes a review of the concept of integrative levels in psychology. Prerequisites: Psy, 503Q and instructor's consent.

944. Seminar in Consultation. (3). Examines theories and techniques of psychological consultation as applied to individuals, organizations, and systems. Prerequisite: instructor's consent.

945. Seminar in Current Developments. (3). Intensive study of current issues, techniques, research and application. Repeatable for different topics for a maximum of six hours. Prerequisite: instructor's consent.

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, emphasis is placed on contemporary research and literature regarding the interface of sensory-motor processes. Prerequisite: instructor's consent.

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
Graduate Faculty
Associate Professors: Stuart Lasine, Paul Wiebe
Assistant Professor: Stephen D. Moore

Although there is no graduate program in religion, the following courses may be taken for graduate credit.

Courses for Graduate/Undergraduate Credit
750. Workshop in Religion. (2-4).

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 normally offered by the department. Repeatable for credit. Prerequisite: departmental consent.

Russian
See Modern and Classical Languages and Literatures
Spanish
See Modern and Classical Languages and Literatures

Social Work
See Urban and Public Affairs, Hugo Wall School of.

Sociology
Graduate Faculty
Professor: John J. Hartman (graduate coordinator)
Associate Professor: Nancy Brooks
Assistant Professors: Gretchen Hill, Sandra S. Houts, Ronald R. Matson, Kathleen M. O'Flaherty (chairperson), David W. Wright

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, as well as an emphasis in gerontology.

Admission Requirements
Applicants are evaluated for admission with respect to their undergraduate record, Graduate Record Examination scores (optional), and three letters of reference from professors who supervised their undergraduate work. For consideration for admission to degree status, applicants are expected to have at least 15 hours in sociology including courses in social statistics, social theory, and research methods. Specific course prerequisites may be made up after admission by students with otherwise adequate backgrounds. Final recommendation on a candidate's admission to the MA program in sociology is made to the Graduate School by the graduate coordinator of the Department of Sociology.

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. 812, Research Methods in Sociology, and 845, Seminar in Sociological Theory, and two 800-level graduate seminars. Each student must demonstrate skill in a collateral area, such as research or computer programming. 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.

Degree Requirements for the MA
With Gerontology Emphasis
Students may complete the MA degree in sociology with an emphasis in social gerontology under either the thesis or nonthesis program as described below. For either program 60 percent of the courses must be 700 level or above.

Thesis Program. Students must complete the sociology core, Ger. 800, and three of the gerontology courses listed below.

Sociology Core Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs</th>
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</thead>
<tbody>
<tr>
<td>Soc. 512, Measurement and Analysis</td>
<td>3</td>
</tr>
<tr>
<td>Soc. (Ger.) 513, Sociology of Aging</td>
<td>3</td>
</tr>
<tr>
<td>Soc. 812, Research Methods in Sociology</td>
<td>3</td>
</tr>
<tr>
<td>Soc. 845, Seminar in Sociological Theory</td>
<td>3</td>
</tr>
<tr>
<td>Soc. 875-876, Thesis</td>
<td>3-6</td>
</tr>
<tr>
<td>Seminar electives (2 seminars above 800)</td>
<td>6</td>
</tr>
</tbody>
</table>

Gerontology Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ger. 800, Seminar I</td>
<td>3</td>
</tr>
<tr>
<td>and three of the following courses</td>
<td></td>
</tr>
<tr>
<td>Ger. (Anthro.) 514, Anthropological Perspectives in Aging</td>
<td>3</td>
</tr>
<tr>
<td>Ger. (Biol.) 518Q, Biology of Aging</td>
<td>3</td>
</tr>
<tr>
<td>Ger. (Econ.) 663, Economic Insecurity</td>
<td>3</td>
</tr>
<tr>
<td>Ger. 801, Field Research in Gerontology</td>
<td>3</td>
</tr>
<tr>
<td>Total Hours</td>
<td>36</td>
</tr>
</tbody>
</table>

*Thesis must be aging related.

Nonthesis Program. Students must complete the sociology core, Ger. 800, and four of the gerontology courses listed below.

Sociology Core Courses

<table>
<thead>
<tr>
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<tbody>
<tr>
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<tr>
<td>Soc. (Ger.) 513, Sociology of Aging</td>
<td>3</td>
</tr>
<tr>
<td>Soc. 812, Research Methods in Sociology</td>
<td>3</td>
</tr>
<tr>
<td>Soc. 845, Seminar in Sociological Theory</td>
<td>3</td>
</tr>
<tr>
<td>Soc. 851, Directed Research</td>
<td>3</td>
</tr>
<tr>
<td>Seminar electives (2 seminars above 800)</td>
<td>6</td>
</tr>
</tbody>
</table>

Gerontology Courses

<table>
<thead>
<tr>
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<tr>
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<td>3</td>
</tr>
<tr>
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<td></td>
</tr>
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<td>3</td>
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</tr>
<tr>
<td>Ger. (Econ.) 663, Economic Insecurity</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>36</td>
</tr>
</tbody>
</table>

*Directed research must be aging related.

Examinations
Students electing the thesis program in sociology must pass an oral defense of the thesis.

Courses for Graduate/Undergraduate Credit

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. 212 or 312, Math. 111 or 331Q or equivalent.

512. Measurement and Analysis. (3). Generally offered in the spring only. Develops knowledge and understanding of some of the fundamental skills and conceptual tools used in conducting sociological research, including both qualitative and quantitative approaches, through performing selected techniques: problem selection, conceptualization, hypothesis formulation, design choice, sampling procedures, measurement, collection of qualitative data, computation, and quantitative analysis, and presentation of results. Prerequisites: Soc. 111, Soc. 212 or 312, Soc. 501.

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

515. Sociology of the Family. (3). Analysis of 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.

516. Sociology of Sex Roles. (3). Cross-listed as Wom. S. 516. Analyzes the institutional sources of man's and woman's roles, the source of changes in these roles, the consequent ambiguities and conflicts. Prerequisite: Soc. 111Q.

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.

520. Family and Aging. (3). Cross-listed as Ger. 520. An analysis of the families and family systems of older people. Special emphasis on demographic and historical changes, widowhood, caregiving and intergenerational
relationships as these relate to the family life of older people. Prerequisite: Geront 100 or junior standing.

523. Sociology of Law. (3). A consideration of the impact of law in 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.

527. Violence and Social Change. (2). The analysis of 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.

534. Urban Sociology. (3). Urban population organization and institutions and programs of city planning. Prerequisite: Soc 111Q.

537. The Social Consequences of Disability. (3). Cross-listed as Geront 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.

538. Medical Sociology. (3). An analysis of 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.

539. Juvenile Delinquency. (3). The factors related to juvenile delinquency and the measures of treatment and prevention. Prerequisite: Soc 111Q.

540. Criminology. (3). The extent and nature of criminal behavior and societal reactions to it. Prerequisite: Soc 111Q.

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.

545. Sociological Theory. (3). A comprehensive survey of sociological theory, spanning both classical and contemporary theorists relevant to the development of sociology. Prerequisites: 9 hours of sociology.

598. Internship. (1-6). Supervises persons involved in internships or placements in the community where credit can be given. Prerequisite: departmental consent.

600. Selected Topics in Sociology. (3). Study in a specialized area of sociology emphasizing student research projects. Includes deviant behavior, political sociology, the family and others. Repeatable for a maximum of six hours credit. Prerequisites: Soc 111Q, instructor’s consent and substantive area course.

651. Directed Research. (1-3). 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.

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.

750. Sociology Workshop. (1-3). Provides specialized instruction using a variable format, in a sociologically relevant subject.

781. Cooperative Education in Sociology. (1-2). Provides practical experience, under academic supervision, that complements the student’s academic program. May be taken for one hour for each of two semesters or two hours for one semester. Consultation with and approval by an appropriate faculty advisor is necessary. Graded Cr/NR only.

*Prerequisite may be waived with departmental consent.

Courses for Graduate Students Only

812. Advanced Research Methods. (3). Provides graduate students with practical experience addressing sociological questions with available data. This experience involves deciding on a research topic, developing an appropriate literature review, performing data analysis and presenting a written and oral report of the overall project. Students should develop an understanding of the strengths and limitations of empirical research. Prerequisite: Soc 512.

815. Seminar on the Family. (3). Review of the family and the theoretical implications thereof. Prerequisite: Soc 515 or departmental consent.

820. Seminar in Social Movements. (3). Analysis of the elements in social movements as factors in social and cultural change. Prerequisite: departmental consent.

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.

825. Seminar in Organizational Analysis. (3). Exploration of selected problems in organizational theory based on major theoretical and empirical approaches, both classical and contemporary. Prerequisite: departmental consent.

830. Seminar in Stratification and Power Structure. (3). Exploration of selected problems in organizational theory based on major theoretical and empirical approaches, both classical and contemporary. Prerequisite: departmental consent.

834. Seminar in Urban Sociology. (3). Independent research projects in urban sociology. Prerequisite: Soc 534 or departmental consent.

838. Seminar in Health and Illness. (3). Both classical and contemporary theoretical and analytical tools show how health and illness inform the understanding of social behavior. Examines major themes and issues in medical sociology. Course moves beyond study of the medical institution to include study of health as a social characteristic. Prerequisite: Soc 538 or instructor’s consent.

843. Seminar in Sociological Theory. (3). Emphasizes continuities between European and American social theory. The perspective is both historical and analytical spanning the 18th, 19th and 20th centuries and concluding with the works of representative contemporary theorists. Prerequisite: Soc 545 or departmental consent.

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 not to exceed six hours. Prerequisites: 15 hours of sociology and departmental consent.

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 800 and instructor’s consent.

860. Proseminar—Teaching Sociology. (1). Exposes students to the components of the academic role of a sociologist. Prerequisite: graduate student status.

870. Independent Reading. (2-3). Advanced systematic reading in a topical area under the supervision of a member of the graduate faculty. Repeatable for credit not to exceed six hours. Prerequisite: departmental consent.

875-876. Thesis. (3-6).

Urban and Public Affairs, Hugo Wall School of

The Hugo Wall School of Urban and Public Affairs enhances the University’s ability to respond to its urban mission through the cooperative efforts of the academic units and centers which comprise the new School. The School, created in 1993, includes Administration of Justice, Gerontology, Minority Studies, Public Administration, Social Work and the Center for Urban Studies. The Hugo Wall School provides a quality educational unit for students and also functions as a research and service unit that assists with a broader range of needs identified in the community.

Administration of Justice

Graduate Faculty

Professors: Daeh Chang
Associate Professors: Ronald G. Javedet, Galen M. Janetska (director), Michael Palmiotto, Prabha Unithan
Master of Administration of Justice

Admission Requirements
It is recommended that applications for admission be filed with the dean of the Graduate School by March 1 for consideration for admission in the fall semester. Evaluation for admission is based upon the applicant's undergraduate record and academic background.

The minimum Administration of Justice admission requirements are listed below:
1. Full standing: a grade point average of at least 3.00 based upon the last 60 hours of course work.
2. Probation standing: a grade point average of 2.25 based upon the last 60 hours of course work.

Students may be admitted to non-degree standing Category B if they have a grade point average of 2.25 based upon the last 60 hours of course work.

A minimum of 15 hours of work in administration of justice or approved equivalent is required (otherwise, deficiency requirements will be assessed).

Limitations on the number of students admitted to the MAJ degree program each academic year may be established because of constraints imposed by the department's graduate teaching/advising capacity.

Degree Requirements
The MAJ degree requires a minimum of 36 hours, including 21 hours taken in courses numbered 400 or above. All students are required to take AJ 491, 493, 494, 495, 496, and 497. Students must complete a thesis or a 36-hour course work option and a comprehensive examination.

It is recommended that MAJ 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. Note the restrictions on the following elective hours: there is a maximum of nine hours total in AJ 781, 782, 783, 881, and 882; there is a maximum of six hours total in AJ 781, 881, and 882; there is a maximum of six hours total in AJ 782 and 783.

Examinations
Thesis candidates 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.

Facilities
Students in the Wichita State MAJ degree program have access to excellent computer and research facilities, as well as a criminology laboratory. Students also may use local, state, and federal criminal justice agencies for field research or internship placements.

Courses for Graduate/Undergraduate Credit

593. Crime Causation and Criminal Justice Policy. (3). Introduction to theoretical issues in criminal justice. Emphasizes 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. Prerequisites: AJ 191 and 293.

595. Research Methods. (3). An introduction to statistical methods, including experimental design, the analysis of statistical processes and related procedures. Studies the general methodology of research as it pertains to the administration of justice. Prerequisites: AJ 191 and 293.

600. Forensic Anthropology. (3). Cross-listed as Anthr 600. Encompasses the area of criminal investigation involving biological evidence, blood, hair, fingerprint, and skeletal system. Covers procedures of collection, preservation, marking, transportation, referral, laboratory analysis, classification and identification emphasizing anthropological interpretation. Prerequisites: AJ 191, 293, or Anthr 557, or instructor's consent.

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. Prerequisites: AJ 191, 292, 293, or instructor's consent.

621. Environmental Law. (3). An in-depth analysis of emerging federal, state, and local legislation; judicial decisions; and administrative policy to environmental protection. Explores the role of the administration of justice agency and a variety of governmental and nongovernmental protective agencies related to prevention, investigation, and enforcement processes of environmental protection. Special emphasis on the contribution administration of justice agencies can make toward development and implementation of effective environmental public education and assistance programs. Prerequisites: AJ 191 and 293 or instructor's consent.

630. Security, Theory, and Practice. (3). Advanced course emphasizing the interrelationships between theories underlying contemporary security practice. Prerequisite: AJ 191, 293, or instructor's consent.

641. Forensic Psychiatry. (3). Analysis of the role of psychiatry in the administration of justice process. Introduces the student to concepts and procedures of forensic psychiatry. Prerequisites: AJ 191 and 293 or instructor's consent.

643. Forensic Science. (3). Analysis of the medical role of prevention, detection, and treatment as related to the administration of justice. Emphasizes medical specialty areas, such as pathology and psychiatry which have significant effect on segments of the administration of justice process. Prerequisites: AJ 191 and 293 or instructor's consent.

651. Dispute Resolution in Administration of Justice. (3). Analysis of community and individual reactions to agency policy and services. Emphasizes the agency's role as mediator between offenders and victims of crime and between other groups and individuals in conflict. Prerequisites: AJ 191 and 293 or instructor's consent.

781. Cooperative Education. (1-4). Provides a paid field placement that integrates theory with a planned and supervised professional experience designed to complete 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 department cooperative education coordinator. Open only to AJ graduate students. Offered CR/NC only.

782. Workshop in Administration of Justice. (3). Prerequisite: instructor's consent.

783. Advanced Special Topics in Administration of Justice. (1-4). Detailed study of topics in administration of justice with particular emphasis established according to the expertise of the various instructors. Prerequisites: program director's consent.

Courses for Graduate Students Only

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.

855. Seminar on Juvenile Justice. (3). An analysis of the criminal justice process as related to the youthful offender. Emphasizes functional components, such as training of corrections personnel, community coordination for delinquency prevention and control, police-school relations, and ethical, administrative and operational aspects of juvenile justice agencies.

856. Agency-Community Relations. (3). In-depth analysis of the role of agency administrators in community relations and related public officials in existing community programs. Special emphasis on a multiplicity of approaches for developing new lines of com-
communications between the agency and the community.

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.

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

882. Individual Directed Study in the Administration of Justice. (3-6). Faculty directed readings and/or research in special areas of interest in the field of administration of justice. Prerequisite: program director's consent.

891. Judicial Process. (3). The review and analysis of local, state and federal criminal statutes and court decisions as they apply to the administration of justice process.

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

894. Critical Issues. (3). Investigates emerging phenomena in the overall system of criminal justice to demonstrate the pertinence of theory to practice. Includes role conflicts in law enforcement and corrections; police professionalism; the offender as a client for services; and corrections as a setting for research.

895. Policing in America. (3). A study of law enforcement topics including the historical development of policing, the police role, occupational socialization and problems of police work in the United States.

896. Corrections in America. (3). Focuses on analysis and evaluation of contemporary correctional systems in America including both institutional programs, such as prisons and jails and noninstitutional programs which focus on alternatives to incarceration in community settings, such as diversion, probation, parole, halfway houses, work release centers and restitution.

897. Advanced Research Methods in Administration of Justice. (3). Advanced research course; studies the selection and formulation of research problems, research design, hypotheses generation, scale construction, sampling procedures and data analysis and interpretation. Prerequisite: A) 595 or equivalent.

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

Gerontology

Graduate Faculty

Associate Professors: William C. Hays, Ellen Holmes (director)

Assistant Professor: Jean E. Jordan

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 biological sciences, psychology, economics, sociology, the health professions, and anthropology.

Master of Arts

The gerontology program offers two options leading to the MA degree, the generalist option and the specialist option. Both options require a minimum of 30 hours for the thesis track and 36 hours for the nonthesis track.

The generalist option is designed for students with little or no previous training in gerontology, among them professionals in such areas as communicative disorders, recreation, physical or occupational therapy, the ministry, counseling, social work, adult education, and mental health, where older people make up a significant and increasing proportion of the client population and where professionals with gerontological training are presently scarce.

The specialist option is designed for students who have undergraduate course work in gerontology. Since employment in the area of aging often demands the combination of knowledge and skills found in a particular discipline such as public administration, social work, or mental health, the specialist option combines graduate course work in gerontology with an emphasis (12 hours) in another department or discipline.

Admission Requirements

In addition to the Graduate School admission requirements, applicants must have a grade point average in their bachelor's degree of 3.000 (on a 4.000 scale) and must submit names of three references. Students desiring to pursue the generalist option must have an undergraduate degree in an applied or professional area or have work experience with older people. Those who wish to pursue the specialist option must have completed course work in each of the following four areas: biology or physiology of aging, psychology of aging, economics of aging, and sociology of aging. They must have maintained a 3.000 average in these courses. These students also must meet the admission requirements of the department in which the area of specialization is being taken.

Degree Requirements

Students must take certain required core courses, as well as courses in the generalist or specialist option, with a minimum total of 30 hours for the thesis and 36 hours for the nonthesis track.

Core (Required) Courses. All students enrolled in the MA program in gerontology must take the following courses:

- Geron. 800, Seminar in Gerontology I: 3
- Geron. 801, Field Research in Gerontology: 3
- Geron. 802, Social Policy and Aging: 3
- Geron. 810, Advanced Gerontology Internship: 6* (if option selected)
- Written comprehensive exams are required of all students who pursue the nonthesis program option.

*With the approval of the program director and two members of the gerontology faculty only three hours of Geron. 810 may be required with the thesis option.

Generalist Option: In addition to the core courses, students pursuing the generalist option must take the following courses:

- Geron. 715, Adult Development and Aging: 3
- Geron. 663, Economic Insecurity: 3
- Two of the following three courses: 6
  - Geron. 513, Sociology of Aging
  - Geron. 514, Anthropology of Aging
  - Geron. 518Q, Biology of Aging
- Elective gerontology courses: 3-9

Specialist Option. In addition to the core courses, students pursuing the specialist option are required to take a minimum of 12 hours offered by the department in the area of specialization. These courses must meet the approval of the graduate coordinator or department chairperson in the department of specialization.

The internship and thesis, if the specialist option is selected, must be related both to gerontology and to the area of specialization. The Plan of Study required by the Graduate School must also be approved by the gerontology program and the outside department.

Gerontology Emphasis

The gerontology emphasis is a 12- to 15-hour concentrated core in gerontology taken as part of a master's degree program in another department. Students who wish to pursue the gerontology emphasis must fulfill the requirements in the degree granting department as well as the designated gerontology core.
Courses for Graduate/Undergraduate Credit

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 network. Repeatable for six hours. Prerequisite: six hours credit. Prerequisite: 12 hours of gerontology credit and instructor's consent.

512. Issues in Minority Aging. (3). Cross-listed as Min. S. 512. Addresses the needs and interests of older/minority Americans, learning the legal procedures for resolving specific problems of minority elderly, and gaining experience in these methods through individual fieldwork projects. Prerequisite: Geron 798, 12 hours of gerontology credit or instructor's consent.


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 life span perspective.

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.

520. Family and Aging. (3). Cross-listed as Soc. 520. An analysis of the families and family systems of older people. Special emphasis on demographic changes, economic changes, widowhood, caregiving and intergenerational relationships as these relate to the family life of older people. Prerequisite: Geron 100 or junior standing.

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.

550. Selected Topics in Gerontology. (1-6). Study in a specialized area of gerontology with the focus upon preprofessional 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 six hours. Prerequisite: instructor's consent.

560. The Aging Network. (3). An overview of the process of aging, 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.

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

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

710. 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 life span. Prerequisite: Geron 798 or six hours of gerontology.

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

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

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 six hours. Prerequisite: 12 hours of gerontology and instructor's consent.

789. 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

800. Seminar in Gerontology I (3). Advanced study of the theories of aging from a multidisciplinary perspective emphasizing social gerontology. Prerequisite: Geron 798 or 12 hours of gerontology or instructor's consent.

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.

802. Social Policy and Aging. (3). The analysis and evaluation of social policy issues related to aging and old age. Emphasizes the importance of social values and historical context for understanding current policies and practices. Prerequisite: Geron 798, 12 hours of gerontology or instructor's consent.

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.

810. Advanced Gerontology Internship. (3-6). Integrates academic gerontology and practical experience emphasizing application of research findings. Students are assigned to an agency or organization engaged in planning, administering or providing direct services to older people. Includes the intern submitting and being examined upon a comprehensive internship paper. Prerequisites: 12 hours of gerontology credit and instructor's consent prior to registration.

820. Thesis. (1-3). Repeatable, but total credit hours counted toward degree shall not exceed four hours.

Minority Studies
Graduate Faculty
Assistant Professor: Anna M. Chandler (director)

Although a graduate program is not currently available in minority studies, the Department of Minority Studies participates extensively with other departments in the multidisciplinary Master of Arts in Communications (MAC) program. See requirements for the MAC program in the Fairmount School of Liberal Arts and Sciences, Elliott School of Communications section of the Graduate Bulletin.

Courses for Graduate/Undergraduate Credit

512. Issues in Minority Aging. (3). Cross-listed as Geron 512. Addresses the needs and interests of students who are interested in (1) providing services to the minority elderly; (2) exploring the "issues" of concern to minority elderly; (3) becoming familiar with the rights of older/minority Americans; (4) learning the legal procedures for resolving many of the specific problems of the minority elderly, and (5) offering tried and tested solutions to the problems encountered by minority elderly. Prerequisites: Maj. S. 100Q, Geron 100, Soc. 111Q or instructor's consent.

540. Advanced Cross-Cultural Communications. (3). An advanced study on special topics...
Financial Management
**Required Courses**
P. Adm. 761, State and Local Financial Systems
Acct. 800, Financial Accounting

**Elective Courses**
Minimum of two of the following courses or other related courses approved by adviser and program director:
- Pol. S. 821, Budgetary Process
- P. Adm. 740, Policy Evaluation
- P. Adm. 755J, Local Government Law
- Acct. 801, Managerial Accounting

**Elective Courses**
Econ. 702, Mathematical Methods in Economics
Econ. 653, Public Finance
Econ. 688, Urban Economics
Fin. 612, Capital Budgeting
Fin. 840, Financial Systems

**Policy Analysis**
**Required Course**
P. Adm. 740, Policy Evaluation

**Elective Courses**
Minimum of two of the following courses or other related courses approved by adviser and program director:
- P. Adm. 700, Urban Affairs
- P. Adm. 740, Policy Evaluation
- P. Adm. 755J, Local Government Law
- P. Adm. 755P, Research Practicum
- P. Adm. 755S, Performance Measurement

**Policy Analysis**
- Psy. 810, Advanced Research Methods I
- Psy. 811, Advanced Research Methods II
- Econ. 663, Economic Insecurity
- Econ. 831, Econometrics

**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 (P. Adm. 890) will carry three hours credit and will include attendance at a monthly seminar. Students opting for an internship also must complete an applied research paper (three hours) which may be based upon an appropriate internship project. Intern positions are remunerative and are awarded on a competitive basis. Although placement cannot be guaranteed, the public administration program of the Hugo Wall School has an excellent placement record.

**Financial Assistance**
The Board of Trustees of Wichita State University, through the Graduate School and the public administration program of the Hugo Wall School, offers a number of graduate assistantships on a competitive basis. Recipients receive a stipend for the academic year plus a partial tuition waiver. Graduate assistants work 20 hours per week with faculty in the public administration program's teaching, research, and public service activities.

The public administration program of the Hugo Wall School also designates two outstanding graduate assistants as Hugo Wall Fellows. Each fellow is granted at least $600 per semester stipend in addition to the regular graduate assistantship remuneration. In addition, the public administration program also awards the George Pyle Fellowship which carries a stipend of $500 per semester.

Courses for Graduate/Undergraduate Credit

625. Computer Applications for Public Policy. 3Pr. Students with major types of software applications for IBM compatible microcomputers and their use in public policy analysis. Prerequisite: enrollment in MPA program or sponsorship by local government.

670. Urban Affairs. 3A study of the policy issues faced by local government in an urban setting from a multidisciplinary point of view. Prerequisite: enrollment in urban affairs program or instructor's consent.

702. Research Methods in Public Administration. 3A study of research design and research methods used in public administration. Prerequisites: enrollment in MPA program or instructor's consent.

704. Decision Making. 3A study of the decision-making process in public administration. Prerequisite: enrollment in MPA program or instructor's consent.

706. Public Administration. 3A study of the public administration program's teaching, research, and service delivery quality. The social sciences offer a variety of research tools and methods that have management feedback applications which are appropriate for evaluating performance. Prerequisite: instructor's consent.

755. Special Topics in Urban Affairs. 3Pr. Topics in advanced study in urban 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.

761. State and Local Financial Systems. 3Deals with selected aspects of state and local government financial management. Introduces fund accounting, costing of government services, capital budgeting and asset management.

770. The Environment of Public Administration. 3A study of the environmental context of public administration, including political systems, constitutional authority, legislative process, intergovernmental relations, the price system, market failure, government regulation, public finance and public choice. Prerequisites: Pol. S. 321 and Econ. 202.

Courses for Graduate Students Only

875-876. Thesis. 3-3Prerequisite: advisor's consent

890. Internship. 3Pr. Integrates academic pursuits and practical experience. Students assigned to the internship are assigned to work in an approved government, community or private organization, for a period of three to 12 months. Prerequisites: completion of all P. Adm. core courses and 6 hours of additional graduate credit courses.

898. Applied Research Paper. 3Pr. Applied research paper and work the direction of a faculty committees to develop and compares competency in the areas of writing research and policy conceptualization. Prerequisite: advisor's consent.

**Social Work**
Graduate Faculty
Assistant Professors: Elwin M. Barrett (director), Sallie M. Kaweke, Timothy W. Luse

Although a complete graduate program is not available currently in social work, the following courses may apply toward a master's degree.

Courses for Undergraduate/Graduate Credit

500. Social Welfare Policy: Analysis and Evaluation. 3Pr. Designed to provide systematic frameworks for examining various social policy, and programs, evaluating major social welfare programs and alternative designs, and engage in complex community resources in an urban environment. Prerequisites: Pol. S. 121Q or Hist. 135Q, 5c. Wr. 200Q.
502. Social Work Practice: 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 which focuses on experiential learning. Required for social work majors. Prerequisite: program admission.

541. Women and Poverty. (3). Cross-listed as Wom. St. 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. 388Q, or instructor's consent.

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 six hours. Prerequisite: instructor's consent.

560. Personal Human Interaction within Society. (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: six hours from a list of social and behavioral science courses approved by the social work faculty and selected in consultation with a social work adviser.

570. Internships in Social Work. (0-6). Provides a specially designed field experience for special students who need or desire training that will enhance their professional abilities and for whom academic credit is appropriate. Also meets experiential needs of special designated students for whom academic credit is appropriate. Repeatable for credit not to exceed a total of six hours. Prerequisite: instructor's consent.

600. Social Welfare Development. (3). Develops social work knowledge and skills to foster innovation and change within human service organizations, in program networks, community dynamics, and in arenas of public policy. Social work models are developed to lessen the magnitude of social problems and advance social justice in urban environments with diverse populations and dynamic resource systems. Prerequisites: Sc. Wk. 200, Pol. S. 121Q or Hist. 132Q.

601. Advanced Social Work Practice. (3). Advanced practice theory emphasizing becoming both knowledgeable and skillful in applying theory in enriching professional practice through clear understanding of concepts, principles, techniques and processes of social work meth-ods as they relate to individuals, families and groups and to the larger community. To be taken concurrently with Sc. Wk. 602 except by departmental consent. Prerequisites: Sc. Wk. 502 and departmental consent.

602. Practicum I. (6). Placement in community social welfare agencies for supervised periods of observation and direct service design 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 departmental consent. Prerequisites: a grade of B or better in Sc. Wk. 502 and departmental consent.


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.

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 department in consultation with majors, groups of community practitioners, and area service institutions. Repeatable. Prerequisite: instructor's or departmental consent.

750. Social Work Workshops. (1-5). 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.

Women's Studies
Graduate Faculty

Associate Professors: Gayle Davis, Carol Konek, Dorothy C. Miller (director)
Assistant Professor: Deborah Gordon

Students may earn a master's degree in several areas with an emphasis in women's studies. These include curriculums 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

511. Women in Early America, 1600-1830. (3). Traces women's contributions and experiences in building the United States, from 1600 to the 1830s. Includes both conventional and newly developed methodologies in women's history research.

512. Women and Reform in America, 1830-Present. (3). Examines the history of women in the United States from 1830 to the 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.


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 historic and social value to the culture.

522. Contemporary Women's Art. (3). Examines art by women in the contemporary world. Special attention to the impact of the women's movement on the creative energies and on the career directions and opportunities of these women in the arts.

530. The American Woman in History. (3). Cross-listed as Hist. 530.

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.


535. Literary Images of Women: Diverse Voices. (3). Cross-listed as Engl. 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. 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: Engl. 101, 102, and one course in literature.

536Q. Writing by Women. (3). Cross-listed as Engl. 536. Division A course/elective. 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.
537. Contemporary Women's Drama. (3). Cross-listed as Engl. 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. Writers considered vary. In addition to reading and analyzing plays, students write plays of their own. Prerequisites: Engl. 101 and 102 and 5 hours of English literature.

541. Women and Poverty. (3). 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 women in Kansas. Prerequisites: 6 hours of social science preferably in women's studies, including Wom. S. 388Q, or instructor's consent.

542. Women in Other Cultures. (3). Cross-listed as Anthr. 542.

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.

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.

580. Special Topics. (1-3). Focuses on advanced topics of interest to women's studies.

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. 387Q and 388Q, or 6 hours of women's studies courses, or instructor's consent.

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

Courses for Graduate Students Only

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.

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 four hours of lecture and two hours of lab.
Graduate Faculty 1994-95

Full Membership

Date or dates following title refer to time of initial and successive appointments. Faculty listed have academic rank.


Alexander, David R., Associate Professor and Chairperson, Physics, and Executive Director, Lake Afton Public Observatory (1971). BS, Kansas State University, 1967; AM, Indiana University, 1968, PhD, 1971.


Armstrong, Richard N., Assistant Professor, School of Communication (1987). BA, Southern Utah State College, 1972; MA, Brigham Young University, 1974; PhD, Bowling Green State University, 1978.

Bagai, Rajiv, Assistant Professor, Computer Science (1990). MS, Birla Institute of Technology and Science, 1983; MS, University of Victoria, 1987; PhD, 1990.


Bajaj, Fren N., Associate Professor, Mathematics and Statistics (1968). BA, Punjab University, 1951; MA, 1954; MS, Case Western Reserve University, 1967; PhD, 1968.

Bakken, Linda, Associate Professor, Administration, Counseling, Educational, and School Psychology (1985). BA, Northern Michigan University, 1966; MS, Utah State University, 1979; EdD, Boston University, 1983.


Ballenger, Marcus T., Professor, Curriculum and Instruction and Associate Dean, Education (1970). BSE, North Texas State University, 1959; MED, Texas Tech University, 1963; EdD, 1970.

Batem, Morita M., Associate Professor, Finance, Real Estate, and Decision Sciences (1966). BSME, University of South Carolina, 1946; MS, University of North Carolina, 1950; PhD, Oklahoma State University, 1967.


Bell, John A., Associate Professor and Chairperson, Management (1971). BA, University of Southern California, 1966; PhD, Texas Tech University, 1971.


Bereman, Nancy, Associate Professor, Management (1980). BA, Wichita State University, 1969; MBA, 1974; PhD, University of Minnesota, 1983.


Billings Dorothy K., Associate Professor, Anthropology (1968). BA, University of Wisconsin, 1953; PhD, University of Sydney, 1972.

Bischoff, William, Associate Professor and Chairperson, Geology (1984). BA, DePauw University, 1979; MS, Northwestern University, 1982; PhD, 1985.

Blakeslee, Donald J., Associate Professor, Anthropology (1976). BA, University of Nebraska, 1969; MA, 1971; PhD, University of Wisconsin-Milwaukee, 1975.

Blaziczk, Donald L., Assistant Professor, Hugo Wall School of Urban and Public Affairs, Administration of Justice Program (1976). BA, Northern Illinois University, 1967; MA, 1970; PhD, Michigan State University, 1976.


Bom, John D., Jr., Associate Professor History (1965). BA, University of Texas, 1952; MA, University of Houston, 1958; PhD, University of New Mexico, 1963.

Borresen, C. Robert, Associate Professor, Psychology (1963). BS, Northwestern University, 1953; AM, University of Missouri, 1958; PhD, 1968.

Boughton, Harrison C., Professor, School of Music (1961). BA, University of Northern Iowa, 1956; MA, University of Denver, 1956; DMA, University of Missouri at Kansas City, 1975.

Bousfield, George R., Assistant Professor, Biological Sciences (1991). BS, Saginaw Valley State University, 1974; MA, Indiana University, 1976, PhD, 1981.

Boyd, John David, Professor, School of Art and Design (1972). BA, California State University, Long Beach, 1968; MFA, Cranbrook Academy of Art, 1971.

Brady, Stephen W., Associate Professor, Mathematics and Statistics, and College Algebra Program Director (1967). AB, Indiana University, 1963; AM, 1965; PhD, 1968.

Bravo-Elizondo, Pedro, Professor, Modern and Classical Languages and Literatures (1975). Universidad Tecnica del Estado, Chile, 1957; MA, Education, Catholic University, Valparaiso, Chile, 1964; MA, University of Iowa, 1971; PhD, 1974.

Britton, Clark V., Jr., Professor, School of Art and Design (1957). BAA, Auburn University, 1952; MAA, 1955.

Brooks, Christopher K., Assistant Professor, English (1989). BA, Indiana University, 1977; MA, Indiana State University, 1979; PhD, Purdue University, 1987.


Brown, Karen Lee, Associate Professor, Biological Sciences (1982). BA, Miami University-Oxford, Ohio, 1974; MS, 1976; PhD, University of Georgia, 1981.


Burk, Kenneth W., Professor, Communicative Disorders and Sciences (1971). BA, University of Iowa, 1953; MA, University of Kentucky, 1955; PhD, Purdue University, 1962.


Burns, Dennis H., Assistant Professor, Chemistry (1989). BS, University of California-Los Angeles, 1981; PhD, University of California-Davis, 1986.


Carper, William R., Professor, Chemistry (1967). BS, State University of New York at
Farnsworth, David N., Professor, Political Science (1956). BA, Wichita State University, 1953; AM, University of Illinois, 1955; PhD, 1959.
Fatehi-Sedeh, Kamal, Professor, Management (1983). BA, College of Business Science, 1965; BS, Bowling Green State University, 1971; MBA, Western Illinois University, 1972; PhD, Louisiana State University, 1976.
Fernandez, Jeffrey E., Associate Professor and Boeing Fellow, Industrial and Manufacturing Engineering (1986). BEng, NED University of Engineering and Technology, Pakistan; 1982; MSIE, Texas Tech University, 1983; PhD, 1986.
Fillon, Bryant F., Professor, Curriculum and Instruction (1990). BA, University of Michigan, 1960; MS, C.W. Post College of Long Island University, 1965; PhD, Florida State University, 1969.
Foran, Michael F., Professor, School of Accountancy (1983). BA, University of Arizona, 1967; MAS, University of Illinois, 1968; PhD University of Washington, 1972; CMA; CPA-Texas, Oklahoma.
Foran, Nancy Joyce, Associate Professor, School of Accountancy (1979). BS, University of California at Los Angeles, 1965; MS, Wichita State University, 1967; PhD, Oklahoma State University 1985, CPA-Kansas.
Foster, Mary Sue, Associate Professor, School of Art and Design (1960). BFA, University of Kansas, 1961; MSE, 1963; MFA, 1971.
Full, William E., Associate Professor, Geology (1982). BS, University of Notre Dame, 1969; MA, University of Illinois, Chicago Circle, 1980; PhD, University of South Carolina, 1982.
Furtwengler, Carol, Associate Professor, Administration, Counseling, Educational, and School Psychology (1990). BS, Bowie State University, 1972; MA, George Mason University, 1977; PhD, Vanderbilt University, 1980.
Gaunt, Philip, Professor and Director, Research and International Program, Elliott School of Communication (1990). BA, Reading University, U.K., 1959; MA, Indiana University, 1968; PhD, 1969.
Gibson, George, Professor, School of Music (1967, 1968). BM, University of Miami, 1956; MM, University of Texas, 1959; DMA, University of Southern California, 1971.
Gleem-Lewin, David, Professor and Dean, Liberal Arts and Sciences (1994). AB, Knox College, 1965; PhD, Cornell University, 1972.
Goodell, Phillips W., Associate Professor, Marketing and Small Business (1986). AB, Princeton University, 1953; MBA, Stanford University, 1957; PhD, Texas Tech University, 1967.
Graham, A. Richard, Professor, Mechanical Engineering, and Director, Center for Technology Application (1963). BSME, Kansas State University, 1957; MS, 1960; PhD, University of Iowa, 1965.
Greywall, Mahesh S., Professor, Mechanical Engineering (1969). BSc, University of Allahabad, India, 1953; BS, University of California at Berkeley, 1957; MS, 1959; PhD, 1962; Licensed Professional Engineer-Kansas.
Gries, John C., Associate Professor, Geology (1971). BS, University of Wyoming, 1962; MS, 1965; PhD, University of Texas, 1970.
Cythiel, Anthony P., Associate Professor, History (1971). Diplome d'Humanites, St. Stanislas Poperinge, Belgium, 1950; BPh, Maison de Philosophe, Belgium, 1953; MA in Theology, Maison de Theologie, Universite de Louvain, Belgium, 1957; MA, University of Detroit, 1966; PhD, 1971.
Halcomb, Charles G., Professor, Psychology (1950). BA, Oklahoma Baptist University, 1958; PhD, Baylor University, 1964.
Hamza, Hussein, Assistant Professor, Physics (1989). BS, Lebanese University, 1978; MS, Northeastern University, 1980; PhD, 1986.
Hawkins, Katherine W., Associate Professor and Associate Director, Elliott School of Communication (1984). BA, University of Virginia, 1980; MA, University of Texas-Austin, 1982; PhD, 1986.
Hawley, Donna J., Professor, School of Nursing and Director, Graduate Nursing Education (1981). BSN, University of Iowa 1968; MA, University of Missouri at Kansas City, 1971; MN, University of Kansas, 1980; EdD, 1983.
Hendry, William J. III, Associate Professor, Business Sciences (1992). BA, Northeastern University, 1974; MA, 1978; PhD, Clark University, 1982.
Hersch, Philip L., Associate Professor, Economics (1983). BA, Queens College, 1974; MA, Ohio State University, 1978; PhD, 1982.
Hill, Gretchen J., Assistant Professor, Sociology (1991). BA, Washburn University, 1984; MA, University of Missouri at Kansas City, 1987; PhD, University of Kansas, 1990.
Ho, James C., Distinguished Trustees Professor, Physics, and Senior Staff Scientist, National Institute for Aviation Research (1971). BS, National Taiwan University 1959; MS, University of California at Berkeley, 1963; PhD, 1966.
Ho, Lop-Hing, Assistant Professor, Mathematics and Statistics (1969). BA, Chinese University of Hong Kong, 1979; MA, Princeton University, 1982; PhD, 1984.
Hoag, Gerald B., Associate Professor, English (1967). AB, Loyola University, New Orleans, 1951; MA, Tulane University, 1955; PhD, 1965.
Hoffman, Klaus A., Associate Professor, Aerospace Engineering (1990). BS, University of Texas at Austin, 1972; MS, 1975; PhD, 1983.
Holmes, Ellen C., Associate Professor, Hugo Wall School of Urban and Public Affairs, and Program Director, Gerontology (1975). BA, Wichita State University, 1968; MA, 1971; PhD, University of Kansas, 1981.
Hoope, Steven J., Associate Professor,


Lengnick-Hall, Cynthia A., Professor and Barton Fellow, Management (1990). BA, University of California-Los Angeles, 1970; MBA, 1976; PhD, University of Texas at Austin, 1981.

Lengnick-Hall, Mark L., Associate Professor, Management (1990). BBA, University of Texas at Austin, 1975; MBA, 1980; PhD, Purdue University, 1988.

Levi, Donald, Professor and Kansas Chair, Real Estate and Land Use Economics, Finance, Real Estate, and Decision Sciences (1980). BS, University of Missouri, 1964; JD, 1966; PhD, Washington State University, 1974.


Loper, Gerald D., Jr., Associate Professor, Physics (1964). BA, Wichita State University, 1959; MS, Oklahoma State University, 1962; PhD, 1964.

Lydy, Michael J., Assistant Professor, Biological Sciences (1990). BA, Wittenberg University, 1984; PhD, Ohio State University, 1990.

Ma, Daowei, Assistant Professor, Mathematics and Statistics (1993). MS, Wuhan University, China, 1982; PhD, Washington University-St. Louis, 1990.


Mandt, Almer Joseph, Associate Professor, Philosophy (1976). BA, Trinity College, 1972; MA, Vanderbilt University, 1974; PhD, 1978.


Martin, Charles L., Associate Professor, Marketing and Small Business (1985). BBA, West Texas State University, 1981; MBA, 1982; PhD, Texas A&M University, 1986.


Mauer, Julie A., Assistant Professor, Mechanical Engineering (1990). BS, Northern Arizona University, 1979; MSE, University of New Orleans, 1984; PhD, Louisiana State University, 1989; Licensed Professional Engineer, Louisiana and Kansas.

Mathis, William E., Professor and Chairperson, School of Music (1969). BS, Brigham Young University, 1957; MS, 1961; PhD, University of Michigan, 1969.

Mau, Joseph W.C., Assistant Professor, Administration, Counseling, Educational, and School Psychology (1991). BA, Tamkang University, Taiwan, 1979; MA, University of Iowa, 1985; PhD, 1990.

May, Philip T., Professor, School of Accounting (1974). BA, Lawrence University, 1957; MBA, Indiana University, 1959; PhD, University of Wisconsin, 1967. CFA-Wisconsin.


McConnell, B. Jack, Professor, Chemistry (1979). BS, West Texas State University, 1959; PhD, Oklahoma State University, 1962.

McDonald, J. David, Assistant Professor, Biological Sciences (1993). BS, Kansas State University, 1983; MS, 1985; PhD, 1990.

McHugh, Mary L., Associate Professor, School of Nursing (1993). BSN, Wichita State University, 1973; MS, University of Michigan, 1978; PhD, 1987.

McKellar, Nancy A., Assistant Professor, Administration, Counseling, Educational, and School Psychology (1964). BS, University of Michigan, 1976; MA, Northern Illinois University, 1979; PhD, 1981.


Meissner, Gregory J., Associate Professor, Psychology (1980). BA, Wichita State University, 1977; PhD, University of Tennessee, 1980.


Mitchell, Linda C., Associate Professor, School of Accounting (1977). BS, East Central University, 1968; MBA, University of Arkansas, 1969; PhD, 1975. CMA-Kansas.


Murdock, Katherine, Associate Professor, School of Music (1985). BA, Humboldt State University, 1974; MA, San Francisco State University, 1980; PhD, Eastman School of Music, University of Rochester, 1986.

Murphy, Dwight D., Professor, Finance, Real Estate, and Decision Sciences (1967). BS, University of Denver, 1957; JD, 1959.


Myose, Roy Y., Assistant Professor, Aerospace Engineering (1992). BSAE, University of Southern California, 1983; MS, California Institute of Technology, 1984; PhD, University of Southern California, 1991.

Nagati, M. Gawad, Associate Professor, Aerospace Engineering (1984). BS, Cairo University, Egypt, 1966; MS, Wichita State University, 1978; PhD, Iowa State University, 1984.

Nance, Donald W., Associate Professor and Director, Counseling Service (1968). BA, University of Redlands, 1964; MA, University of Iowa, 1967; PhD, 1968.

Nie, Yumin, Assistant Professor, Computer Science (1994). BS, Harbin Institute of Technology, China, 1982; MS, Temple University, 1986; PhD, University of North Carolina, 1989.

Norris, Roy H., Professor and Chairperson, Electrical Engineering (1959). BS, Wichita State University, 1959; MS, 1962; PhD, Oklahoma State University, 1972.

O'Flaherty, Kathleen, Assistant Professor and Chairperson, Sociology (1983). BA, Clarke College 1979; MA, Miami University, 1980; PhD, Purdue University, 1984.

Olivero, Raymond D., Associate Professor, Science and Technology (1976). BS, University of San Diego, 1969; MS, Western Michigan University, 1972; PhD, University of North Florida, 1976.


Palmiotto, Michael, Associate Professor, Hugo Wall School of Urban and Public Affairs, Administration of Justice Program (1994). BS, Mercy College, 1971; MS, City University of New York, 1974; PhD, University of Pittsburgh, 1979; PhD, 1984.

Papazakis, Michael, Associate Professor and Boeing Fellow, Aerospace Engineering (1986).


Soles, David E., Associate Professor, Philosophy (1974, 1982). BA, University of Pittsburgh, 1969; PhD, Johns Hopkins University, 1977.


Spillman, Richard S., Associate Professor and Director of Creative Writing, English (1992). BA, Illinois Wesleyan University, 1968; MA, San Francisco State University, 1972; PhD, State University of New York-Binghamton, 1982.

Stangs, John E., Jr., Associate Professor, Political Science (1968). BA, Southeastern Louisiana University, 1961; MA, Louisiana State University, 1963; PhD, University of Wisconsin, 1971.

Steck, James E., Assistant Professor, Mechanical Engineering (1990). BS, University of Missouri at Rolla, 1960; MS, 1964; PhD, 1969.

Stephens, Frances C., Associate Professor, English (1970). BA, Texas A&M University, 1956; MA, University of Texas, 1967; PhD, 1970.

Stevenson, William T.K., Professor, Chemistry (1967). BS, University of Glasgow, Scotland, 1977; PhD, 1980.

Stone, Brian J., Assistant Professor, Administration, Counseling, Educational, and School Psychology (1990). BA, Columbia College, 1983; MEd, Brigham Young University, 1985; PhD, Ball State University, 1989.


Sudermann, Frederick, Assistant Professor, Political Science, and Vice President, Research and Governmental and Industrial Relations (1964). BA, Wichita State University, 1958; MA, 1960.


Sutton, Peter G., Professor, Geology, and Coordinator, General Education (1983). BS (Hon), McMaster University, 1953; PhD, Northwestern University, 1958.


Sweeney, Arthur B., Professor, Management (1968). BS, University of Illinois, 1947; MSW, 1949; PhD, University of Houston, 1956.

Tahey, Syed M., Associate Professor, Physics (1976). BS, Dacca University, 1964; MS, 1966; MA, California State University, Long Beach, 1969; PhD, Washington State University, 1974.

Talaty, Erach R., Professor, Chemistry (1969). BSc (Honors), Nagpur University, India, 1958; PhD, 1954; PhD, Ohio State University, 1957.


Taylor, Merrell Alan, Assistant Professor, Biological Sciences (1991). BS, Southwest Missouri State University, 1980; PhD, University of Missouri-Columbia, 1985.

Terrell, William T., Associate Professor, Economics (1967). BS, Oklahoma State University, 1958; MS, 1961; PhD, Vanderbilt University, 1967.

Tesfame, Aserat, Assistant Professor, Electrical Engineering (1988). BSc (EE), Addis Ababa University, 1965; BSc (Math), 1973; MS, Cornell University, 1976; PhD, 1980.

Thomas, Phillip D., Professor, History (1965, 1984). BA, Baylor University, 1960; MA, University of New Mexico, 1964; PhD, 1965.

Thompson, J. William, Professor, School of Music (1976). BM, Wichita State University, 1963; MM, 1965; DMA, University of Missouri at Kansas City, 1968.

Tilford, Michael, Associate Professor, Curriculum and Instruction, Associate Vice President, Academic Affairs, and Dean, Graduate School (1967). BS, Langston University, 1957; MA, Johns Hopkins University, 1958; EdD, Oklahoma State University, 1970.


Toops, Gary H., Associate Professor, Modern and Classical Languages and Literatures (1989). BA, McGill University, 1973; MA, University of British Columbia, 1979; MA, Yale University, 1980; MPhil, 1982; PhD, 1985.

Treichak, Andrew Jr., Assistant Professor, School of Music (1980). BM, Oberlin Conservatory, 1973; MM, State University of New York at Stonybrook, 1975; DMA, University of Texas at Austin, 1988.


Unnithan, Prabha, Associate Professor, Hugo Wall School of Urban and Public Affairs, Administration of Justice Program (1994). BS, Karnataka University, India, 1974; MBA, University of Nebraska, 1978; PhD, University of Nebraska-Lincoln, 1983.


van Boven, Bertil H., Professor, School of Music (1987). AB, University of California-Berkley, 1974; MA, University of Oregon, 1978; PhD, University of Upsala, Sweden, 1983.


Vincent, Michael, Associate Professor, Modern and Classical Languages and Literatures (1980). BA, St. John's University, 1972; Diplome de Langue et de Civilisation Francaise, Universite de Paris, 1973; MA, University of Wisconsin, 1974; PhD, 1979.

Wahlbeck, Phillip G., Professor, Chemistry (1972). BS, University of Illinois, 1954; PhD, 1958.


Wenham, C. Michael, Professor, Economics (1966). BS, University of Missouri, 1959; PhD, University of Kansas, 1968.

Wentz, Willam H., Jr., Distinguished Professor, Aerospace Engineering, and Executive Director, National Institute for Aviation Research (1957, 1963). BS, Wichita State University, 1955; MS, 1961; PhD, University of Kansas, 1969. Licensed Professional Engineer.


Wesley, Carol E., Associate Professor, Communicative Disorders and Sciences (1994). BA, Geneva College, 1965; MA, University of Iowa, 1969; PhD, 1971.


Williamson, L. Keith, Assistant Professor, Elliott School of Communication (1977). BA, Wichita State University, 1965; MTh, Southern Methodist University, 1968; EdD, Temple University, 1975.

Wilson, John H., Professor, Curriculum and Instruction (1968). BA, Wichita State University, 1958; MEd, 1964; EdD, University of Oklahoma, 1967.

Wimalasena, Kandateghe, Assistant Professor, Chemistry (1989). BS, University of Peradeniya, Sri Lanka, 1977; PhD, Georgia Institute of Technology, 1986.

Woller, Debra, Assistant Professor, Biological Sciences (1993). BA, University of California, San Diego, 1982; PhD, University of Washington, 1987.


Ackerman, Paul D., Assistant Professor and Assistant Chairperson, Psychology (1968). BA, University of Kansas, 1954; MA, 1966; PhD, 1968.


Babnick, Judith, Associate Professor, School of Performing Arts (1984). BA, Edgell College, 1974; MA, University of Cincinnati, 1976; PhD, University of California, 1981.

Badek, Barry T., Assistant Professor, School of Art and Design (1993). BFA, Virginia Commonwealth University-Richmond, 1985; MFA, Syracuse University, 1990.


Bees, Julie L., Associate Professor, School of Music (1968). BM, Peabody Conservatory, 1974; DMA, University of Colorado, Boulder, 1982.


Boneh, Shahar, Assistant Professor, Mathematics and Statistics (1989). BA, Tel-Aviv University, Israel, 1984; MA, University of California-Santa Barbara, 1987; PhD, 1990.

Bowman, Barbara E., Assistant Professor, Biological Sciences, and Director, Affirmative Action (1966). BS, University of Utah, 1954; MME, Wichita State University, 1966; PhD, University of Kansas, 1978.

Brennan, Jeri Ann, Associate Professor, Curriculum and Instruction (1982). BME, University of Kansas, 1965; MS, 1972; PhD, 1980.

Cavarossi, Joyce P., Associate Professor, School of Performing Arts (1965). BSE, University of Virginia, 1953; MA, Ohio State University, 1963.


Ciboski, Kenneth N., Associate Professor, Political Science (1968). BA, University of Kansas, 1961; MA, 1965; PhD, University of Washington, 1971.


Conrad, Mary Elaine, Associate Professor and Chairperson, Medical Technology (1980). BS, Kansas Newman College, 1957; MS, Kansas State University, 1974; PhD, 1991.


Deskins, James, Professor and Director, School of Accountancy (1985). BBA, University of Oklahoma, 1960; MBA, 1961; PhD, University of Texas at Austin, 1965. CPA-Oklahoma and Texas.


Distler, Donald A., Associate Professor, Biological Sciences (1943). BA, University of Louisville, 1952; MS, 1958; PhD, University of Kansas, 1966.


Douglas, Donald M., Associate Professor, History (1965). BA, Kansas State University, 1961; MA, 1963; PhD, University of Kansas.


Faires, Wesley L., Associate Professor, Communication Disorders and Sciences (1968). BA, Wichita State University, 1958; MA, 1962; PhD, 1965.


Fowler, Thomas A., Assistant Professor, School of Music (1979). BME, Wichita State University, 1966; MFA, 1979.

Fox, L. Raymond, Professor, Biological Sciences (1979). BA, University of California, Santa Barbara, 1965; PhD, 1967.

Gladhart, Stephen C., Assistant Professor and Chairperson, Health Sciences, and Assistant Professor, School of Health Sciences (1974). BA, Wichita State University, 1969; MA, 1972; EdD, University of Kansas, 1977.


Gregg, Alvin L., Assistant Professor, English (1968). BA, Texas Tech University, 1956; MA, 1957; PhD, University of Texas, 1969.


Hackett, Donald W., Associate Professor, Marketing and Small Business, and Director, Center for Entrepreneurship (1973). BBA, University of Oklahoma, 1967; MBA, 1970; DBA, 1974.

Halstead, Helen L., Assistant Professor, School of Nursing (1970). BSN, University of Kansas, 1955; MD, University of Minnesota, 1969; PhD, Kansas State University, 1982.

Hamilton, Cheryl M., Assistant Professor, School of Art and Design (1993). BFA, University of Nebraska-Lincoln, 1978; MS, University of Tennessee-Knoxville, 1977.

Hanna, Kathleen M., Assistant Professor, School of Nursing (1991). BS, Loretta Heights College, 1980; MSN, University of Nebraska Medical Center, 1981; PhD, University of Pittsburgh, 1990.


Hartman, John J., Professor, Sociology (1968). BS, Southwest Missouri State University, 1961; MS, University of Missouri, 1963; PhD, 1966.

Hays, William C., Associate Professor, Hugo Wall School of Urban and Public Affairs,
Shawver, Martha M., Assistant Professor, Nursing, and Associate Vice President, Academic Affairs (1975). BSN, Eastern Mennonite College, 1965; MA in Nursing, University of Iowa, 1974; PhD, University of Kansas, 1985.


Steinke, Elaine, Assistant Professor, School of Nursing (1990). BSN, Wichita State University, 1979; MN, 1982; PhD, Kansas State University, 1987.

Thomas, James H., Associate Professor, Anthropology (1976). BA, Wichita State University, 1971; MEd, 1975; PhD, Oklahoma State University, 1976.


Town, Robert L., Associate Professor, School of Music (1965). BM, Eastman School of Music, 1960; MM, Syracuse University, 1962.

Turk, Randall L., Assistant Professor, Administration, Counseling, Educational, and School Psychology (1994). BS, Butler University, 1965; MEd, Seattle University, 1988; PhD, Texas A&M University, 1994.

Ulrich, Yvonne M., Assistant Professor, School of Nursing (1987). BSN, Wichita State University, 1975; MN, 1979; PhD, University of Texas at Austin, 1989.

Vickery, W. Dean, Assistant Professor, Management (1971). BA, Wichita State University, 1954; MS, 1968.

Vukovich, Matthew D., Assistant Professor, Health and Physical Education (1994). BS, Iowa State University, 1988; MS, 1990; PhD, Ball State University, 1993.

Wells, Candace, Assistant Professor, Curriculum and Instruction (1980). BA, University of Chicago, 1971; MA, University of Missouri, 1973; EdD, Oklahoma State University, 1980.

Widener, Russell D., Assistant Professor, School of Music (1981). BM, Baylor University, 1968; MM, Catholic University, 1972.


Yeotis, Catherine G., Assistant Professor, Curriculum and Instruction (1979). BS, Michigan State University, 1963; MS, Purdue University, 1973; PhD, 1978.

Youngman, Arthur L., Assistant Professor, Biological Sciences (1965). BA, Montana State University, 1959; MS, Case Western Reserve University, 1961; PhD, University of Texas, 1965.
Key to Course Descriptions

Symbols

When two course numbers are joined by a hyphen (-), the first semester is prerequisite to the second; when the numbers have an ampersand (&) between them, the two semesters may be taken in either order. Unless specifically noted otherwise, the first course listed is offered in the fall semester and the second in the spring.

The number of hours of credit for each course is indicated in parentheses following the course title. The number of class meetings per week is normally the same as the number of credit hours. Two hours of laboratory work usually are required for one hour of credit. In courses involving meetings other than lectures, the following symbols are used: R, lecture; L, laboratory; C, conference; D, demonstration; and P, practicum/clinical, with the hours of practicum/clinical per week given in front of the letter (6-8P means six to eight hours of practicum/clinical per week).

Abbreviations

The following abbreviations of academic departments and areas are used in references to courses offered by those departments.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Department/Area</th>
</tr>
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<tbody>
<tr>
<td>Acc.</td>
<td>Accounting</td>
</tr>
<tr>
<td>AE</td>
<td>Aerospace engineering</td>
</tr>
<tr>
<td>AJ</td>
<td>Administration of justice</td>
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<tr>
<td>Anthr.</td>
<td>Anthropology</td>
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<tr>
<td>Art E.</td>
<td>Art education</td>
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<tr>
<td>Art F.</td>
<td>Art and design foundation</td>
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<tr>
<td>Art G.</td>
<td>Graphic design</td>
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<tr>
<td>Art H.</td>
<td>Art history</td>
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<tr>
<td>Art S.</td>
<td>Studio arts</td>
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<tr>
<td>Av. Mgt.</td>
<td>Aviation management</td>
</tr>
<tr>
<td>B. Law</td>
<td>Business law</td>
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<tr>
<td>Biol.</td>
<td>Biological sciences</td>
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<tr>
<td>CDSP</td>
<td>Counseling, educational, and school psychology</td>
</tr>
<tr>
<td>Chem.</td>
<td>Chemistry</td>
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<tr>
<td>Chin.</td>
<td>Chinese</td>
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<tr>
<td>CI</td>
<td>Curriculum and instruction</td>
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<tr>
<td>Comm.</td>
<td>Communication</td>
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<tr>
<td>CS</td>
<td>Computer science</td>
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<td>Dance</td>
<td>Dance</td>
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<tr>
<td>DH</td>
<td>Dental hygiene</td>
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<tr>
<td>DS</td>
<td>Decision sciences</td>
</tr>
<tr>
<td>EAS</td>
<td>Educational administration and supervision</td>
</tr>
<tr>
<td>Econ.</td>
<td>Economics</td>
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<tr>
<td>EE</td>
<td>Electrical engineering</td>
</tr>
<tr>
<td>Engl.</td>
<td>English language and literature</td>
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<tr>
<td>Engr.</td>
<td>General engineering</td>
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<tr>
<td>Entre.</td>
<td>Entrepreneurship</td>
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<tr>
<td>Fin.</td>
<td>Finance</td>
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<td>Fren.</td>
<td>French</td>
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<td>Geog.</td>
<td>Geography</td>
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<td>Geol.</td>
<td>Geology</td>
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<td>Germ.</td>
<td>German</td>
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<td>Geront.</td>
<td>Gerontology</td>
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<tr>
<td>HAE</td>
<td>Health, administration, and gerontology</td>
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<tr>
<td>Hist.</td>
<td>History</td>
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<tr>
<td>HNRS</td>
<td>Honors Program</td>
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<tr>
<td>HS</td>
<td>Health sciences</td>
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<td>HRM</td>
<td>Human Resource Management</td>
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<td>IE</td>
<td>Industrial engineering</td>
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<td>Ital.</td>
<td>Italian</td>
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<td>Japan</td>
<td>Japanese</td>
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<tr>
<td>LAS-I</td>
<td>Liberal arts interdisciplinary</td>
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<tr>
<td>Lat.</td>
<td>Latin</td>
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<td>Legal</td>
<td>Legal assistant</td>
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<td>Ling.</td>
<td>Linguistics</td>
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<td>Math.</td>
<td>Mathematics</td>
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<td>ME</td>
<td>Mechanical engineering</td>
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<td>Med. T.</td>
<td>Medical technology</td>
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<td>Mgmt.</td>
<td>Management</td>
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<td>Min. St.</td>
<td>Minority studies</td>
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<td>Mkt.</td>
<td>Marketing</td>
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<tr>
<td>Mkt.</td>
<td>Marketing</td>
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<tr>
<td>Mus. A.</td>
<td>Applied music</td>
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<td>Mus. C.</td>
<td>Musicology-composition</td>
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<tr>
<td>Mus. E.</td>
<td>Music education</td>
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<td>Mus. P.</td>
<td>Music performance</td>
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<td>Nurs.</td>
<td>Nursing</td>
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<tr>
<td>PA</td>
<td>Physician assistant</td>
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<tr>
<td>P. Adm.</td>
<td>Public administration</td>
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<tr>
<td>PE</td>
<td>Health and physical education</td>
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<td>Phil.</td>
<td>Philosophy</td>
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<td>Phys.</td>
<td>Physics</td>
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<td>Pol. S.</td>
<td>Political science</td>
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<td>Port.</td>
<td>Portuguese</td>
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<td>Psy.</td>
<td>Psychology</td>
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<td>PT</td>
<td>Physical therapy</td>
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<td>RE</td>
<td>Real estate and land use economics</td>
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<tr>
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<td>Religion</td>
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<td>RT</td>
<td>Respiratory therapy</td>
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<td>Russian</td>
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<tr>
<td>Sc. Wk.</td>
<td>Social work</td>
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<td>Stat.</td>
<td>Statistics</td>
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<td>Thea.</td>
<td>Theatre</td>
</tr>
<tr>
<td>UC</td>
<td>University College</td>
</tr>
<tr>
<td>Wom. S.</td>
<td>Women's studies</td>
</tr>
</tbody>
</table>
Map Legend
Facilities are identified with a letter corresponding to their location on the map.

Buildings
Abilene Library (D)
Ahlberg Hall (C)
Blake Hall (B)
Brennan Hall I (C)
Brennan Hall II (C)
Brennan Hall III (C)
Campus Activities Center (C)
CAC Theater (C)
Central Energy Plant (D)
Cessna Stadium (C)
Child Development Center (A)
Clinton Hall (C)
Communications Building (B)
Corbin Education Center (D)
Credit Union (D)
Devlin Hall (C)
Duerksen Fine Arts Center (B)
Eck Stadium (E)
Edwin A. Ulrich Museum of Art (B)
Elliot Hall (C)
Engineering Building (D)
Fairmount Towers Commons (A)
Fairmount Towers North (A)
Fairmount Towers South (A)
Fiske Hall (B)
Gaddis Physical Plant Complex (D, E)
Gardner Plaza (C)
Golf Course Maintenance Building (E)
Golf Pro Shop (F)
Grace Memorial Chapel (C)
Grace Wilkie Hall (D)
Henriksen Hall (C)
Heskett Center (D)
Heskett Center Storage (D)
Housing Maintenance Shop (A)
Hubbard Hall (C)
Industrial Technology (C)
Intensive English Language Center (A)
Jardine Hall (C)
Levitt Arena (B)
Lindquist Hall (C)
Lutheran Student Center (D)
Marcus Center for Continuing Education (F)
Mathematics-Physics Building (C)
McKenna Hall (B)
McKnight Art Center (B)
Media Resources Center (D)
Memorial 70 (B)
Morrison Hall (C)
National Institute for Aviation Research (E)
Neft Hall (C)
Newman Center (D)
Original Pizza Hut (D)
Police Department (D)
President's Residence (B)
Publications (D)
Science Building (C)
Sheldon Coleman Tennis Complex (C)
Tyler Field (E)
University Alumni and Faculty Club (F)
Visual Communications (D)
Wallace Hall (D)
Wiedemann Hall (B)
Wilner Auditorium (B)
Woodman Alumni Center (F)

Fraternities
Alpha Tau Omega (B)
Beta Theta Pi (A)
Delta Upsilon (C)
Kappa Sigma (D)
Phi Delta Theta (E)
Sigma Alpha Epsilon (B)
Sigma Nu (B)
Sigma Phi Epsilon (C)

Sororities
Alpha Phi (D)
Delta Delta Delta (D)
Delta Gamma (D)
Gamma Phi Beta (D)

Wichita State has an ongoing program to provide people with disabilities full access to all buildings; however, some barriers still exist. For information regarding any campus building's accessibility to the disabled, call the Resource Center for Independence, (316) 689-3309.

Visitors to the Wichita State campus should obtain temporary parking permits from the Police Department, open 24 hours a day.

For more information contact the Wichita State University Graduate School, 107 Jardine Hall, (316) 689-2095.
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