<table>
<thead>
<tr>
<th>Program and Area</th>
<th>Degree</th>
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<tbody>
<tr>
<td>Industrial Engineering (MS) (PhD)</td>
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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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<tr>
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<tr>
<td>Conducting (instrumental)</td>
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<tr>
<td>History/Literature</td>
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<tr>
<td>Performance</td>
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<tr>
<td>piano/organ</td>
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<tr>
<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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<tr>
<td>Music Education (MME)</td>
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<tr>
<td>Choral</td>
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<td>Elementary</td>
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<td>Instrumental (with recital option)</td>
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<td>Music in Special Education</td>
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<td>Nursing (MSN)</td>
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<td>Physical Education (MEd)</td>
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<td>Physical Therapy (MPT)</td>
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<td>Physics (MS)</td>
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<td>Political Science (MA)</td>
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<td>Psychology—Community/Clinical Psychology (MA)</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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<tr>
<td>School Psychology (MEd) (EdS)</td>
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<td>Science Education (MSE)</td>
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<td>Sociology (MA)</td>
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<tr>
<td>Spanish (MA)</td>
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<tr>
<td>Special Education (MEd)</td>
<td>M</td>
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M = Master      S = Specialist in Education      D = Doctoral
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Notice of Nondiscrimination
The Wichita State University does not discriminate on the basis of race, color, national origin, sex, age, or physical disability. Any person having inquiries concerning this may contact James J. Rhatigan, Vice President for Student Affairs and Dean of Students, The 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 1993
Aug. 16-21 .................................. Fall semester registration
Aug. 23 ........................................ Classes begin
Sept. 4-6 ...................................... Labor Day, holiday
Sept. 13 ....................................... Final date for filing Application for Degree card in Graduate School Office
Oct. 15 ......................................... Midterm point
Oct. 29 ......................................... Final date for withdrawal with nonpenalty grades
Nov. 1 ......................................... Priority application due date for spring financial aid awards
Nov. 12 ......................................... Last day for oral defense*
Nov. 15-23 .................................. Early registration period for spring semester
                                          (exact dates published in the Schedule of Courses)
Nov. 24-28 .................................. Thanksgiving recess
Dec. 9 ......................................... Last day of classes
Dec. 10 ......................................... 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. 11-17 .................................. Final examinations
Dec. 18 ......................................... Fall semester ends

Spring Semester 1994
Jan. 10-15 .................................. Spring semester registration
Jan. 17 ......................................... Martin Luther King, Jr. Day, holiday
Jan. 18 ......................................... Classes begin
Feb. 7 ......................................... Final date for filing Application for Degree card in Graduate School Office
March 15 ..................................... Priority application due date for fall financial aid awards
March 18 ..................................... Midterm point
March 21-27 ................................ Spring recess
March 28 ..................................... Classes resume
April 1 ......................................... Final date for withdrawal with nonpenalty grades
                                          Priority application due date for summer financial aid awards
April 8 ......................................... Last day for oral defense*
April 13-22 ................................ Early registration period for fall semester (exact dates published in the Schedule of Courses)
May 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*
May 9 ......................................... Last day of classes
May 10 ......................................... Study day
May 11-17 .................................. Final examinations
May 18 ......................................... Spring semester ends
May 21 ......................................... Commencement

These dates may be subject to change.
* Graduate School deadlines to ensure graduation that semester.
Summer Semester 1994
May 26-June 3 ....................... Presession and workshops
May 30 ......................... Memorial Day, holiday
May 31-June 3 ...................... Summer Session registration
June 6 ......................... Classes begin, first four-week term
June 10 ......................... Final date for filing Application for Degree card in Graduate School Office
July 1 ....................... Last day of first four-week term; registration for second four-week term
July 4 ..................... Independence Day, holiday
July 5 ..................... Classes begin, second four-week term
July 8 ..................... Last day for oral defense*
July 23 .................... 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 29 ..................... Summer Session ends

Fall Semester 1994
Aug. 15-20 ....................... Fall semester registration
Aug. 22 ....................... Classes begin
Sept. 3-5 ..................... Labor Day, holiday
Sept. 12 ..................... Final date for filing Application for Degree card in Graduate School Office
Oct. 14 ..................... Midterm point
Oct. 29 ..................... Final date for withdrawal with nonpenalty grades
Nov. 1 ..................... Priority application due date for spring financial aid awards
Nov. 11 ..................... Last day for oral defense*
Nov. 14-22 ................... Early registration period for spring semester
                              (exact dates published in the Schedule of Courses)
Nov. 23-27 ..................... Thanksgiving recess
Dec. 8 ...................... Last day of classes
Dec. 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*
                              Study day
Dec. 10-16 ..................... Final examinations
Dec. 17 ..................... Fall semester ends

These dates may be subject to change.
* Graduate School deadlines to insure graduation that semester.
Spring Semester 1995
Jan. 10-15........................................Spring semester registration
Jan. 16........................................Martin Luther King, Jr. Day, holiday
Jan. 17........................................Classes begin
Feb. 6........................................Final date for filing Application for Degree card in Graduate School Office
March 15.......................................Priority application due date for fall financial aid awards
March 17.......................................Midterm point
March 20-26......................................Spring recess
March 27.......................................Classes resume
March 31.......................................Final date for withdrawal with nonpenalty grades
April 1........................................Priority application due date for summer financial aid awards
April 7........................................Last day for oral defense*
April 12-21....................................Early registration period for fall semester
                                      (exact dates published in the Schedule of Courses)
May 5........................................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 8........................................Last day of classes
May 9........................................Study day
May 10-16.....................................Final examinations
May 17.......................................Spring semester ends
May 20.......................................Commencement

Summer Semester 1995
May 23-June 2..................................Presession and workshops
May 29........................................Memorial Day, holiday
May 30-June 2..................................Summer Session registration
June 5........................................Classes begin, first four-week term
June 9........................................Final date for filing Application for Degree card in Graduate School Office
June 30.......................................Last day of first four-week term; registration for second four-week term
July 3........................................Classes begin, second four-week term
July 4........................................Independence Day, holiday
July 7........................................Last day for oral defense*
July 21........................................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 28.......................................Summer Session ends

*Graduate School deadlines to insure graduation that semester.
General Information

1992-93 University and Academic Officers
Warren B. Armstrong, President of the University
Rex Cotter, Provost and Vice President for Academic Affairs
Elizabeth King, Vice President for University Affairs
Roger D. Lance, Vice President for Administration and Finance
James J. Rhatigan, Vice President for Student Affairs and Dean of Students
Michael Tilford, Dean of the Graduate School
R. Malcolm Richards, Dean of the W. Frank Barton School of Business
Maurine A. Fry, Dean of the College of Education
William J. Wilhelm, Dean of the College of Engineering
Walter J. Myers, Acting Dean of the College of Fine Arts
M. Diane Roberts, Dean of the College of Health Professions
Gerald D. Loper, Interim Dean of Fairmount College of Liberal Arts and Sciences
Jacqueline J. Snyder, Dean of Continuing Education
Jasper G. Schad, Dean of Libraries
James W. Kelley, Dean of University College and Associate Vice President for Student Affairs
Frederick Sudermann, Vice President of Governmental and Industrial Relations
Gary Hunter, Director of Intercollegiate Athletics

Board of Regents
State of Kansas
Robert Caldwell, Salina
Rick Harman, Shawnee Mission
Charles H. Hostetler, Manhattan
John G. Montgomery, Junction City
Shirley Palmer, Chairperson, Fort Scott
Frank C. Sabatini, Topeka
Jack S. Sampson, Hutchinson
Donald L. Skawon, Wichita
Sidney Warner, Cimarron
Stanley Z. Koplik, Executive Director, Topeka

Graduate Council
Michael P. Tilford, Dean of the Graduate School
Ronald G. Iacovetta, 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; Educational Administration and Supervision; Health, Physical Education, and Recreation; and Industrial Technology
Gary Greenberg, Social Sciences
Randolph A. Ellsworth, Curriculum and Instruction; and Counseling, Educational, and School Psychology
David M. Kemme, W. Frank Barton School of Business
Donald Levi, Master of Business Administration
Alicia A. Huckstadt, College of Health Professions
William E. Unrau, Humanities
Mahesh S. Greer, College of Engineering

The Wichita State University Profile

The 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 Personnages Oiseaux by Joan Miro and Grand Torso of a Woman 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 Placement 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 Devlin Hall, which houses the Center for Entrepreneurship; the National Institute for Aviation Research; and an expansion to Ablah Library, which includes a state-of-the-art Media Resources Center. The Science Classroom and Laboratory Building houses the departments of computer science, mathematics, physics, and psychology, as well as the Computing Center and its IBM 3081K+ 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 Savilla-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 X1-300 nuclear magnetic resonance spectrometer; a DEC VAX minicomputer; a CAD/CAM laboratory with Apollo DN-520 digital workstations; and modern aerodynamic laboratories which include two low-speed 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 financial assistance programs are available including assistantships, fellowships, scholarships, and loans. The University also offers the opportunity for part-time student employment and cooperative education training positions.

Life at WSU is exciting and enriching. We invite you to visit the campus and see firsthand what we have to offer.

Mission Statement

In December 1986, the Kansas Board of Regents approved the following mission statement for The Wichita State University:

The 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, The 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, Safelite Corporation, IFR, Bank IV, Southwestern Bell, Electrotech, and Microtech are located in the Wichita area. Also Pizza Hut, Taco Tico, Koch Industries, Rent-A-Center, and Coleman 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 Tilford, Dean
Ronald Iacovetta, 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; and in aerospace, electrical, mechanical, and mechanical engineering. A doctoral transfer arrangement with the University of Kansas also is available in educational administration.

The graduate faculty consists of the University president, the executive 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 dean, 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 The 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 The 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 The 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.

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 The Wichita State University involve the students' rights to express their views and to take reasoned exception to the views of facul-
ty; 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 abiding 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 The 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 through 799 may be taken by both undergraduate students (for undergraduate credit) and graduate students. 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 adviser 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 The 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 Application for Admission and appropriate transcripts (as described below) to:

Graduate School
107 Jardine Hall
The Wichita State University
1845 Fairmount
Wichita, KS 67260-0004
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.

Graduate Nondegree Admission
Students originally admitted to a nondegree category may later reapply for admission to degree program status. 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 who already possess a graduate degree or who do not want to seek a graduate degree at The Wichita State University 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 (courses numbered 750), 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.

**Graduate Credit for Seniors (Senior Rule)**

Seniors at Wichita State or neighboring 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 neighboring institutions must be admitted as undergraduates (possibly as guest students) through the University admissions office.

The completed Senior Rule application 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 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. Enrollment in at least nine hours at the graduate level each semester is mandatory.

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 year. 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 The 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 The 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 switch advising areas, a new application for admission to the correct 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).

Some departments have specific 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.

An adviser 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 also 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 and times for enrollment are established by the registrar. Graduate students must enroll according to the times (determined alphabetically) published in the Schedule of Courses for any given term. Adherence to the schedule enrollment 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, 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 the 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.

Incompletes 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 3.00. Students admitted on probation are automatically placed in full standing if they attain a cumulative grade point average of at least 3.00 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 3.00 within nine additional hours of graduate credit course work.

Students may be dismissed from their degree program or nondegree category A and placed in nondegree category B if they fail to attain a cumulative grade point average of at least 3.00 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 2.00 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 form and must state in 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 fulltime 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 enrollments may be obtained by petitioning the Graduate School.

Faculty Restrictions
Faculty members of The Wichita State University who hold the rank of assistant professor or higher cannot earn graduate 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 six 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
submit 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 credit is fully acceptable to that institution in satisfaction of its advanced degree requirement, and
3. The credit is applicable in terms of content to the student's program of study.

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.

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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 credit is fully acceptable to that institution in satisfaction of its advanced degree requirement, and
3. The credit is applicable in terms of content to the student's program of study.

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 requirements for the degree. 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 requirements for the degree are again expected to be completed.

Time Limits

Courses started more than six years before the semester in which the degree work is completed may not be used as part of a degree program. In some cases courses taken before this time 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.

For doctoral programs requiring a mas-
ter's degree for admission, the doctorate must be completed within six years from the effective date of admission. In those programs permitting admission directly after the bachelor's degree, the doctorate must be completed in nine years after the date of admission.

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 shall normally carry the grade of F 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 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 advisers. 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. In master's programs final oral examinations are required of all students presenting theses or research projects. 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 1992-93, are subject to change by the action of the Kansas Board of Regents or the state legislature.

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<tr>
<th>Each Semester and Summer Session</th>
<th>Resident</th>
<th>Non Resident</th>
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<tbody>
<tr>
<td>Tuition</td>
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<tr>
<td>1 through 14 hours</td>
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<tr>
<td>per credit hour</td>
<td>75.15</td>
<td>215.80</td>
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<tr>
<td>15 hours and above</td>
<td>1,127.25</td>
<td>3,327.00</td>
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<td>flat fee</td>
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<tr>
<td>Registration fee</td>
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<tr>
<td>per semester</td>
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<td>8.00</td>
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<tr>
<td>Student Service fee</td>
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<tr>
<td>per semester</td>
<td>8.00</td>
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</tbody>
</table>

The student fees, required of all students enrolled on the 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 $8,000. 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 hold other remunerative employment without the written approval of the department chairperson and Dean of the Graduate School.

Carl 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 $5,400.

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 of the student and determined 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, The Wichita State University, Wichita, Kansas 67260-0061, by March 1 for the following academic year.

The College of Education offers several scholarships to students enrolled in advanced degree programs: the Andrea Ullberg 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 The Wichita State University Endowment Association and 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, The Wichita State University, 1845 Fairmount, Wichita, Kansas 67260-0004.

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

Delano Maggard, Jr., Graduate Student Loan Fund. Funds have been provided through The 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 Student Life and Services (Room 105, Grace Wilkie Hall) is responsible for the residence halls, off-campus housing concerns, Resource Center for Independence, fraternities and sororities, student organizations and student involvement programs, the child development center, women’s activities, international programs, placement and 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 Catalog.)

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

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 credits 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.

Office of International Programs

International Programs, 303 Grace Wilkie Hall, serves the special needs of approximately 1,000 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 specially 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.

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.”

Placement and Career Services

The Placement and 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.

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.

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
The Wichita State University
1845 Fairmount
Wichita, Kansas 67260-0141

The 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.

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 and from 5 to 10 p.m. Monday through Thursday for children two to 12 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.

Resource Center for Independence
Serving Students with Disabilities

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

Resource Center for Independence
The 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 brailling 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 these 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 Aihberg 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.

The student body has chosen to participate in a group plan for accident and sickness insurance coverage for students and dependents. 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 Student Life and Services.

Research Support

Center for Economic Development and Business Research

The Center for Economic Development and Business Research, 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 in the Greater Wichita Area.

The center maintains a comprehensive database of economic indicators including 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 Center
for Urban Studies

The Wichita State University's role as a comprehensive urban institution was outlined by the Kansas Board of Regents in 1986 as "an urban university with a focused mission intended to meet the industrial, business, educational, social, and cultural needs of the greater Wichita area."

The Center for Urban Studies was formed in 1955 and has become a leading contributor to the urban mission articulated by the Board of Regents. The Center conducts instruction, research, and service programs, integrating these three essential University functions in responding to the needs of students and the urban environment. The Master of Public Administration degree is administered through the Center and its faculty in public administration and urban affairs. The Center'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.

The newest feature of the Center's community service program is The Wichita Assembly, a community problem-solving forum held twice each year. The faculty and staff of the Center are engaged in a wide range of research on state and local governments, including research and analysis of city-county consolidation, a history of the property tax in Kansas, state-funded emergency shelter and group home services, revenue and expenditure trends in local governments, educational finance, and compilation of selected papers of former Kansas governors John Carlin and Mike Hayden.

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 often used for demonstrations in support of the academic programs of the College of Engineering and the Fairmount College of Arts and Sciences.

The Center for Basic and Applied Research conducts research in the basic areas of aviation, with a focus on aerodynamics, propulsion, flight simulation, structures, avionics, advanced materials, and composites.

The Center for Aviation Safety Research conducts research on topics related to aviation safety, with a focus on crash-worthiness of aircraft structures, human factors, de-icing, stall-spin prevention, and aviation software reliability.

The Center for Technology Application
provides support to manufacturers in the application of technologies that include Computer Integrated Manufacturing (CIM), Computer Aided Design (CAD), and Quality. The CTA 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-sized 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, provides 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 (KSBD) also is part of the Barton School of Business and is collocated with the WSU SBDC. The state director oversees 10 regional and 10 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 (SSR Lab) supports instruction in research methods and provides faculty, staff, students, and off-campus patrons assistance and consultation regarding research issues and questions.

The SSR Lab houses the Test Grading Service for instructors who wish to use the multiple form bubble sheets as test answer sheets. The answer sheets are scanned and the instructor is provided with scores and statistical analyses consisting of the grades (in name and social security number order) and a complete item analysis of the exam. This type of service and consultation is available to individuals working on research projects also. For faculty and staff who work with microcomputers, the SSR Lab is able to up and down load files to and/or from the University’s mainframe.

The lab organizes, administers, and scores the Student Perception of Teaching Effectiveness evaluations to provide the instructor a profile of their teaching skills in comparison to others in the same department, the same college, and the entire University. Upon request, consultation is offered regarding the profile analysis.

The lab has available for faculty and staff a large library of Shareware/Public Domain programs which may be accessed through a computer bulletin board. Contact the lab for further information, (316) 689-3384.

The SSR Lab houses 19 terminals connected to the VAX and IBM mainframes; an NCS OPT-scanner; several microcomputers; and two IBM printers, a 3262 and a 4224.

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

University Press of Kansas
The University Press is operated joint by six state Kansas universities: the University of Kansas, Kansas State University, The 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 the state’s universities. Offices are located on the campus of the University of Kansas in Room 302 Carruth-O’Leary Hall.

Walter H. Beech and Supersonic Wind Tunnels; Water Tunnel
Various wind tunnels are available at Wichita State for faculty and students involved in aerodynamic studies. The Walter H. Beech Wind Tunnel is a 160 mph closed return tunnel with a 7-by-10 feet test section. A matching grant from the National Science Foundation of $113,000 helped to install a new data acquisition and reduction system; improved plotting and printing capabilities; a new Hewlett-Packard computer system; a better video system (camera and monitor) as aid in flow visualization; structural improvements and remodeling, including a new roof over the wind tunnel for better heat insulation; and a new electronic starter and motor control system.

Two supersonic wind tunnels, capable of producing wind velocities from two to four times the speed of sound, are available.

A 1-by-1.3 meter 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 smoke tunnels, a boundary layer tunnel, a water table, and a new water tunnel are also available for flow visualization studies.

The 2-by-3 feet water tunnel, which began operation in 1987, is excellent for flow visualization. Dye filaments are introduced into the flow and are taken with cameras and videotape recordings.
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
Center for Entrepreneurship and Small Business Management
The Center for Entrepreneurship and Small Business Management, housed in Devin Hall, is within the W. Frank Barton School of Business. The center is committed to promoting an environment that encourages private enterprise and that seeks to preserve and enhance entrepreneurial activities. The center provides a comprehensive curriculum in entrepreneurial studies from freshman to graduate level.

The center offers a Bachelor of Business Administration in Entrepreneurship (AACSB accredited). The entrepreneurship major is one of the few in the nation providing special training for students who may wish to establish their own enterprise or operate a new and rapidly growing business. It also will be 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, MBA students may select entrepreneurship electives resulting in a sequence in entrepreneurship.

Seminars and workshops are offered for those interested in entrepreneurship. The most popular workshop, “Entrepreneurship: Your Future in Business,” has received international recognition. In addition, there is a one-week “Entrepreneurship Camp” for high school juniors and seniors.

Additional programs include a visiting lecture series, a complete resource center, and scholarships. The Association of Collegiate Entrepreneurs, an international resource and information network for young entrepreneurs, is headquartered at the center.

Center for Management Development
The Center for Management Development, through the Barton School of Business, offers noncredit management development seminars to the business community.

The WSU management 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.

Continuing Education
The Division of Continuing Education provides support to Graduate Programs by working with the Graduate School and academic units to make coursework and programs available in Outreach locations; by providing mail-in 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 administering 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.

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 Administration 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 Depart-

ment 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 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, Ablah Library supports WSU teaching and research. Its growing collection of more than three million items includes not only books and periodicals, but microforms, corporate annual reports, college catalogs, and audio recordings. The library also serves as a depository for selected public officials of the United States.

The library has open stacks, and reference librarians help students and faculty locate information and use the on-line catalog and reference collection. They also perform literature searches in the numerous computerized data bases to which the library has access. Materials not owned by the library may be borrowed from other institutions through interlibrary loan. The library also makes available study carrels; electronic carrels containing listening and viewing equipment; group-study rooms; microform reading equipment; copy machines; and typewriters.

The Department of Special Collections houses a rapidly growing manuscript collection of more than 700,000 pieces including papers of the abolitionist William Lloyd Garrison and many U.S. congressmen. Other collections include original editorial cartoons by Pulitzer prize-winning cartoonists, publications of U.S. radical organizations, historical Kansas maps, rare books including the W.H. Auden Collection and the Maurice M. Tinterow Collection of books about hypnosis and mesmerism, and the University Archives.

A three-year expansion and renovation project of Ablah Library provides additional space for collections and for new and expanded services.

Cable Television
The 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 12 to 17 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 Discovery Channel and BizNet, nationally delivered program services. WINDOWS 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 the Wichita State University. Through its facilities and services, the center 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 leadersh in 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 Informal 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 8088 based microcomputers with 4M bytes of memory all networking 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 8088 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 microprocessor 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 polling, networking, access to national (BITNET) and international (INTERNET) networks, batch and remote printing computer operations, and online administrative data bases. End-user assistance is available for both microcomputer and mainframe computing.

In 1992, the new Science Laboratory Classroom building was completed. The new building provides state-of-the-art facilities for computing at Wichita State University and allows greater computer access to students as well as faculty.

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, 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 p.m.-8 p.m. The second floor contains the administrative offices, microcomputer repair and microcomputer networking and software offices, as well as faculty and staff microcomputer class room. The third floor is devoted entirely to housing the actual computer system and technical support offices.

The computing facilities have been upgraded and now consist of one IBM E59121 Model 440 mainframe computer and a DEC VAX/400 Model 500. The IBM mainframe has 256 million characters of main memory and more than 1 billion bytes of auxiliary disk storage. The new VAX equipment will provide 2 VAX CPUs of computing power, with 192 million characters of main memory, 7.74 GB of disk storage and a 7 cartridge tape magazine with 18 GB capacity.

The campus network supports Ethernet, SNA, and asynchronous communication with more than 2,600 microcomputers and nearly 500 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 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 rooms, 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.

Institute of Logopedics
The Institute of Logopedics is a private, nonprofit, rehabilitation center providing residential and community services located on 40 acres near the Wichita State campus. The institute specializes in habilitation and rehabilitation of children with speech, language, and hearing disorders. It provides residential, birth to age five, and outpatient services. The institute is University-related through its affiliation with the College of Education's Department of Communicative Disorders and Sciences, which offers academic preparation for Wichita State students desiring to work with communicatively disabled children and adults. Observation and practicum opportunities are provided at the institute as part of the professional preparation of students in speech and language pathology and audiology.

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 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. In addition to renting meeting areas, the Marcus Center for Continuing Education staff provides conference support services, program development, brochure preparation, mailings, fee collection, material preparation and reproduction, registration, and program evaluation.

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 with specialized audio recording studios located in Duerksen Fine Arts Center and Wiedemann Hall. The MRC also 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.

Reading/Study Skills Center
Wichita State offers a variety of services to students through the programs of the Reading/Study Skills 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
The 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, clinical 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 Shockers 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—fea-
turing 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, often from the museum collection, with more experimental work. Exhibitions have featured artists such as David Hockney, Romare Bearden, Morris Louis, Isabel Bishop, and David Salle along with collections of electronic 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 The 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 art, paintings, drawings, sculpture, and prints form the core of the collection. The museum organizes traveling exhibitions of work from the collection. Recent exhibitions by Frederick Waugh, Gordon Parks Photographs, Ernest Trova and of theme organized work 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 Jiminez. The centerpiece of this outdoor collection is the mural, Personnages Oiseaux, by the Spanish artist Joan Miro, located on the face of the museum building. Consisting of nearly one million pieces of Venetian glass and marble, the mural depicts humorous and delightful 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
R. Malcolm Richards, Dean
Donald R. Levi, Associate Dean
W. Dean Vickery, Assistant Dean
Donald R. Levi, Director of MBA program

School of Accountancy—James W. Deskins, director

Departments
Economics—Randall B. Haydon, chairperson
Finance, Real Estate, and Decision Sciences—Awanti P. Sethi, chairperson
Management—John A. Belt, chairperson
Marketing and Small Business—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: Nancy J. Foran, Linda C. Mitchellus, Douglas Sharp
Assistant Professors: Sidney E. Brinkman, Linda F. Christensen

Economics
Professors: Dong W. Cho, Rex L. Cottle (provost/vice president for academic affairs), Randall B. Haydon (chairperson), David M. Kemme, Gerald S. McDougall (associate vice president for academic affairs), Martin M. Perline, Jimmy M. Skaggs, Samuel C. Webb
Associate Professors: Dennis C. Duel, Philip L. Hersch, Maurice Pfannestiel, William T. Terrell, L.N. Yoon
Assistant Professors: Jen-Chi Cheng, James E. Clark

Finance, Real Estate, and Decision Sciences
Endowed Professor: Donald R. Levi (associate dean, director of graduate studies in business, Professor of Real Estate, occupies the Kansas Chair in Real Estate and Land Use Economics)
Professor: Dwight D. Murphey, R. Malcolm Richards (dean)
Associate Professors: Morita M. Bateman, Mohammad Dadashzadeh, Mark G. Dotzour, John D. McBride, Carl C. Nielsen, Awanti P. Sethi (chairperson)
Assistant Professors: Donald Christensen, Manoj Gupta, George Heinrich, Richard LeCompte

Management
Endowed Professor: Gerald H. Graham (R.P. Clinton Distinguished Professor of Management, occupies the R.P. Clinton Endowed Chair of Management)
Professor: Arthur B. Sweeney
Associate Professors: John A. Belt (chairperson), Dharma deSilva, Kamal Fatehi-Sedeh, Cynthia Lengnick-Hall, Mark Lengnick-Hall
Assistant Professors: Nancy A. Bereman, Linn G. Neidengard, Martha Sanders, W. Dean Vickery (assistant dean, Barton School of Business)

Marketing and Small Business
Associate Professors: Donald W. Hackett, Frederic B. Kraft, Charles L. Martin, Robert H. Ross (chairperson)
Assistant Professors: Phillips W. Goodell, Dean E. Headley

The mission of The Wichita State University W. Frank Barton School of Business is to offer learning opportunities which contribute to the development of professionally competent and socially responsible men and women for careers in business, government, and other organizations requiring the organizational, managerial, and analytical skills necessary in today's rapidly changing environment.

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 administration, and the Master of Arts (MA) in economics.

Master of Professional Accountancy
The Master of Professional Accountancy program at The 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.

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: Acct. 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 lack of more than nine hours of preprofessional curriculum, 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 The Wichita State University, plus additional nonbusiness courses for 56 semester hours. The following courses are specifically required by the School of Accountancy and may be counted within this 56 hours:

<table>
<thead>
<tr>
<th>Courses</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comm. 111, Basic Public Speaking</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 201Q and 202Q, Principles</td>
<td></td>
</tr>
<tr>
<td>of Economics I and II</td>
<td>6</td>
</tr>
<tr>
<td>Eng. 210, Composition: Business,</td>
<td>3</td>
</tr>
<tr>
<td>Professional, and Technical Writing</td>
<td></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></td>
</tr>
</tbody>
</table>

2. The candidate must complete a minimum of 28 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 I</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>
<tr>
<td>Econ. 231, Introductory Business Statistics</td>
<td>3</td>
</tr>
<tr>
<td>Upper-division economics course*</td>
<td>3</td>
</tr>
<tr>
<td>Fin. 340, Finance</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.

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 III</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 59 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 571, 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 graduate electives</td>
<td>12</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.

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

Degree Requirements—

Students Possessing a Bachelor's Degree at Time of Admission

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

The following courses must be included in the candidate's degree program and undergraduate equivalents are not a part of the bachelor's degree:

<table>
<thead>
<tr>
<th>Courses</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acct. 210, 310, 410, 510, Financial Accounting I, II, III, IV</td>
<td>*</td>
</tr>
<tr>
<td>Acct. 220 and 320, Managerial Accounting I and II</td>
<td></td>
</tr>
<tr>
<td>Acct. 260, Introduction to Information Processing Systems</td>
<td></td>
</tr>
<tr>
<td>Acct. 430, Taxation I</td>
<td></td>
</tr>
<tr>
<td>Acct. 560, Accounting Information Systems I</td>
<td></td>
</tr>
<tr>
<td>Acct. 640, Auditing I</td>
<td></td>
</tr>
<tr>
<td>B. Law 435 and 436, Law of Associations I and II</td>
<td></td>
</tr>
<tr>
<td>Eng. 210, Composition: Business, Professional, and Technical Writing</td>
<td></td>
</tr>
<tr>
<td>Eng. 685, Advanced Composition</td>
<td></td>
</tr>
<tr>
<td>Math. 111, College Algebra</td>
<td></td>
</tr>
<tr>
<td>Math. 144, Business Calculus</td>
<td></td>
</tr>
<tr>
<td>Phil. 144, Moral Issues</td>
<td></td>
</tr>
</tbody>
</table>

*Bachelor's degree holders may substitute Acct. 430 for Acct. 210 and 310 if they earn a grade of B or better in Acct. 510.

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.
Admission to 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 the 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.

Foreign 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 relevant courses. Determination regarding equivalency credit will be made by the Program Director following admission to the program.

MBA Course Requirements

*Prerequisites

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math. 111, College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>Math. 144, Business Calculus</td>
<td>3</td>
</tr>
<tr>
<td>Acct. 260 or equivalent, for computer literacy</td>
<td>3</td>
</tr>
</tbody>
</table>

**Background Fundamental Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acct. 800, Financial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>DS 850, Production and Operations Management</td>
<td>3</td>
</tr>
<tr>
<td>DS 874, Management Information Systems for Business</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 800, Analysis of Economic Theory</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Econ. 839, Statistical Methods for Business</td>
<td>3</td>
</tr>
<tr>
<td>Fin. 840, Financial Systems</td>
<td>3</td>
</tr>
<tr>
<td>Mgmt. 890, Socio-Legal Environment of Business</td>
<td>3</td>
</tr>
<tr>
<td>Mgmt. 860, Management of Organizations</td>
<td>3</td>
</tr>
<tr>
<td>Mkt. 800, Marketing Systems</td>
<td>3</td>
</tr>
</tbody>
</table>

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acct. 910, Managerial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 903, Analysis of Business Conditions</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 904, Managerial Economics</td>
<td>3</td>
</tr>
<tr>
<td>Mgmt. 962, Organizational Behavior</td>
<td>3</td>
</tr>
<tr>
<td>Mgmt. 885, Advanced Strategic Management</td>
<td>3</td>
</tr>
</tbody>
</table>

***Electives

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directed Electives</td>
<td>6</td>
</tr>
<tr>
<td>Free Electives</td>
<td>9</td>
</tr>
</tbody>
</table>

These courses are to be taken only if a specific void exists.

With approval of the program director, equivalent credit may be granted for courses of equal content taken in an undergraduate program. See Advanced Standing section above.

Of the 15 elective hours, six must be taken in two of the following three functional areas: marketin, finance, and production/quantitative. The remaining nine hours are free electives, of which three may be taken at the 600 level.

Policies

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

2. All candidates must complete 27 hours of 800 level courses including: Acct.
30  

3. General topic interest areas offered in the Barton School of Business are 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 Administration

The Master of Science in Administration 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 administration; 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. General minimum requirements for admission are:

1. A bachelor's degree from a regionally accredited institution.
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.

Foreign 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 Administration 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 33 to 36 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 33-36 hours required for the degree.) Students obtaining the MS in administration (under either option) are required to complete the following courses:

- DS 871, Multivariate Statistical Analysis...
- Mgmt. 886, Research Methods in Business
- Mgmt. 885, Advanced Strategic Management

Additional requirements under each option area are as follows:

Option A: Option A requires the completion of a minimum of 33 credit hours of work, including at least 17 hours in 800-level courses. In addition to the three 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 The Wichita State University Graduate School.

Option B: Option B requires the completion of a minimum of 36 credit hours of work, including at least 17 hours in 800-level courses. In addition, at least 15 hours must be in the area of specialization. Admission to Option B must be approved by the MS committee.

Of the 15 hours of specialization, up to four 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 offers courses of study leading to the Master of Arts (MA) degree. The curriculum for the master's program consists of theory and quantitative methodology courses and a variety of field courses in economics. Students are required either to complete a thesis or pass a comprehensive examination. The thesis option is recommended for students planning to pursue graduate work beyond the master's level. The comprehensive examination option permits students to specialize in a chosen field in economics.

A subspecialty in business economics is available in the MA program. The curriculum for this subspecialty includes business courses in addition to theory and quantitative skills courses. Students choosing this track are required either to complete an independent research project or pass a written comprehensive examination. The business economics subspecialty is designed for students seeking a career in business either as a corporate economist or as a market or industry analyst.

The department strives to offer flexibility in fitting the master's program to the individual student's background and interests.

Admission Requirements

Admission to the MA program in economics requires an undergraduate degree from an accredited university. Students without proper undergraduate economics background must make up the deficiency by taking undergraduate theory courses designated by the graduate coordinator before they are allowed to take graduate-level courses. 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 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>
</tr>
</thead>
<tbody>
<tr>
<td>Econ 631</td>
<td>Intermediate Business</td>
<td>3</td>
</tr>
<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>
</tr>
<tr>
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<td>Mk.t. 803</td>
<td>Marketing Analysis</td>
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Thesis. If students elect to write a thesis, they must complete 30 semester hours 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 34 semester hours and pass a written comprehensive examination covering economic theory and statistics.

Business Economics

In addition to the three required courses listed above, the business economics sub-specialty requires the following courses:

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Independent Research. Students electing the independent research option are required to complete 30 graduate semester hours and four additional hours of independent research. Independent research is taken under the direction of a graduate faculty member of the economics department. The final product is a written paper summarizing the research submitted to the department. The research paper must be read and approved by two faculty members in addition to the faculty advisor.

Comprehensive Examination. Students electing to take the comprehensive examination option are required both to complete 34 graduate semester hours and pass a written comprehensive examination.

Accounting

School of Accountancy

Courses for Graduate/Undergraduate Credit


560. Accounting Information Systems I (3). A study of the content, design and controls of accounting systems, emphasizing the use of computers for processing financial data. Prerequisites: Acct. 220 and 260; Math. 109 or 111; senior standing.

640. Auditing I. (4). A study of the auditor’s attest function, emphasizing auditing standards and procedures, independence, legal responsibilities, codes of ethical conduct and evaluation of accounting systems and internal control. Prerequisites: Acct. 260, 410, 560, Math. 109 or 111; senior standing.

690. Seminar in Selected Topics. (1-3). Repeatable for credit with School of Accountancy consent.

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. 560 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.

851. 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. 830 (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. 830 (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 in 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. MFA 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 MFA 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 Small Business

Courses for Graduate/Undergraduate Credit

690. Seminar in Selected Topics. (1-5). 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

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, queuing 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. Prerequisites: DS 350 or 850.

852. Management Information Systems for Business. (3). A study of business information systems for management decision making and control. Includes coverage of system components, controls, and application. Includes an introduction to a programming language.

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

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

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

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


**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. 202Q 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. 202Q and junior standing.

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

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

622. Comparative Economic Systems. (3). Comparative analysis of the evolutionary struc...
surve y of capitalism, socialism and communism. Emphasizes differences in pricing resource allocation, distribution of income and economic planning. Prerequisites: Econ. 202Q 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.

627. Economic History of the United States. (3). Cross-listed as Hist. 515. An analysis of the basic factors in economic growth. Explores agriculture, trade and commerce; industrial development; and the changing role of the government in economic activity. Prerequisites: Econ. 201Q and junior standing.

630. Monetary Problems and Policy. (3). An analysis of monetary problems and policy. Includes debt management policies and the structure of interest rates. Prerequisites: Econ. 202Q, 340 and junior standing.

640. Labor Economics. (3). An introduction to labor economics surveying both theoretical and empirical research in this field. Includes labor markets, wage determination and human capital theory. Prerequisites: Econ. 202Q and junior standing.

661. Collective Bargaining and Wage Determination. (3). An examination of economic and legal aspects of collective bargaining, emphasizing the techniques and procedures used and the major issues and problems inherent in the bargaining process. Explores the manner in which wages are determined under various institutional relationships. Prerequisites: Econ. 202Q 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. 202Q and junior standing.

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

672. Introduction to International Economics and Business. (3). Cross-listed as Mgmt. 561. A survey of the economic foundations 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. 202Q and junior standing.

674. International Finance. (3). Cross-listed as Fin. 648. 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. 202Q 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. Emphasizes 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. Prerequisite: Econ. 202Q or instructor's consent.

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. 202Q and Math. 144 or equivalent 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 macroeconomics two and problems of national income analysis. Prerequisites: Econ. 301 and one course in calculus.

801. Macroeconomic Analysis. (3). An intensive analysis of contemporary literature and problems of national income analysis. Prerequisites: Econ. 202Q and one course in calculus.

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 and one course in calculus.

803. Analysis of Business Conditions. (3). A study of economic forecasting and its relationship to macroeconomic analysis. Not for graduate credit in the MA program in economics. 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. Not for graduate credit in the MA program in economics. Prerequisites: Econ. 202Q or 800 and one course in calculus.


830. Statistical Methods for Business. (3). An examination of statistical concepts and methods applicable to business decision making. Includes probability theory, point and interval estimation, hypothesis testing, regression analysis, analysis of variance and selected nonparametric techniques. Not open to students with credit in Econ. 231 or equivalent. Not for graduate credit in the MA program in economics. Prerequisite: calculus.

831. Introduction to Econometrics. (3). Analysis of time series, multiple regression, multiple and partial correlation, analysis of variance and introduction to econometric techniques. Prerequisites: Econ. 631 and one course in calculus.


841. Money and Capital Markets. (3). Theoret-
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cal and empirical studies of rate of return on financial assets available in credit, currency, futures and options, equity capital, and international capital markets. An examination of concepts and techniques for measuring and managing financial risk. Prerequisite: Econ. 340 or equivalent.

847. Speculative Markets. (3). Cross-listed as Fin. 847. 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.


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.

870. Seminar in International Trade and Finance. (3). Cross-listed as Fin. 820. A seminar in theoretical concepts and contemporary selected issues of international economics and finance. Includes foreign exchange markets, the Eurodollar market, Arab oil dollars in the international monetary system, transferance of inflation between countries, developments in the common markets, etc. Prerequisite: Econ. 674, Fin. 648 or instructor’s consent.

885. Seminar in Environmental Quality Control. (3). Examination of current and potential approaches to environmental quality control. Takes a critical look at current happenings and trends. Prerequisite: Instructor’s consent.

891. Directed Study. (1-3). Individual study of various aspects and problems of economics. Repeatable for credit with departmental consent. Prerequisite: Graduate standing and departmental consent.

892. Group Studies in Economics. (1-3). Repeatable for credit. Prerequisite: Departmental consent.


896. Thesis. (1-2).

Entrepreneurship

Department of Marketing and Small Business

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 agreed upon solutions. The student gains a personal knowledge of the lifestyle of an entrepreneur, both pro and con, as well as experienced-based knowledge about various aspects of managing a small business. Prerequisites: Mkt. 303, Fin. 340, Mgmt. 360, senior standing. Preferred: Entre. 465 also be taken.

688. 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 analysis. 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. Prerequisite: Entre. 361 and Entre. 465.

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

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

Courses for Graduate Students Only

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

869. Entrepreneurship and Innovation Within Organizations. (3). Addresses trends, current status and success factors in the area of innovation and entrepreneurship within organizations. Principles examined are applicable to any organization, large or small, private or public, by those 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"—the 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 society, 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.

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

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

Finance

Department of Finance, Real Estate, and Decision Sciences

Courses for Graduate/Undergraduate Credit

640. Financial Management. (3). An examination of the problems and operations in which the financial officer is responsible. Emphasizing informational aspects of financial analysis. Prerequisites: Fin. 340, six hours in accounting or departmental consent and junior standing.


643. Capital Markets and Financial Institutions. (3). An introduction to the capital markets system. Studies the management and operations of financial institutions. Each major type of financial institution is viewed in the context of its competitive environment with respect to both asset and liability management. Prerequisites: Fin. 340 and junior standing.

644. Commercial Bank Management. (3). A study of bank asset and liability management. Also explores the internal organization of commercial banks, current problems and recent innovations in commercial banking. Prerequisites: Fin. 643 and junior standing.

645. Security Analysis and Valuation. (3). Comprehensive study of methods of analyzing major types of securities. Market behavior analysis is also made. Explores the formulation of investment objectives, the design of portfolios for classes of institutional and individual investors and portfolio theory. Prerequisites: Fin. 641 and junior standing.

648. International Finance. (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 firms. Also explores relevant aspects of international financial management through a series of case studies. Prerequisites: Fin. 340, Econ. 2020 and junior standing.

690. Seminar in Selected Topics. (1-6). Repeatable with departmental consent. Prerequisite: Junior standing.
Courses for Graduate Students Only

824. Seminar in International Trade and Finance. (3). Cross-listed as Econ 870. A seminar in theoretical concepts and contemporary selected issues of international economics and finance. Includes foreign exchange markets, the Eurodollar market, Arab oil dollars in the international monetary system, transfer of inflation between countries, developments in the common markets. Prerequisite: Fin. 648 or Econ. 674 or instructor's consent.

840. Financial Systems. (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: Acc. 800 or equivalent.

841. Financial Administration. (3). An integrated treatment of basic business finance, financial management, financial statement analysis and financial institutions. Prerequisite: Fin. 840 or equivalent.

842. Structure and Policies of Financial Institutions. (3). The development, management and impact of policies of financial institutions, including planning, measuring and assessing financial goals. Prerequisite: Fin. 840 or equivalent.

843. Investment Analysis and Portfolio Management. (3). Study of the basic theory and investment management. Includes security and portfolio analysis, selection of investment media and measurement of performance. Not available to students with credit in Fin. 641 or equivalent. Prerequisites: Fin. 340 or 840 and Econ. 830.


845. Security Analysis. (3). An analysis and valuation of investment securities issued by corporations and governmental agencies. Prerequisites: Fin. 641 or 843 or departmental consent.

846. Capital Budgeting. (3). A study of the organization and operation of the capital budgeting system. Explores problems in partial capitalization and in comparability of estimates of funds flow. Includes contemporary methods of treating uncertainties and constraints and the application of programming techniques. Also explains the determination of appropriate discount rates. Prerequisite: Fin. 840 or equivalent.

847. Speculative Markets. (3). Cross-listed as Econ 847. 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 and discusses trading strategies such as hedging and arbitrage. Prerequisite: Fin. 840 or equivalent.

890. Seminar in Special Topics. (1-3). Repeatable with departmental consent. Prerequisite: HRM 466 or departmental consent.

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

893. Special Project in Finance. (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 administration degree candidates.

965. Seminar in Selected Topics. (1-3). Repeatable with departmental consent. Prerequisite: HRM 466 or departmental consent.

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

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. Prerequisite: Econ. 202Q 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 organization. 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 inhibitors, problem identification, evaluation of alternatives, applications of qualitative methods to decision processes and decision implementation. Prerequisites: Mgmt. 360 or concurrent enrollment and junior standing.

681. 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: DS 350, Fin. 340, Mkt. 300, 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, nationalization, protectionism, technology transfer and trade policies. Prerequisites: Mgmt. 360 or concurrent enrollment and junior standing.

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

750. Workshop in Management. (1-4). Repeatable with departmental consent. Prerequisite: junior standing.

Courses for Graduate Students Only

830. Socio-Legal Environment of Business. (3). An examination of the economic, political, social and legal environment in which business operates. Considers the philosophic 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 relations, upward management, conflict management, 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-psychoanalytic 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 relevant 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 coursework 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 the 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.

890. Seminar in Special Topics. (1-3). Repeatable with departmental consent. Prerequisites: Mgmt. 891. Directed Studies. (1-5). Repeatable with departmental consent.

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

893. 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 administration degree candidates.


Marketing

Department of Marketing and Small Business

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: Mk 800 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: Mk 300 and junior standing.

606. New Product Marketing. (3). 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: Mk 300, 403 and 405.

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

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

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

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

750. Workshop in Management. (1-4). Repeatable with departmental consent. Prerequisite: junior standing.

Courses for Graduate Students Only

800. 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.

802. Marketing Strategy. (3). Integration of long-range marketing and corporate policies. Includes budgetary control and the evaluation of the effectiveness of marketing systems. Also examines the organization of the marketing department and its relation to the total organization. Prerequisite: Mk 800 or departmental consent.

803. Marketing Analysis. (3). The application of the scientific method to the solution of marketing problems. Prerequisite: Mk 800 or equivalent.

805. Consumer Decision Processes. (3). An examination of different aspects of the behavior of consumers and of the factors that influence their behavior. Includes an analysis of current concepts and models. Prerequisite: Mk 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: Mk 800 or equivalent.

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

891. Directed Studies. (1-5). Repeatable with departmental consent.
893. Special Project in Marketing. (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 administration degree candidates.


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.


618. 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.

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

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. Prerequisite: RE 310, 614 and 618.

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

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

893. Special Project in Real Estate. (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 administration degree candidates.

College of Education

Offices: 104 Corbin Education Center
Maurine A. Fry, Dean
James L. Carroll, Associate Dean for Graduate Programs and Research
Marcus T. Ballenger, Associate Dean for Undergraduate Programs and Students

Departments
Communicative Disorders and Sciences—Rosalind Scudder, chairperson
Counseling, Educational, and School Psychology—Randolph A. Ellsworth, chairperson
Curriculum and Instruction—Kenneth Moore, chairperson
Educational Administration and Supervision—M. Claradine Johnson, chairperson
Health, Physical Education, and Recreation—Susan Koval, chairperson
Industrial Technology—Sidney G. Connor, 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 educational administration, educational psychology, elementary education, physical education, special education, and counseling; the Doctor of Philosophy (PhD) in educational administration, school psychology, and counseling; the Doctor of Education (EdD) in educational administration; and the Doctor of Philosophy (PhD) in communicative disorders and sciences. A transfer program in educational administration leading to the EdD or PhD also is available in cooperation with the University of Kansas.

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, and audiologists. 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 the 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 the department 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. 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, MEd, and MSE 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. Thesis students must pass oral examination over their research. Specific examination requirements described under the appropriate department's section of the Graduate Bulletin 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.

Financial Assistance
Some financial assistance to support graduate study is available, including federal traineeships, assistantships, and fellowships.

Communicative Disorders and Sciences
Graduate Faculty
Professors: Kenneth W. Burk, Barbara Hodsoll, Roger N. Kasten
Associate Professors: Jerry L. Cranford, Harold T. Edwards, Wesley L. Fair, Rosalind R. Scudder (chairperson), Jerry L. Cranford, Thomas R. Knibb, Michael K. Wynne

Degrees and Areas of Specialization
The Department of Communicative Disorders and Sciences offers courses of study leading to the Master of Arts (MA) in communicative disorders and sciences; and the Doctor of Philosophy (PhD). Academic and clinical education are provided for students who wish to become professionally qualified to work with children and adults. Instructional areas include communication sciences, speech-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, and 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, 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 3.000 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 practicum 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 The 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. 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 a group seminar experience under the guidance of a senior professor. Prerequisite: CDS major with junior or senior standing.

570. Foreign Accent and Dialect Reduction. (3), 3R; 1L. Primarily for the nonnative speaker of English or for the speaker of a nonstandard dialect of English wanting to improve pronunciation. Studies problems of foreign accent and English dialect reduction. Analyzes speech patterns and an individual program in dialect reduction is designed. Provides intensive practice. Not for the student who is beginning the study of English.

581. Cooperative Education (1-8). A workrelated 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 Cr/NCr.

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

893. Thesis Research. (1-2). Repeatable, but total credit hours counted toward degree requirements must not exceed two.

899. Thesis. (1-2). Repeatable, but total credit hours counted toward degree requirements shall not exceed two.

935. Advanced Practicum in Communicative Disorders and Sciences. (1-4). Supervised internship in one or more of the following sections: 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 Program Administration. Intended for doctoral students or advanced master’s-level students. Repeatable; more than one section may be taken concurrently.

940. Advanced Selected Topics in Communicative Disorders and Sciences. (1-4). Advanced individual or group study in specialized areas of communicative sciences and disorders. Intended for doctoral students or advanced master’s-level students. Repeatable.

990. Advanced Independent Study in Speech and Language Pathology, Audiology or Speech Science. (1-3). Arranged individual, directed study in specialized content areas in speech and language pathology, audiology or speech sciences. Repeatable. Prerequisites: advanced standing and instructor's consent.

992. Advanced Presentation of Research. (1-3). A directed research project for doctoral stu-
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3. A critical review of pertinent research concerning the physiological bases of speech. Emphasizes understanding the instrumental techniques utilized in such studies. Prerequisite: senior standing and CDS 300, 510.


11. 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. Multicultural literacy and the multidimensional nature of language in the classroom. Prerequisite: CDS 416 or departmental consent.

12. 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.

94. Seminar in Clinical Research. (3). 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.

95. Research Proseminar. (1). A weekly seminar of informal discussion and formal presentation of ongoing or planned research by the CDS faculty and doctoral graduate students. Goal is to provide CDS doctoral students with new, 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.

605. Neurology of Speech and Language I: Basic Processes. (4). A consideration of basic neuroanatomy and neurophysiology necessary for obtaining an understanding of the representation of speech and language in the human central nervous system and of conditions resulting from neurological 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 501 or equivalent or departmental consent.

807. Laboratory Technologies. (3). An introduction to clinical and research instrumentation used in the fields of communicative disorders and sciences. 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.

903. 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.
motor neuron lesions in the central nervous system and emphasized evaluation and treatment strategies for intervention. Prerequisite: CDS 605.

812. Neurology of Speech and Language III: Aphasia and Head Trauma. (3). Language assessment and treatment strategies in adult aphasia, closed head injury, and right hemisphere communication impairment. Includes medical aspects of stroke rehabilitation, transdisciplinary intervention, and contemporary and future professional issues in clinical aphasia. Prerequisite: CDS 605.

815. Interviewing and Parent Counseling. (3). Provision of information on the structure and conduct of different types of interviews, and consideration of the "helping" role, as practiced by professionals who work with exceptional children or adults. The focus is on information supportive of developing effectiveness in these roles. Multicultural concerns are considered.

818. Communication Disorders in Medical Settings. (3). Provides the principles underlying a transdisciplinary teaming approach with an emphasis on differential diagnosis and treatment of complex disorders found in medical settings. Discusses the fundamentals of private practice and legal issues in the practice of speech-language pathology. Prerequisites: CDS 810 and 812.

831. Practicum in Evaluation Procedures. (1). Provides the student with experience in the evaluation and diagnosis of a variety of communicative disorders. Prerequisite: CDS 510.

833. Advanced Graduate Methods in Communicative Disorders. (1). Repeatable. Lecture and class discussions covering various types of communicative disorders. RELATES theories and methods to students' clinical and practicum assignments. Prerequisites: CDS 417, 418, or equivalent and departmental consent.

836. Graduate Practicum in Communicative Disorders. (1-2). Repeatable. Supervised application of diagnostic and/or clinical management techniques with children and adults presenting communicative disorders. Requires 50 hours practicum for each hour of credit. Prerequisites: departmental consent and medical clearance.

Audiology

Courses for Graduate/Undergraduate Credit

751. Clinical Audiology I. (3). 3R; 1L. Techniques and procedures for administering the basic auditory test battery and the interpretation of audiometric results. Prerequisite: graduate student status.

752. Clinical Audiology II. (3). 3R; 1L. Diagnostic and rehabilitative procedures in the audiology clinic. Techniques and procedures for the administration and interpretation of special auditory tests including tests for psychoacoustic, predictive acoustic reflexes, tests for central auditory pathology, and calibration. Prerequisite: CDS 751.


Courses for Graduate Students Only

826. Anatomy and Physiology of the Auditory System. (2). Examines in detail anatomy and function of the auditory system in light of current research knowledge. Studies normal system as a basis for understanding the pathological system. Prerequisites: CDS 231, 516.

827. Introduction to Psychoacoustics. (2). Repeatable. Basic principles underlying the perceptual hearing process, with emphasis on the interdependencies between sound stimuli and subjective auditory experience as related to communicative behavior. Prerequisite: CDS 540.

835. Advanced Graduate Methods in Communication Disorders. (3). Examination of clinical and social aspects of communication disorders in adults. Prerequisites: CDS 417, 418, or equivalent and instructor consent.

850. Graduate Practicum in Audiology. (1). Repeatable. Introduction to clinic and practicum methods for the beginning graduate student in audiology. Prerequisite: departmental consent.

851. Medical Audiology. (2). Many hearing disorders require evaluation/treatment by both the audiology and medical professions. Course reviews the audiological and physiological/medical aspects of the common conditions found in children and adults. Prerequisites: CDS 231, 540, 826, or instructor's consent.

854. Community and Industrial Audiology. (2). Review of recent developments and research with attention to industrial audiology, federal and state regulations, and environmental noise problems. Prerequisite: CDS 751.


858. Auditory Evoked Potentials. (3). Techniques and procedures for administration and interpretation of physiologic tests of the auditory system, including electrocochleography (ECOg), auditory brainstem response (ABR), and the later occurring corical evoked potentials (MLF, LAEP, and P300). Prerequisites: CDS 605, 826, 851.

859. Electronystagmography. (1). Techniques and procedures for clinical evaluation of the functional status of the peripheral (inner ear) and central nervous system portions of the vestibular or balance system. Prerequisite: CDS 658.

860. Amplification I. (3). 3R; 2L. The history and function of hearing aids, auditory trainers, and assistive listening devices. The measurement and significance of the electroacoustic characteristics. The principles and procedures for the selection and recommendation of specific amplification systems for individual hearing losses. Prerequisite: CDS 751.


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 231, 458.

886. Graduate Practicum in Audiology. (1-2). Repeatable. Application of audiomteric 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.

Counseling, Educational, and School Psychology

Graduate Faculty

Professors: James L. Carroll (associate dean), Glen R. Dey, Randolph A. Ellsworth (chairperson), Maurine A. Fry (dean), James J. Rhatigan (vice president, Student Affair), John H. Schuh (associate vice president, Student Affairs)

Associate Professors: Linda Bakken, Orpha K. Duell, Charles A. Romig,
Assistant Professors: Ruth A. Hitchcock, Joseph W.C. Mau, Nancy A. McKellar, Marlene Schonmer, Brian J. Stone

Degrees and Areas of Specialization

The Department of Counseling, Educational, and School Psychology offers programs leading to the Master of Education (MEd) in counseling and in educational psychology. The department offers the Specialist in Education (EdS) in counseling and in school psychology.
Master of Education Requirements
The Master of Education (MEd) in counseling and in educational psychology may be earned under a thesis or nonthesis option. The nonthesis option in counseling requires 36 credit hours of course work and a written comprehensive examination. The thesis option in counseling requires 39 credit hours of course work plus an oral examination over the thesis. For state certification recommendation in elementary or secondary counseling, 39 credit hours are required under the nonthesis plan and 44 credit hours are required under the thesis plan. The MEd in educational psychology requires 36 credit hours of course work and a written comprehensive examination. The thesis option requires 32 credit hours of course work plus an oral examination over the thesis.

Admission Requirements—Counseling
In addition to the general requirements, students seeking admission to the counseling program are required to have a 3.000 grade point average based upon the last 60 credit hours of course work (including any post-baccalaureate graduate work), submit names and addresses and telephone numbers of three people to serve as references, and provide evidence of completion of nine credit hours of undergraduate psychology, plus six additional undergraduate hours in the behavioral sciences.

Admission to the MEd program in counseling does not require the teaching certificate; however, students whose career goals include Kansas school counseling certification must hold 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.

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—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:

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

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.

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 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.
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 3.500. 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 EdS 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 EdS program. A thesis equivalent differs from a thesis only in form of recognition. Faculty will apply all thesis criteria for advisement, proposal review, human subjects review, and final oral examination.

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.

Courses for Graduate/Undergraduate Credit

652. Student Development. (3). Training for students involved as small-group leaders. Prerequisite: 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. Involves 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. Prerequisite: 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/NCr.

704. Introduction to Educational Statistics. (3). An introduction to statistics, including measures 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 do, 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 332 or 333, Psy. 334, or equivalent.

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 an instructor's consent to take 729A, 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 personnel and guidance interests. May emphasize different preselected areas during a semester. Repeatable with adviser'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. Prerequisite: CESP 334, 433, 801.

801. 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.

802. Introduction to Interaction Process. (1). 5/U grade only. A laboratory approach to an examination of the counselor's role in the counseling process. Helps the prospective counselor understand issues 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 philosophy, including a study of the helping relationship and the preparation of research reports in the counseling profession.

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 704, 801, 802, 803, 804.

808. School Psychology Professional Issues. (3). Examines roles and functions of school psychologists within the context of historical foundations of the profession. Uses lecture, discussions, 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 704, 801, 802, 803, 804.

815. Career Development. (2). The classification, collection, evaluation and use of individual data in counseling theory. Also studies current occupational trends and developments and theories of occupational choice. Prerequisites: CESP 704, 801, 802, 803, 804.


820. Learning Theory and Instruction. (3). Applications of some major learning theories and learning principles. Prerequisite: CESP 801 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. Prerequisites: CESP 704, 801, 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 704 and 801; 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 485.

825. Group Counseling Techniques. (2). 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. Requirements 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 related to these areas in a lecture format which includes some case simulation and practice activities. Prerequisites: CESP 822, 855 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. Prerequisites: 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. Repeatable 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 relationships in creating macro- and micro-learning experience designs for solving practical or perceived problems in 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.

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 hours. Prerequisite: departmental consent.

947. Internship in Counseling: Internal or External. (2). The Internship 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.
Courses for Graduate/Undergraduate Credit

518. Instructional Strategies: Kindergarten. (3). Students examine the content and methods of instruction in kindergarten and observe/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.

601. Introduction to Exceptional Children. (2). Students examine the historical evolution of special education through litigation and legislation and understand their role in the education of special education children. They learn to recognize various handicapping conditions and use information gained about these conditions to seek and provide appropriate services for handicapped children. Prerequisites: acceptance into teacher education and concurrent enrollment in CI 311, 430 and CESP 334. Currently and previously certified teachers meet prerequisites and do not need concurrent enrollment in other courses.

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.

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 Cr/NCr.

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.
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 Process. (3). Students examine all aspects of current reading theory and pertinent reading research to point out the possibilities of applying this theory and research to the actual teaching of children.

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.

720. Microcomputers in the Classroom. (2). Students become familiar with the various areas of computer applications in education. No computer experience necessary. Students develop a working knowledge of computer functions, applications, software and languages relevant to ordinary classroom use.

721. Beginning Applesoft BASIC. (1). Students are introduced to classroom program applications to develop a practical and working level of skills in programming Applesoft BASIC. They learn how to plan, write, debug and modify simple programs for classroom use. Prerequisite: CI 720.

722. LOGO Implementation. (3). Students are acquainted with the philosophy of LOGO, learn to teach the LOGO language in their classroom applications and develop curricular activities which stress problem solving and programming techniques. Prerequisite: CI 720.

723. Microcomputers in Reading. (3). Students become acquainted with the microcomputer in reading and language arts and are introduced to a wide variety of software available. Students are provided a framework for using computers during the teaching day.

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. Prerequisite: graduate standing.

735. Introduction to the Gifted. (3-6). Students are introduced to the historical and socio-educational perspectives germane to gifted education, and provides 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 728 and CI 761.

745. Utilizing the Print Media in Classrooms. (3). Students explore various ways the print media may be utilized to teach critical thinking skills, graphics, and communicative skills through word study and writing practice and improved reading through speed and comprehension practice. Course work stresses the utilization of the daily newspaper as a supplement to other materials in teaching the various school subjects and emphasizes preparation of teaching materials for the school classroom.

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

751. Introduction to the Reading Process. (3). Students develop an awareness of classroom management and evaluation systems which include a variety of evaluation and management tools and formats. Prerequisite: CESP 801.

755. Instructional Models and Practices. (3). For teachers (1) to explore the theories behind the development of, and the syntaxes for viable instructional practices; (2) to apply instructional models to the analysis and evaluation of various learning environments; and (3) to develop a commitment as a reflective practitioner to more effective instruction through an expanded and integrated repertoire of teaching strategies. Prerequisite: admission to Master's of Education in Curriculum and Instruction, CESP 801.

806. 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 tool that drive the teachers' investigations. Prerequisite: graduate standing.

807. Philosophy, History and Psychology of Secondary and Elementary Education. (3). Students survey of concepts of mind, learning, experience and knowledge, and philosophical, historical and psychological systems and theories as they relate to current educational problems and practices. Prerequisite: CI 701.

808. Sociology of Education. (3). Students explore the relationship between education and society. Prerequisite: CI 701.

821. Classroom Reading Practicum. (3). Students participate in a practicum experience, delivering developmental and corrective reading instruction in a classroom setting. Prerequisite: CI 705.

823. Applied Behavior Analysis. (3). Behavior management strategies specifically needed by classroom teachers to affect academic and social outcomes. Addresses technical, theoretical and practical aspects of applied behavior analyses. Prerequisites: CI 601 and 742.

831. Evaluation Techniques in an Effective Classroom. (3). Students develop an awareness of classroom management and evaluation systems which include a variety of evaluation and management tools and formats. Prerequisite: CESP 801.

835. Instructional Models and Practices. (3). Students examine curriculum models that are alternatives to the traditional curriculum and the socioeconomic, political and psychological factors that motivate their development. Attention to a comparison of historical and contemporary models for the curriculum. Prerequisite: CESP 801.

841. Program Organization and Delivery Systems. (3). Students learn about involving parents, utilizing community agencies and businesses, program organization and evaluation, working with paraprofessionals, being aware of current delivery systems and learning to describe the Kansas State Special Education Plan. Prerequisite: CI 896 or CI 735 or CI 740.

845. Curriculum Models and Practices. (3). Examines theories, development processes, evaluation procedures and current practices in curriculum. The emphasis is on multiple conceptual frameworks for thinking about curriculum and reflective inquiry into the implications of those frameworks in today's classrooms and schools. Prerequisites: admission to Master's of Education in Curriculum and Instruction, CESP 801.

847E. Practicum: Learning Disabilities. (3-6). 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 896 and 888.
847T. Practicum: Educable Mentally Handicapped. (3-6). Provides students with full-time participation in a class for educable mentally 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 deficits. Prerequisites: CI 886 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 deficits. Prerequisites: CI 886 and 888.

847M. Practicum: Gifted. (3-6). Stresses teaching approached teaching. 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 class-room setting with a trained professional. Prerequisites: CESP 728, CI 761 and 762.

847S. Practicum: Center-Based Early Childhood Handicapped. (2). Provides opportunities in centers for early childhood handicapped education for the student to develop clinical competencies with handicapped young children and their parents under the supervision of trained professionals in the field. Prerequisites: CI 740 and CDS 815 or CI 760. Concurrent enrollment in CI 891 or 892 strongly recommended.

847T. Practicum: Home-Based Early Childhood Handicapped. (2). Provides opportunities in home-based education for the student to develop clinical competencies with handicapped young children and their parents under the supervision of trained professionals in the field, working in the homes of children and parents. Prerequisites: CI 740 and CDS 815 or CI 760. Concurrent enrollment in CI 891 or 892 strongly recommended.

849. Seminar in Reading Organization. (3). Students examine the organization and administration of reading programs and investigate pertinent research in the area of reading instruction. Prerequisites: CI 705, 723 and 887.

853. Improvement of Instruction in Language Arts. (3). Students examine recent developments in the teaching of language arts in elementary and/or middle school grades: problems, concerns, methods, materials and research related to listening and to 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.

858. Improvement of Instruction in Science. (3). Students identify and explore the principles of science that teachers should recognize, understand, and consider.

859 A-M. Seminars in Curriculum and Instruction. (3). Seminars deal with current issues, topics, trends, and problems in curriculum 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 on each seminar. A maximum of two hours can be applied to the Master of Education in Curriculum and Instruction. Prerequisite: admission to Master's of Education in Curriculum and Instruction. CESP 801.

860. Seminar on Research Problems. (3). Enables MEd students to 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 application requirement for the MEd in Curriculum and Instruction. Prerequisite: admission to MEd in Curriculum and Instruction; CI 806, CESP 801.

862. Professional Portfolio Development. (3). Students develop the professional portfolio proposed and accepted in CI 860. In consultation with their portfolio adviser and two other faculty members, students proceed with their approved agendas. 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. (Prerequisite: CI 860 and CI 862 for concurrent enrollment in CI 862).

870. 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.

875-876. Master's Thesis. (2,3,6). 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 course(s) 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 combinations of these. Prerequisite: CI 735.

886. Introduction to Mildly Handicapped. (3). Students examine the roles and responsibilities of special educators and become acquainted with issues and challenges confronting special educators. In addition they 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 Master of Education, special education for mildly handicapped.

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 886 or CI 705 or CI 735.

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 886 and acceptance into the Master of Education, special education for mildly handicapped.

890. Special Problems in Education. (1-4). Directed reading and research under supervision of a graduate instructor. Prerequisite: departmental consent.

891. Assessment for Early Childhood Handicapped. (3). Students study emerging and traditional models, procedures and materials in early identification, screening and assessment of infants and preschoolers with suspected special needs. Concurrent enrollment in an early childhood special education practicum is strongly recommended. Prerequisites: CI 728, 740 and 761.

892. Methods: Early Childhood Handicapped. (3). Students demonstrate and discuss current practices in early childhood special education with a focus categorically with specific categorical groups and across domains in early intervention. Concurrent 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. Prereq...
requisites: CESP 728 and CI 740, 761, 762, 847R, 891 and 892 or instructor's consent. Repeatable for credit.

Educational Administration and Supervision
Graduate Faculty
Professors: Willis J. Furtwengler
Associate Professors: Carol B. Furtwengler, M. Claradine Johnson (chairperson)
Assistant Professors: David S. Hurst, Vicky L. Triponey (associate dean, Student Life)

Degrees and Areas of Specialization
The Department of Educational Administration and Supervision offers courses of study leading to the Master of Education (MEd) in educational administration and supervision for students pursuing certification endorsement at the building level, a Specialist in Education (EdS) in educational administration and supervision for students pursuing certification endorsement as district level administrators, and a field-based EdD program.

Master of Education Requirements
The Master of Education (MEd) in educational administration and supervision is a 33-39 credit hour nonthesis program. Students pursuing certification endorsement as building administrators must complete this program in its entirety. A comprehensive final examination is required.

Admission Requirements
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 completed graduate work equivalent to the Master's and Specialist's degrees at an accredited institution.

Applicants must have a minimum grade point average of 3.500 on a 4.000 scale for all graduate-level hours (i.e. master's and/or specialist degrees) 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, including two from school administrators with whom the applicant has worked, which attest to the applicant's potential for success in a doctoral program and for executive leadership in education.
3. Evidence of certification 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 17 dissertation hours, final examinations, and an approved dissertation.

Doctor of Philosophy and Doctor of Education (WSU-KU)
A transfer program in educational administration, leading to the Doctor of Philosophy (PhD) or Doctor of Education (EdD), is available in cooperation with the University of Kansas.

Certification Programs
The Department of Educational Administration and Supervision 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)
Course 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 Cr/NCr.

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

812. Special Studies in Educational Administration and Supervision. (1-3). Group study in a preselected specialized area of educational administration and supervision. Repeatable for credit with departmental consent. Prerequisite: departmental consent.

875. A Survey of School Administration Today. (3). An introductory experience for students interested in learning more about school administration at the K-12 level. Emphasizes the role of the administrator as defined by relevant, problem finder, problem solver, legal/financial expert, instructional supervisor, and human resources developer. Students are familiarized with the skills, understandings, and career commitments essential to successfully apply for and hold a position in school administration. Not applicable to EAS graduate degree program requirements. Prerequisite: admission to Graduate School.

Courses 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 practical application. 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 systems 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.

852. Special Studies in Educational Administration and Supervision. (1-3). Group studies in new materials, new research or innovations in advanced educational administration and supervision areas for practicing administrators or advanced students. Repeatable for credit with departmental consent. Prerequisite: departmental consent.

854. Finance and Facilities Management. (3). Designed for those preparing to become administrators at the school-building level. Focuses upon the knowledge and skills necessary to plan and organize work groups, projects, and the resources necessary to carry out day-to-day functional activities of schools.

860. Research Seminar 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 the development of personal skills in dealing with groups. Students engage in simulation exercises to acquire skills in dealing with groups.

875-876. Master's Thesis. (2-2). A student's thesis is designed to deal with a problem of educational significance. Acceptable projects are developmental in nature. Acceptable projects are written under the direction of a faculty member approved by the student's major advisor. All useful, well-written reports of student research. Prerequisite: completion of master's degree or instructor's consent.

905. Field Project in Administration and Supervision. (2-6). Field projects are planned to meet a legitimate need in an educational setting in which the student, under professional guidance, can develop and become involved. The project may fulfill the requirements of a departmental advancement or a needed investigation or inquiry. Field projects can be developed singly or in groups. The project or group of projects may require the necessary research, design, and preparation of the project to complete the requirements of the project. The project is to be completed within the scheduled semester, and if the student is unable to complete the project, the project may be continued during the following semester. Prerequisite: instructor's consent.

909. Planning in Educational Administration. (3). Seeking out and 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.

953. 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.

955. Field Project in Administration and Supervision. (1-3). Field projects are planned to meet a legitimate need in an educational setting in which the student, under professional guidance, can become involved. The project may fulfill the requirements of a departmental advancement or a needed investigation or inquiry. Field projects can be developed singly or in groups. The project or group of projects may require the necessary research, design, and preparation of the project to complete the requirements of the project. The project is to be completed within the scheduled semester, and if the student is unable to complete the project, the project may be continued during the following semester. Prerequisite: instructor's consent.

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, research 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 in an ongoing analysis of school-related problems and the conceptualization of action programs for addressing such problems. Prerequisite: Admission to EdD program in EAS.

971. Decision-Making and Problem-Solving Seminar. (3). Focuses on approaches to identifying, clarifying, and solving problems in elementary and secondary education. Decision-making and problem-solving models are reviewed, critiqued, and applied. Prerequisites: Admission to EdD program; EAS 970 and 981, concurrent enrollment in EAS 982.

972. Administrative Leadership Seminar. (3). Designed to facilitate in-depth investigations of research relevant to leadership theory and practice. Activities include clarifying and developing personal leadership skills; identify-
ing, fostering, and supporting the leadership skills of others; and conducting observations of leaders in action. Prerequisites: Admission to EdD 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 EdD program in EAS.

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

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 EdD program in EAS.

986. Field-Based Research I. (2). This is the first in a sequence (Fall, Spring, Summer) that provides opportunities for field work leading to ME dissertation proposal. Prerequisites: Admission to EdD program; EAS 981, 982, 983, and concurrent enrollment in EAS 972.

987. Field-Based Research II. (2). Follows EAS 986 and continues field-based research activities and development of dissertation proposals. Prerequisites: Admission to EdD program; EAS 986.

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

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

991. Practicum in Educational Administration and Supervision. (1-2). Designed for persons who have been employed in their first administrative position and are seeking recertification in Kansas. Course of study is individually designed by an EAS faculty member with the student and his/her school district supervisor. Addresses the needs of the student and district. Thrust is to assist student to extend basic skills relevant to a particular administrative assignment. The student must register for three hours of credit in EAS 591 to meet recertification requirements. S/U grading only. Prerequisites: completion of master's degree and departmental consent.

992. Superintendence/Internship. (6). Two-semester course designed primarily for individuals who are completing an educational specialist program 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 projected administrative interest. 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 EdD program in EAS and required doctoral coursework.

Other Courses

The following courses are still available for students enrolled prior to June 1, 1990, and may be taken only by permission.

810. The Principalship. (3).

853. School Business Administration. (3).

871. Group Processes for Administrators and Supervisors. (3).

872. Conflict Management. (3).

888. Data Management for School Administrators. (3).

891. Preservice Building Administrator Practicum. (3).

896. Planning in Educational Administration. (3).

946, 947, 948, 949. The Internship. (2, 3, 4, 5).

960. Seminar in the Process of Administration. (1-3).

Health, Physical Education, and Recreation

Graduate Faculty

Associate Professors: John F. Hansan, Susan K. Kovar (chairperson)

Assistant Professors: Kathy D. Campbell, Natasha M. Fife, Richard E. Laptad, Sarah McCallister, Gloria Napper-Owen, F. Yvonne Slingerland, Nancy B. Stubbs

Degrees and Areas of Specialization

The Department of Health, Physical Education, and Recreation offers courses of study leading to the Master of Education (MEd). 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) on 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 option 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 30 credit hour thesis option or a 36 credit hour nonthesis option. The exercise/wellness program offers a 36 hour thesis option and a 34 hour nonthesis option. The thesis option requires an oral examination on the research; the nonthesis option requires a written comprehensive examination. The sports administration program is a 36 hour nonthesis option and requires final written and oral examinations.

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 310 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 310 and admission to teacher education block.

530. Physiology of Exercise. (3). 3R, 1L. Provides 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.

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. Prerequisite: 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, 2.5000 minimum GPA overall and for major, admitted to College of Education.

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


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 Health, Physical Education and Recreation. (3). Survey and critical analysis of research and other pertinent materials in the field.

801. Seminar in Sports Administration. (3). Designed to provide a comprehensive overview of problems relating to sports administration programs. Sample of topics: public relations, promotion, personnel management, finance, accounting, contest management and travel.

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 328 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.

815. Fitness Assessment and Exercise Prescription. (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.

825. Physical Education in Elementary Schools. (2). New concepts, recent trends, methodology, programming, and supervision. This course is 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 is given to immediate and long term adaptation to exercise and training. Prerequisite: PE 530.

847. Internship. (6-12). Internship in selected areas of specialization in exercise science or sports administration. Prerequisite: departmental consent.

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 Health, Physical Education and Recreation. (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, 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.

880. Analysis of Motor Skills. (3). Movement and sport skills analyzed in terms of mechanical principles by means of films and experimentation.

890. Problems in Health, Physical Education and Recreation. (1-4). Directed reading and research under supervision of a graduate instructor.

Industrial Technology

Graduate Faculty

Associate Professor: Sterling B. Lewallen
Assistant Professors: Alan A. Aagaard, Sidney G. Connor (chairperson)

Degrees and Areas of Specialization

Industrial Technology may be used as an emphasis area in the Master of Education (MEd) degree in the Department of Curriculum and Instruction.

Courses for Graduate/Undergraduate Credit

570. Directed Studies in Materials and Processes. (3). Provides an opportunity for the advanced student to pursue an area of emphasis within the realm of materials and processes on a synthesis level. The method of study is research, basic and applied, or a combination thereof, in consultation with the professor; culminating in a research project and/or report. Prerequisite: departmental consent.

572. Basic N/C Programming. (3). Lecture/Laboratory course provides instruction in numerically controlled machine tool design, utilization programming, tooling and operation. Prerequisite: six hours machine tool operations or equivalent.

575. Composite Material Applications. (3). An introduction to the description and application of composite materials. Prerequisite: postsecondary course inastics or equivalent industrial experience.

580. Directed Studies in Power and Energy. (3). Provides an opportunity for the advanced student to pursue an area of emphasis within the realm of power and energy on a synthesis level. The method of study is research, basic and applied, or a combination thereof, in consultation with the professor; culminating in a research project and/or report. Prerequisites: departmental consent.

590. Directed Studies in Visual Communications. (3). Provides an opportunity for the advanced student to pursue an area of emphasis within the realm of visual communications on a synthesis level. The method of study is research, basic and applied, or a combination thereof, in consultation with the professor; culminating in a research project and/or report. Prerequisite: departmental consent.
592. Desktop Publishing. (3). Desktop publishers control the entire publishing process, from creation and typesetting to printing and distribution, with equipment from the desktop. Word processing on the personal computer and laser printing are the two technological achievements that make possible a desktop publishing revolution. Stresses type design, harmony, legibility, copy fitting and layout fundamentals.

594. Offset Lithography. (3). Principles and techniques of preparing computer-generated and other original copy, processing lithographic negatives and plates, as well as operating offset printing presses. Includes laboratory. Prerequisite: departmental consent.

596. Introduction to Computer Aided Drafting (CAD). (3). Interactive computer graphics course that provides hands-on experience and basic information necessary for students to implement, modify and use a computer graphics system. Enables students to learn methods of input and output and teaches the fundamentals of CAD using various microcomputer based CAD system applications. Demonstrates mainframe CAD system applications.

597. VersaCAD. (3). Introduction to CAD is designed to give an individual with no previous CAD background an exploratory experience in Computer Aided Drafting. Introduces VersaCAD software to the students who complete a workbook of sample drawings designed to cover the major operations of the software. After the sample drawings are completed, a major project using the computer is required. Each student receives 64 hours of computer time.

598. AutoCAD. (3). A basic Computer Aided Drafting course utilizing AutoCAD software to produce mechanical and assembly type drawings.

625. Advanced AutoCAD. (3). Conceptual and practical applications of advanced topics in Computer Assisted Drafting and Design. Topics include advanced DOS commands, Script and Batch files, Menu and Tablet customization, pictorals, and 3-dimensional drawings.

635. DeskTop Publishing 2. (3). Extends the student's knowledge with specific pieces of software, publication design, creation of effective business graphics, and electronic page layout principles. Assignments will reflect documents which are typical of business/industrial publications. Prerequisite: I.Tec. 592 or equivalent experience as approved by instructor.

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 Cr/NCr.

750. Workshop in Industrial Technology. (1-4). Offered from time to time on various aspects of industrial technology.

751. Institute in Industrial Technology. (1-4). Designed to develop knowledge and competence related to curricular and methodological innovations in industrial education. Content is designed to satisfy those competencies that are identified as essential for teaching a defined subject area. Prerequisite: departmental consent.

785. Instructional Media. (3). Selection, use and production of educational media. Includes instructional design, media planning skills, visual literacy, slide show production, design and production of transparencies, basic photography, audio recording and mixing, video tape recording and the operation of instructional audio-visual equipment. Assignments involve the design and production of materials for teaching.

790. Special Problems in Industrial Technology. (1-4). Directed reading and research under the supervision of a graduate instructor. Prerequisite: departmental consent.

792. Explorations in Technology. (3). Participates experience the modular curriculum approach for the middle level student, including technical materials demonstration equipment and specific laboratory equipment. Teachers gain insight into methodologies for proper delivery of the curriculum and gain familiarity with the presentation format and laboratory equipment.

796. Principles of Technology 1 Methods. (3). Prepares teachers to teach Principles of Technology Units I-7 through experiential familiarity with technical materials, equipment, videos and laboratory manuals. Emphasizes presentation format and laboratory equipment. Prerequisite: departmental consent.

797. Principles of Technology 2 Methods. (3). Prepares teachers to teach Principles of Technology Units 8-14 through experiential familiarity with technical materials, equipment videos and laboratory manuals. Emphasizes presentation format and laboratory equipment. Prerequisite: I.Tec. 796.

799. Principles of Technology 3. (3). Evaluation and synthesis of previous course work, remediation and enrichment of areas of assessed weakness regarding the principles of applied physics. Prerequisite: I.Tec. 797.

Courses for Graduate Students Only

840. Instructional Technology in Industrial Technology. (3). Designed to acquaint graduate students with the emerging technology of instruction. Includes a study of programmed instruction, systems approach to instruction, instructional television, projected media, motion films, computer-assisted instruction, learning resource centers and other pertinent topics. Students are involved in planning and preparing instructional material using systematic procedures. Prerequisite: departmental 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.

Music Education
See School of Music section, College of Fine Arts.
College of Engineering

Offices: 100 Wallace Hall
William J. Wilhelm, Dean
Mark M. Jong, Associate Dean

Departments
Aerospace—Bert L. Smith, chairperson and master's graduate coordinator; Klaus Hoffman, doctoral graduate coordinator
Electrical—Roy H. Norris, chairperson; Mahmoud E. Sawan, graduate coordinator
Industrial—Donald L. Hommerich, chairperson; Abu Masud, graduate coordinator
Mechanical—Richard T. Johnson, chairperson and 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 qualifying 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 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 course work, the department chairperson, in consultation with the graduate coordinator and the student, recommend to the Engineering Graduate Committee an advisory committee for each student, consisting of a minimum of four engineering faculty members with at least one from an engineering department other than the student's major department, and one graduate faculty member from outside the College of Engineering. 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 all 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 12 hours of mathematics, at least 15 hours in the student's major field, and a minor field of study as defined by the student's advisory committee. A Plan of Study normally contains about 60 semester hours of courses, including courses from the master's degree, and should have a minimum of 60 percent of the hours (approximately 54 hours) beyond the master's level 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.

Comprehensive Examination
After the PhD plan of study has been approved, and after sufficient course work has been completed, the student, under the direction of his/her advisory committee, must take examinations covering the following three areas: the major field of study, the minor field of study, and mathematics/statistics. The student's advisory committee is responsible for ensuring that the student takes the three exams 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 dissertation. 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.

**General Engineering**

**Courses for Graduate/Undergraduate Credit**

510. **Topics in Engineering.** (1-3). Presents new or special courses of general engineering interest on sufficient demand. Repeatable for credit when subject material warrants.

565. **Computer Graphics.** (3). 2R; 2L. Forms of computer graphics, input-output devices, generation of points, vectors, etc. Includes interactive versus passive graphics and the mathematics of three dimensions, projective and the hidden line problem. Includes animated movies, computer-aided design and instruction as well as applications. Prerequisites: Math. 344, EE 218 or AE 227 or equivalent.

600. **Integration of Engineering Concepts.** (3). Designed for seniors to integrate their coursework into a coherent concept of the major principles, tools and techniques of engineering. Prerequisites: senior standing, preferably taken last semester of undergraduate work.

**Aerospace Engineering**

**Graduate Faculty**

**Distinguished Professors:** William H. Wentz, Jr.

**Professors:** Walter D. Bernhart, Andrew J. Craig, Bert L. Smith (chairperson and master’s graduate coordinator)

**Associate Professors:** Klaus A. Hoffmann (doctoral graduate coordinator), Walter J. Horn, M. Gawad Nagati, Michael Papadakis

**Assistant Professors:** L. Scott Miller, Roy Y. Myose, Kamran Rokhasz, P. Sriram

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 three fields: (1) aerodynamics, fluid mechanics, and propulsion, (2) structures, solid mechanics, and composites, and (3) flight dynamics and control. 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 adviser 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 major 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. 530.


525. **Flight Structures I.** (3). 2R; 3L. Stress analysis of flight vehicle components. Prerequisites: AE 324, AE 333, Math. 350 and ME 282. The letter two may be taken concurrently.

527. **Numerical Methods in Engineering.** (3). Error analysis. Includes polynomial approximations and power series, iterative solutions of equations, matrices and systems of linear equations, numerical differentiation and integration, approximate solution of differential equations by finite differences. Prerequisites: AE 227 and Math. 550 which may be taken concurrently.


607. **Automatic Flight Controls I.** (3). State variable methods, review of aircraft and spacecraft dynamic transfer functions. Feedback systems, sensors, actuators and circuit
615. Introduction to Space Dynamics. (3). Orbital mechanics, orbit determination, orbital maneuvers, attitude dynamics and sensors. Prerequisite: ME 525.

625. Flight Structures II. (3). Strength analysis and design of flight vehicle components. Introduction to energy methods and variational principles. Application of elementary methods to the analysis of flight vehicle structures. Special projects in structural analysis and design. Prerequisite: AE 525.


653. 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 tools for fiber-reinforced polymer structures and structural components. Prerequisites: ME 350 and AE 633 both recommended.

660. Selected Topics. (1-3). Prerequisite: instructor's consent.


702. Jet Propulsion. (3). Analysis of jet propulsion devices; study of cycles; effect of operating variables; presentation of problems of instability, operation and instrumentation. Prerequisite: AE 532 or equivalent.


711. Intermediate Aerodynamics. (4). A study of equations of motion, potential flow, conformal transformations, finite wing theory, nonsteady airfoil theory and advanced numerical techniques in aerodynamics. Prerequisite: AE 424 or 420 or ME 621.

712. Advanced Aerodynamics Laboratory. (3). 1R; 3L. Advanced topics in wind tunnel testing including analysis and sensitivity, modeling techniques, flow design and calibration, control surface loads and moments, laser velocimetry, hot film anemometry, dynamic signal processing, flow measurement probes, 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. Aerodynamics of Compressible Fluids I. (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. Prerequisite: AE 424, AE 420, ME 621 or equivalent.


731. Analysis of Elastic Solids I. (3). Develops the equations of the theory of elasticity and uses them to determine stress and displacement fields in linear elastic isotropic bodies. Uses stress intensity factors to obtain solutions. Introduces energy principles and variational methods. Prerequisite: instructor's consent.

733. Mechanics of Deformable Solids II. (3). An extension of AE 333. Typical topics are transformation of stress and strain in three dimensions, noncircular torsional members, curved beams, beams with unsymmetric cross sections, energy methods and the finite element method of analysis, stress concentration, theories of failure, fracture mechanics, etc. Prerequisite: AE 333.


760. Selected Topics. (1-3). Prerequisite: instructor's consent.


807. 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 AE 715.


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.

851. Analysis of Elastic Solids II. (3). A continu
nation of AE 731 covering more advanced topics in the theory of elasticity such as the analysis of nonlinear elastic bodies and anisotropic bodies. 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.

876. MS Thesis. (1-6). Graded S/U only.

878. Directed Studies. (1-3). Involves directed study under the supervision of a graduate faculty member. Requires a written report. Repeatable toward an MS directed study project up to three hours. Graded S/U only. Prerequisite: graduate standing.

911. Airfoil Design. (3). Historical development of airfoils, underlying theories and experiments; modern airfoil design philosophy and techniques; theories used in modern airfoil computation methods; application of computer programs for practical airfoil design problems including high lift and control devices. Prerequisites: AE 711, Math 757.

913. Aerodynamics of Aeroelasticity. (3). A study of thin airfoils and finite wings in steady flow and thin airfoils oscillating in incompressible flow. Includes extension to compressible and three-dimensional airfoils and modern methods for low aspect ratio lifting surfaces. Prerequisites: AE 711 and 777 or instructor's consent.

916. Aerodynamics of Compressible Fluids II. (3). An exploration of perfect gas flows past bodies of revolution. Also includes axisymmetric method of characteristics, high temperature gases in equilibrium and frozen flows and one- and two-dimensional moving shock waves. Introduces separated flows and jet mixing. Prerequisite: AE 716.


936. Theory of Plasticity. (3). Includes criteria of yielding, including plastic stress-strain relationships and stress and deformation in thick-walled shells, rotating discs and cylinders, bending and torsion of prismatic bars for ideally plastic and strain-hardening materials. Includes two-dimensionally and axially symmetric problems of finite deformation and variational and extremum principles. Prerequisite: AE 731.

960. Advanced Selected Topics. (1-3). Prerequisite: instructor's consent.


990. Advanced Independent Studies. (1-3). Prerequisite: instructor's consent.

**Electrical Engineering**

Graduate Faculty

**Professors:** Elmer A. Hoyer, Everett L. Johnson, Mark T. Jong, Roy H. Norris (chairperson), Mahmoud El-Sawalhy (graduate coordinator), Robert L. Schrag, Paul K. York.

**Associate Professors:** Robert I. Egbert, John S. O'Loughlin, Larry F. Prayer.

**Assistant Professors:** Ward T. Jewell, William R. Parkhurst, Mohammad Sarbazi, Asrat Teshome.

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 major, 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 and must include at least six hours outside the department. Students must have a 3.000 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, all candidates must pass an oral examination over their course work. Thesis option candidates must also 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). 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 Electromechanical Energy Converters. (3). A continuation of EE 488, including solid-state control. Stresses computer applications. Prerequisites: EE 492 and 498.

595. Electrical Design Project II. (2). May not be counted toward a graduate electrical major. A continuation of EE 585. Prerequisite: EE 585 or departmental consent.

598. Electric Energy Systems. (3). Concepts of electric energy systems, high-energy transmission lines, system representation, load-flow analysis, load-flow control, economic operation, symmetrical and unsymmetrical faults and system stability. Stresses computer applications. Prerequisite: EE 382.

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 228 and at least one EE course at 400 level or above.
663. Waves, Waveguides and Antennas. (3) A study of propagation and transmission of electromagnetic waves. Includes plane wave propagation in various media and oblique reflections, dielectric windows, transmission through waveguides and introduction to 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 feedback, active and switched capacitor filters, nonlinear circuits, analog and digital phase locked loops, switched-mode power conversion and RF circuits. Corequisite: EE 384. May not be counted for credit toward a graduate electrical major.

682. Energy and Information Transmission. (2) A study of the theory and application of transmission lines. Treats both pulsed and steady state sinusoidal signals. Includes line parameter and equations, signal propagation, effects of terminations, invariance of line and stubs. Prerequisite or corequisite: EE 382. May not be counted for credit toward a graduate electrical major.


686. Information Processing. (4) 3R; 3L. Properties of signals and noise; introduction to information theory; stability criteria, and compensation design. Prerequisite: EE 384.


788. Embedded Systems Programming. (3) A study of the requirements and design of embedded computer 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. Prerequisite: EE 494 or departmental consent.

790. Information Processing. (4) 3R; 3L. Deals with the applications of solid-state electronics to 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.

797. Selected Topics in Electrical Engineering. (1-4). New or special courses presented on sufficient demand. Repeatable for credit. Prerequisite: departmental consent.

854. Stochastic Control Systems. (3) Review of the pertinent aspects of deterministic system models; stochastic processes and linear dynamic system models emphasizing linear systems driven by white Gaussian noise; linear estimation and optimal filtering; design and performance analysis of Kalman filters. Prerequisites: EE 684 and 754.
877. Special Topics in Electrical Engineering. (3). New or special courses are presented under this listing on sufficient demand. Repeatable for credit. Prerequisite: departmental consent.

878. Directed Studies in Electrical Engineering (1-4). Graded S/U only. Repeatable toward the MS directed study option for up to four hours. The student writes a paper and gives an oral presentation on the study made. Prerequisite: departmental consent.

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 methods of digital speech signals, 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.

883. Digital Filters. (3). A study of digital filter design methods. Includes both IIR and FIR filters. Discusses software and hardware implementations; introduces two-dimensional digital filters. Prerequisite: EE 782 or departmental consent.

884. Discrete-Time Control Systems. (3). Fundamentals of input-output and state-space analysis, difference equations and state space representations; pole placement and observer design; dynamic programming and discrete minimum principle; linear state regulator design; equality-constrained control problems. Prerequisites: EE 684 and 782.

886. 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. Prerequisites: EE 686 and 774.

888. Selected Topics in Antennas and Propagation. (3). Determination of characteristics of practical antenna systems; radiation patterns and antenna impedance; diffraction, horns, slots, etc; and wave propagation in the earth’s environment, including tropospheric and ionospheric phenomena. Prerequisite: EE 663.

889. Advanced Electrical Laboratory. (2). 6L. Training in fundamental experimental technology in some field of electrical specialization. Consists of selected experiments in various areas of electrical engineering. The general subject area is announced each semester the course is offered. Repeatable for credit. Prerequisite: departmental consent.

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 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.

895. 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 684 and 792 or instructor’s consent.

897. 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.

906. Advanced Selected Topics in Electrical Engineering. (1-3). Presents new or specialized advanced topics in engineering. Repeatable for credit. Prerequisite: instructor's consent.


906. 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 properties of m-sequences. Presents the need for and concepts of spread spectrum systems. Also studies (a) direct-sequence spreading systems, (b) hopping systems, (c) time hopping spread spectrum systems, (d) spread spectrum systems, and (e) hybrid spread spectrum systems and (f) full-time early-late and dual dither code tracking loops. Analyzes initial synchronization of the receiver spreading codes and the performance of spread spectrum systems in jamming environments. Presents examples of spread spectrum systems. Prerequisites: EE 786 and 754. EE 886 desirable.

990. Advanced Independent Study. (1-3). Arranged individual, independent study in specialized content areas in engineering under the supervision of a faculty adviser. Repeatable toward the PhD degree. Prerequisites: advanced standing and departmental consent.

993. Sensitivity Methods in Control Systems Design. (3). Sensitivity analysis of deterministic and stochastic systems; sources of uncertainty in control systems, e.g., plant parameter variation, time delays, small nonlinearities, noise disturbances and model reduction; quantitative study of the effects of uncertainties on system performance; low-sensitivity design strategies, state and output feedback design; sensitivity function approach, singular perturbation and model education techniques; adaptive systems and near-optimal control. Prerequisites: EE 893.

Industrial Engineering

Graduate Faculty

Distinguished Professor: Randall Chambers
Professors: Don Hommerzheim (chairperson), Don Malzahn
Associate Professors: Jeffrey Fernandez, Abu Masud (graduate coordinator)
Assistant Professors: In-Chan Choi, Ming Liu, Saeid Motavalli, Subramanian Prakash

The Industrial Engineering Department is committed to instruction and research in the design, analysis, and operation of integrated systems of people, material, equipment, and money. There is a special emphasis on providing training and experience in performing independent research on topics with theoretical as well as application interest. While the curriculum is formally organized around three areas of emphasis—industrial ergonomics/human factors, manufacturing engineering, and operations research/systems engineering—students are encouraged to conduct research on topics that overlap more than one of these areas. Through required core courses, the curriculum ensures that the graduate students are exposed to all three areas, irrespective of their previous academic background.

The Industrial 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 engineering, and operations research/systems engineering. 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 curriculum and research areas in Industrial 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 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 systems.

Operations research/systems engineering.
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 major 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 course work.

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 three hours of project through IE 849. Both options require a written report.

The plan of study in either option must include: (1) core courses (IE 549, IE 743, and IE 745) 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 engineering, and operations research/systems engineering. Details of the PhD program can be found under the College of Engineering heading.

Courses for Graduate/Undergraduate Credit

549. Human Factors Engineering. (3). A systematic approach to the optimization of human-environment interaction. Includes human information processing and limitations, work space design and environmental factors. Prerequisites: IE 452 and 524 or departmental consent.

550. Production and Inventory Control. (3). Quantitative techniques in the analysis and control of production systems. Includes forecasting, inventory models, operation planning and scheduling. Prerequisite: IE 255 and 450 or 743.

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.

555. Information Systems. (3). A study of the design, implementation and economic analysis of computer-based information systems. Prerequisites: IE 255 and EE 218 or AE 227.


558. Manufacturing Methods and Materials. (3). A study of modern manufacturing methods, including metal cutting, metal forming, casting and molding, welding and nontraditional processing, Introduction to automation and numerical control. Prerequisite: AE 333.

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 452, 553 and 558.

565. Systems Simulation. (3). The design of simulation methods 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 553 or equivalent and EE 218 or AE 227.

590. Industrial Engineering Design I. (3). A design project utilizing industrial engineering principles, performed under faculty supervision, for solving practical problems. Prerequisites: IE 452, 553, 558, and department consent. Corequisites: IE 563, 565. May not be counted toward a graduate industrial engineering major.

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. Prerequisites: IE 590 and department consent. Corequisites: IE 549, 554. May not be counted toward a graduate industrial engineering major.

720. Urban Systems. (3). Cross-listed as P. Adm. 720. Develops the principles of systems analysis and the tools by which these principles can be applied. Example applications are taken from urban problems. Emphasizes the formulation of realistic models and solutions. Develops computer techniques in class as necessary. Prerequisite: departmental consent.

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.

743. Operations Research. (4). A study of various operations research techniques including linear programming, transportation and assignment algorithms, dynamic programming, queuing models and inventory models. Prerequisites: IE 254 or Stat. 471, Math. 511 or 555 and EE 218 or AE 227. May not be taken by students who have credit in IE 450.


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.

756. Decision Support Systems. (3). A study of various decision support system techniques including relational database, spreadsheets and expert systems. Prerequisite: IE 556 or departmental consent.


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. Studies operational feasibility, reliability, maintainability, supportability and economic feasibility. Prerequisites: IE 254 and 255.

770. Industrial Automation. (3). Teaches the design and application of manufacturing automated systems. Automation components, such as sensors, actuators and microprocessors, along with the use of programmable logic controllers are discussed. Other areas of automation, such as robotics, machine vision, DNC machine tools, and their integration into automated systems are introduced in this course. Prerequisite: EE 382.

775. Computer Integrated Manufacturing. (3). A study of the concepts, components and technologies of CIM systems, enterprise modeling for CIM, local area networks, CAD/CAM interfaces, information flow for CIM, shop floor control and justification of CIM systems. Prerequisite: IE 553 or instructor's consent.


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. Inventory Systems. (3). A study of deterministic and stochastic inventory models and algorithms for inventory systems and their applications. Prerequisite: IE 553 or 743.

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 565 and 524.


849. Industrial Engineering Graduate Project. (3). An independent study performed under the supervision of 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 adviser.

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, radiation and air contaminants. Prerequisite: IE 549.

858. Advanced Manufacturing Processes. (3). Advanced topics in manufacturing materials and processes, including metallurgical considerations, process/properties interactions, mechanics of material removal operations, tool wear, machinability, process economics and non-traditional processes. Prerequisite: IE 745.

860. Engineering Management Communications. (3). A study of the design of technical communications for specific audiences, the team writing process, the editing of your own and others' technical writing, content presentation of technical material and design of visual aids.


880. Topics in Industrial Engineering. (3). New or special courses are presented under this listing. 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.

930. 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. Prerequisites: 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 work-rest scheduling. Prerequisite: IE 549.

950. Occupational Biomechanics. (3). Theoretical fundamentals of the link system of the body and kinetic aspects of body movement. Includes application of biomechanics to work systems. Prerequisites: IE 549 and AE 223.

956. 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 218 or AE 227 or departmental consent.

960. Advanced Selected Topics. (1-3). Prerequisite: instructor's consent.

970. Robotic Sensors. (3). A study of robotic sensors, contact and non-contact. Emphasizes the application of machine vision in robotics and automated inspection. Prerequisite: IE 670.


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.
Mechanical Engineering

Graduate Faculty

Professors: A. Richard Graham, Mahesh S. Greywall, Richard T. Johnson (chairperson and graduate coordinator)

Associate Professors: Jharna Chaudhuri, George E. Talia

Assistant Professors: Nagaraj Arakere, Behnam Bahr, Hamid M. Lankarani, Julie A. Mathis, T.S. Ravigururajan, James E. Steck

Adjunct: Francis W. Cooke

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; 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. 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 major 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 graduate coordinator or 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 an advanced degree in engineering. They must be approved by the student’s adviser, 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 ME 501, emphasizing availability, irreversibility, Maxwell’s equations and thermodynamic property relations. Prerequisites: ME 501, with grade of B or better.

503. Mechanical Engineering Systems Laboratory. (2). * 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. Prerequisites: ME 402, 541, 622.

541. Mechanical Engineering Design II. (3). * Continuation 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. Prerequisites: ME 350 and 439 with a grade of C or better.

544. Environmental Engineering. (3). Theory, analysis and design of heating, ventilating and air-conditioning systems based on psychometrics, thermodynamics and heat transfer fundamentals. Emphasizes design procedures for space air-conditioning and heating and cooling loads in buildings. Prerequisites: ME 400 and 502.

580. Selected Topics in Mechanical Engineering. (3). New or special topics are presented on sufficient demand. Repeatable for credit when subject material warrants. Prerequisite: departmental consent.

621. Fluid Mechanics. (3). * Continuation of fluid mechanics stem of ME 400. Analysis of steady and unsteady, incompressible and compressible, multidimensional flow fields emphasizing continuity, momentum and energy equations. Includes potential flow, boundary layer theory and fluid machinery. Prerequisites: ME 400.

622. Heat Transfer. (3). * Continuation of heat transfer stem of ME 400; steady and transient multidimensional conduction, free and forced convection, radiation and combined heat transfer. Discusses various analytical methods, analogies, numerical methods and approximate solutions. Prerequisites: ME 400 and 621 (ME 621 may be taken concurrently).

630. 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 400 and Math. 550.

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 400 and 502, both with a grade of C or better.

650. Selected Topics in Mechanical Engineering...
62. Mechanical Engineering Practice. (O, 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 students in their last semester. Prerequisite: ME 541.

678. 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.

729. Computer-Aided Analysis of Mechanical Systems. (3). Modeling and analysis of planar motion for multibody mechanical systems including automatic 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 or 550.

734. 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 400 or departmental consent.

737. Robotics and Control. (3). A systems engineering approach to robotic science and technology. Fundamentals of manipulators, sensors, actuators, end-effectors and product design for automation. Includes kinematics, trajectory planning, control, programming of manipulators, along with introduction to artificial intelligence and computer vision. Prerequisite: ME 659 or equivalent.

739. Advanced Machine Design. (3). A broad coverage of principles of mechanical analysis and design of machine elements. Emphasis will be on 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 studies are gears, bearings, shafts, rotating machinery, and many types of spring-mass systems. Fundamentals learned in mechanics, strength of materials, and thermal sciences are used to understand mechanical system modelling, analysis, and design. Prerequisite: ME 541 or instructor's consent.

744. Advanced Environmental Engineering. (3). A continuation of ME 544 emphasizing building energy systems related to the design and selection of heating, ventilating, and air conditioning equipment and distribution subsystems. Prerequisite: ME 544 or departmental consent.

747. Microcomputer-Based Mechanical Systems. (3). 2R; 1L. Microcomputer-based real-time control of mechanical systems. Familiarizes students with design and methodology of software for real-time control. Includes an introduction to the C programming language which is most relevant to interfacing and implementation of control theory in computer-based systems. Laboratory sessions involve interfacing microcomputers to mechanical systems and software development for control methods such as PID. Prerequisite: ME 659 or instructor's consent.

749. Kinematics and Dynamics of Machines. (3). Analysis and synthesis of mechanisms; force analysis of machines. Prerequisite: ME 439.

750. Special Topics in Mechanical Engineering. (1-3). New or special topics are presented on sufficient demand. Repeatable for credit when subject material warrants. Prerequisite: departmental consent.

755. Intermediate Thermodynamics. (3). Laws of thermodynamics, introduction to statistical concepts of thermodynamics, thermodynamic properties, chemical thermodynamics, Maxwell's relations. Prerequisite: ME 502 or departmental consent.

760. 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-fracture mechanics approach is stressed. Prerequisite: ME 350 or instructor's consent.

762. Polymeric Composite Materials. (3). A basic understanding and knowledge about the structure and mechanical properties of polymeric composite materials in detail. Both short fiber and continuum fiber composites are discussed. Emphasis is given to special design considerations for composite materials including fracture mechanics and performance of composites under adverse conditions (fatigue and impact). Prerequisite: ME 350 or equivalent course.

764. Thermodynamics of Solids. (3). Presents basic thermodynamic concepts which will form the working tools throughout the course. Emphasis is placed on 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 350 and ME 390 or instructor's consent.

766. SEM and EDAX. (3). Gives knowledge of Scanning Electron Microscopy (SEM). SEM is a powerful tool in materials science and engineering which can be used to analyze structural defects in materials. Both the theory and experimental methods, as well as the application of these methods, will be discussed in the course. Prerequisite: ME 350 or equivalent.

Courses for Graduate Students Only

801. 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: Math 561 or departmental consent.

829. 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 biodynamic. Prerequisites: ME 729 or instructor's consent.

845. Fracture. (3). Ductile and brittle fracture: phenomena and mechanisms, linear elastic fracture mechanics, transition temperature approaches, tests for fracture resistance and design methods. Prerequisite: departmental consent.


847. Applied Automation and Control Systems. (3). 2R; 3L. 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 659 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. Heat Transfer-Conduction. (3). Theory and measurement, Fourier's equation, steady and unsteady state with and without heat sources and sinks and numerical methods. Prerequisite: ME 622, Math. 757 or departmental consent.

852. Heat Transfer-Convection. (3). Free and forced convection in laminar and turbulent flow. Includes analysis and synthesis of heat transfer equipment. Prerequisite: ME 622 or departmental consent.

853. Heat Transfer-Radiation. (3). Radiative properties of real surfaces, configuration factor analysis, radiative transfer in participating media, exchange factor analysis, Monte Carlo methods. Prerequisite: ME 622 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 502 or departmental consent.


860. Introduction to Ceramics. (3). Designed for mechanical engineering graduates and graduates with other engineering or science backgrounds. Emphasis on developing and understanding the significance of the basic concepts rather than methods for engineering problem solving or the detailed study of particular materials systems. Prerequisite: ME 350 or instructor's consent.

861. Similitude in Engineering. (2). Critical analysis of models and analogies as aids to engineering design. Prerequisite: departmental consent.

868. Rational Design Methods. (3). The principles of creativity, decision theory, modeling, optimization and reliability as applied to problems of engineering design. Prerequisite: departmental consent.


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.


960. Advanced Selected Topics. (1-3). New or specialized advanced topics in mechanical engineering. Prerequisite: instructor's consent.


990. 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, Acting Dean
Bertil H. van Boer, Interim Associate Dean
Raymond D. Olivero, Coordinator for graduate studies in art
Donald L. Corbett, Coordinator for graduate studies in music

School of Art and Design—Elizabeth M. Willis-Sowards, acting chair
Art Education—Mary Sue Foster, director
Art History—Mira Merriman, director
Graphic Design—Shirley McCol- lum, director
Studio Arts—John D. Boyd, director
School of Music—Nicholas E. Smith, acting chair
Music Education—James L. Hardy, director
Musicology-Composition—J. William Thomson, interim director
Keyboard Performance—Paul E. Reed, director
Strings Performance—Jay C. Deck er, director
Voice/Choral Performance—Dorothy Curn, director
Winds/Percussion Performance—Victor A. Markovich, director
School of Performing Arts—Leroy Clark, chair

Fine Arts
Although there is no graduate degree in general fine arts, the following course is available for graduate credit.

Courses for Graduate/Undergraduate Credit
S90. Special Topics in the Fine Arts. (1-4). For group instruction. May be repeated for credit. Course involves interdisciplinary upper division/graduate level topics within the fine arts. Topics vary according to the instructors involved.

School of Art and Design
Elizabeth M. Willis-Sowards, Acting 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 concentration in art education. Students seeking the Master of Fine Arts degree may take a concentration in ceramics, painting, printmaking, or sculpture. The specific requirements for each major are described under the appropriate program listing.

Art Education
Graduate Faculty
Associate Professor: Mary Sue Foster
Assistant Professor: Carol Jeffers

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 program in art education and meet requirements for Kansas state certification in this field. Also required are a 2.750 overall grade point average during the last two years of undergraduate study and a 3.000 grade point average in art, with a minimum of 12 hours in art history or equivalent, 15 hours in one studio area, and nine hours in art education curriculum. Degree applicants are expected to schedule an interview with the art education faculty prior to the first semester of enrollment. During the interview applicants are required to present for evaluation the following: (1) a personal and professional resume reflecting accomplishments; (2) a brief statement outlining professional goals; (3) written examples of professional and scholarly work; and (4) six examples of their work art in either portfolio or slide form with an accompanying list identifying media, size, etc. Up to half of the portfolio may be work produced by students of the applicant. All work should be identified with name, title, size, and media. When deemed necessary, undergraduate courses determined by the major professor may be required before students are admitted to the MA program with full standing. All correspondence should be addressed to the graduate coordinator of art and design.

Degree Requirements
Two major plans may be followed in meeting the requirements for the MA degree.

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>Art education including 3 hour thesis</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>12</td>
</tr>
<tr>
<td>Major art areas and related fields*</td>
<td>15</td>
</tr>
<tr>
<td>Total</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.

Art education (includes
6 hours of research problems) | 18
Major art areas and related fields* | 15
Total | 33

*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 graduate school with the approval of the major adviser 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 the major department and the dean of the Graduate School give their approval and if the course is taught by The Wichita State University graduate faculty. Only six hours of such work will be accepted. Six hours of graduate-level courses in one department taken on a nondegree student basis will be accepted. Courses taken outside of one department before acceptance into the art education master's program may or 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. Focuses on contemporary trends in aesthetics relative to the visual arts. 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 concentrates on the use of technological equipment for making multimedia programs and resources for instruction. Emphasizes the integration and selection of appropriate visual media for art instruction. Students participate in a 20-hour field experience in a school setting. 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 433.

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. Prerequisites: 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.

520. Seminar in Art History. (3). Directed independent study in art history. Prerequisite: instructor's consent.

521. Individual Research Problems in Art History. (1-4). Directe directed independent study in art education not normally covered in other graduate course work. Repeatable for credit. Prerequisite: instructor's consent.

521Q. Individual Research Problems in Art History. (3). Repeatable for credit with adviser's consent. Prerequisite: instructor's consent.

526. 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.

527. Modern Architecture. (3). An overall view of the development of modern architecture from its inception in the early 20th century until today. Stresses theoretical connections between art and architecture, the arts of painting and sculpture as they developed in the United States and Europe.

530. Seminar in Art History. (3). Systematic study in selected areas of art history. Course content varies but individual areas are not repeatable for credit.

532. 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.

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, medium, processes, interrelations with other visual arts, style questions, genres, and criticism.

Courses for Graduate/Undergraduate Credit

516Q. Aesthetic Inquiry. (3). Division A course/elective. Focuses on contemporary trends in aesthetics relative to the visual arts. Students write critical observations and interpretations in response to art work. Prerequisite: upper-division art major.

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Courses for Graduate/Undergraduate Credit

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534. History of Photography. (3). History of photography stressing techniques, medium, processes, interrelations with other visual arts, style questions, genres, and criticism.
721. Introduction to Art History for Teachers I. (3). 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 curricula. 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 II. (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 curricula. Specifically for early childhood, elementary and secondary teachers. Approved for recertification credit for elementary and secondary teachers by KSBOE.

732. 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. Prerequisites: suitable preparation for graduate work in art history (e.g., BA or BFA in art history) and 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: instructor's consent.

Graphic Design—Commercial Art

Graduate Faculty

Professor: Clark V. Britton, Jr.
Assistant Professor: Kirsten S. Johnson, Shirley McCollum

Although there is no graduate degree in graphic design, the following course is available for graduate study.

Course for Graduate/Undergraduate Credit


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: Richard St. John, John Boyd
Associate Professors: Raymond Olivero, Ronald Christ, Kathleen Shanahan
Assistant Professors: Rolf Westphal

Master of Fine Arts

The Master of Fine Arts (MFA) degree 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 grade point average during the last two years of undergraduate study and a 3.250 overall grade point average in the major field of study: ceramics, painting, printmaking, or sculpture. Also required is a Bachelor of Fine Arts (BFA) degree, or the equivalent, 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.

Studio courses in the major area ........... 23 Hrs.

* Studio courses in a minor option area ........................................ 5
** Courses in art history .................................................. 9
Terminal project in the major area .......... 10
Course in art seminar or directed readings ........................................ 3
Total .................................................................................. 60

* Minor option can be taken in one studio area, a variety of studio areas, or outside the student major area.
** Those 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' works and their standing in the program. No graduate review is held during Summer Session.

Transfer of Credit. All graduate credit 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. 570 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. 279 and 370.

576. Study of Ceramic Glazes II. (3). Lab fee. Studies the glaze formulation and the color and crystalline effects of oxides on glazes. Requires notebook, formulation records and laboratory work. Prerequisite: Art S. 575.

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. 875.

878-879. Terminal Project—Ceramics. (2, 3 or 5).

Drawing

Courses for Graduate/Undergraduate Credit

545. Advanced Drawing Studio. (1-3). Drawing with a variety of media. Uses graphic problems relative to individual technical 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 individual 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. (1-5-6). 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.

558-559. 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. (1-5). Lithography, black and white or color. For students interested in professional printmaking, course offers specialization in color printing. Repeatable for credit. Prerequisites: 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 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).

Sculptrure

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

Nicholas E. Smith, Acting Chair

Graduate degree programs in the College of Fine Arts, 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, dispassionately, and without prejudice any problem related to the art of music.

Master of Music

The Master of Music (MM) degree allows for specialization in history-literature, piano pedagogy, theory-composition, conducting, and performance. The general requirements for the degree are outlined below, while the specific information about the requirements for each specialization is given in the section concerning courses offered in the area of specialization.

Admission Requirements

Admission to the MM program requires the completion of an accredited music bachelor's program that includes a minimum of 42 semester hours in music, with at least 24 hours in a major field and 15 hours in a minor field. Approval of the MM specialization must be acquired during the first semester of enrollment.

Degree Requirements

The MM degree requires the completion of a minimum of 36 graduate hours, including a thesis or recital as indicated for the respective specializations. Of those hours, 60 percent must be in courses numbered 700 and 800 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 any of the period courses from 893, Music of Antiquity through the Renaissance, through 897, Music of the 20th Century). A minimum of eight semester hours in the applicant's specialization must also be selected with the adviser's approval.

Master of Music Education

The School of Music offers the Master of Music Education (MME) degree through its music education department. The requirements for this degree are explained in detail under the section of the Graduate Bulletin concerning the music education program.

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

Professors: James L. Hardy, Donald Corbett, Betty T. Welsbacher
Assistant Professors: Thomas Fowler, Elaine Bernstorff

Degree Requirements

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 any of the period courses from 893, Music of Antiquity through the Renaissance, through 897, Music of the 20th Century). A minimum of eight semester hours in the applicant's specialization must also be selected with the adviser's approval.

Admission Requirements

Admission to the degree program in music education requires the completion of a Bachelor of Music Education degree, or its equivalent, 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 specialty 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 Graduate Study; 851, Psychology of Music; 871, History and Philosophy of Music Education; and 830, Seminar in Music Theory. Three hours are also 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. (3). Methods and materials for teaching music in the preschool and kindergarten classroom. Includes the development of the child's musical growth through singing, listening, rhythm 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; for the potential practicing music teacher, classroom teacher or special education teacher. Includes identification of dysfunctioning 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 con
struction 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 and 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. Prerequisites: Mus. E. 237 and 238 or equivalent.

739A. Advanced Brass Techniques. (2). Special problems and techniques in the teaching of brass instruments. Surveys current materials. Prerequisites: Mus. E. 239 or equivalent.

740A. Advanced Percussion Techniques. (2). Special problems and techniques in the teaching of percussion instruments. Surveys current materials. Prerequisites: Mus. E. 240 or equivalent.

750. Music Education Workshop. (1-4). Repeatable for credit.

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 Coop 781 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. Prerequisites: successful completion of the freshman year and satisfactory academic standing prior to the first full assignment. May be repeated for credit. Offered CR/NC 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 music education special emphasis 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 dysfunctioning 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 the subject area of exceptional children. This provision applies to initial certification and recertification of music teachers only. Prerequisite: Mus. E. 403 or 404.

823. Special Music Education Practicum. (3). For the music special education emphasis MME candidate only. Supervised teaching in special education classrooms. A companion course to Mus. E. 822; gives the music special education emphasis MME candidate experience in teaching in special education classrooms. Prerequisite: Mus. 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: Mus. 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 electing the conducting option on the instrumental or choral emphasis under the MME degree. Prerequisite: Instructor and departmental consent.


852. Introduction to Bibliography and Research. (3). See course listing under musicology-composition department.

854. Research Seminar in Music Education. (3). Continued application of techniques of research. Requires the completion of a major research project. Prerequisite: Mus. C. 852.

871. History and Philosophy of Music Education. (2). A study of historical trends and contemporary philosophies relevant to music education. Prerequisite: Mus. E. 851.


876. Thesis. (2).

Music Performance

Graduate Faculty

Professors: Harrison C. Boughton, Joseph C. Combs, Jay C. Decker, George H. Gibson, James Jones, Walter J. Myers

Associate Professors: Julie Bees, Dorothy Crum, Victor A. Markovich, Paul E. Reed, Frances K. Shelly, Nicholas E. Smith, Robert Town, Vernon L. Yenne, Won Bin Yim

Assistant Professors: Sylvia Coats, Catherine Consiglio, Robert Glasmann, David Schepps, David Perry, Russell D. Widener

Master of Music with Emphasis in Performance

Admission to the Master of Music (MM) program with emphasis in music performance requires a performance background, with a Bachelor of Music degree in the performance area of specialization or the equivalent. Performance 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. Final acceptance in a performance specialty is dependent on 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 with Emphasis in Piano Pedagogy**

The Master of Music (MM) degree with emphasis in piano pedagogy gives primary emphasis to the development of tutorial concepts specific to keyboard skills and artistry; secondary, but significant, emphasis is placed on an acceptable demonstration of keyboard performance at the master's degree level. The pedagogy option includes extensive preparation in the area of keyboard literature and stresses the relationship of performance to selected repertoire and teaching-skill development.

**Admission Requirements**

Students must have completed a Bachelor of Music in piano performance or its equivalent. All candidates must complete a satisfactory audition early in the program in no event later than the close of the first semester of enrollment. Permission to pursue the degree is tentative pending approval of the audition. Deficiencies, if noted, must be satisfied before admission to candidacy for the degree.

**Degree Requirements**

The MM degree with emphasis in piano pedagogy requires the completion (minimum) of 32 graduate hours, including a graduate degree recital. Of these hours, 20 must be in courses numbered 700-800 or above. 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).
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 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.

717Y. 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, music 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 the violin and viola with an emphasis on developing technique and pedagogical skills. 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 minilessons for instructor and class critique. Prerequisite: performance capability on a woodwind instrument or instructor's consent.

681. Brass Pedagogy. (2). A comprehensive study of brass instrument techniques, concepts and materials of studio instruction for the advanced student, including the teaching of minilessons for instructor and class critique. Prerequisite: performance capability on a brass instrument or instructor's consent.

682. Percussion Pedagogy. (2). A comprehensive study of percussion instrument techniques, concepts and materials of studio instruction for the advanced student, including the teaching of minilessons for instructor and class critique. Prerequisite: performance capability on percussion instruction or instructor's consent.

691. 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: Music P. 217 or 218 or equivalent.


710-711-712-713-714. Ensembles. (1-1-1-1-1). (A) Orchestra; (B) Symphonic Band/Wind Ensemble; (C) A Cappella Choir; University Singers; Concert Chorale; (D) Piano Accompaniment; (E) Opera Theater; (F) Madrigal Singers; Chamber Singers; (G) Woodwind Ensemble; (H) Saxophone Quartet; (P) Brass Chamber Ensemble; (Q) Percussion Ensemble; (R) Beginning String Ensemble and String Chamber Ensemble; (T) Jazz Arts Ensembles I and II; (V) Guitar Ensemble. Prerequisite: Audition required. Repeatable for credit.

715Y. Voice for Music Theater. (2). Basic repertoire and singing techniques with weekly master class devoted to music theater techniques and concepts. Restricted to persons other than vocal majors. Repeatable.


760. Group Piano Practicum. (2). Supervised group piano teaching for graduate students. Prerequisites: Music P. 580 and 581.


790. Special Topics in Music. (1-4). For individual or group instruction. Repeatable with departmental consent.

**Courses for Graduate Students Only**

811. 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...
Applicants also must submit representative compositions for examination by the composition faculty; approval for admission to candidacy is contingent upon the candidate's demonstrated ability to complete a final project in composition.

Completion of the MM degree with emphasis in theory-composition requires at least one semester of 840A-C, Seminar in the Techniques of Composition. In addition, students must complete a terminal project which must consist of one of the following: (1) a composition of major proportions, (2) a body of works in various media, or (3) a written thesis in the area of music theory. Composition majors may be required by the thesis committee to have a work or works performed publicly. The composition or compositions must be submitted in a minimum of two ink copies and bound in keeping with the procedures established through the Graduate School of The Wichita State University. These ink copies represent high quality of musical manuscript and must be completed in the candidate's own hand.

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). Counterpointal 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, modulation, accompanying and improvisation. Required of all organ majors. Repeatable. Prerequisite: Mus. C. 228 or departmental consent.

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.

641. Oratorio and Cantata Literature. (2). 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.

659-660. Applied Composition. (2-2). Individual study in musical composition emphasizing writing for both small ensembles and large groups in larger forms. Repeatable. Prerequisites: Mus. C. 560 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 music from impressionism to the present emphasizing related literature and creative writing. Prerequisite: Mus. C. 228.

685. String Literature and Materials. (2). A survey and stylistic analysis of music for solo strings and chamber combinations, beginning with the early baroque period.

726. Voice Literature. (3). A comprehensive survey of early Italian arias. French chansons, German lieders, contemporary English songs and Russian and Spanish literature.

750. Musicology-Composition Workshop (1-4). Repeatable for credit. Prerequisite: instructor's consent.

753. Choral Literature I. (2). A historical and stylistic survey of choral literature of the Renaissance and Baroque eras.


781. Cooperative Education. (1-8). See Mus. E. 781. Offered Cr/NC only.


790. Special Topics in Music. (1-4). For individual or group instruction. Repeatable with departmental consent.
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 compositional skills.

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.

882. 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.

550. 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.

545. Methods of Teaching Dance. (3). Develops teaching skills for elementary schools, high schools, recreation centers, private and professional schools and universities through lessson planning and in-class teaching practice. Prerequisite: Dance 401 or 410.

546. Scene Painting. (3). Presented with a lecture demonstration-studio arrangement. Explores various painting materials and techniques enabling the student to develop some skills for scenic production. Prerequisite: Theatre 244.

645. Practice in Teaching Dance. (3). Actual placement in teaching situation with responsibility for teaching ballet, modern and/or jazz in private studios, elementary, high schools, Ys or recreation centers. Prerequisite: Dance 454.

750. Dance Workshop. (1-4). Repeatable for credit.

Theatre

Graduate Faculty

Professors: Leroy W. Clark (chairperson), Bela Kiralyfalvi
Associate Professors: Judith Babich, Joyce Cavarozi
Assistant Professors: Jerald D. Blatt

A Master of Arts degree in communication with an emphasis in theatre is available through Wichita State. The following courses may apply for graduate credit.

Courses for Graduate/Undergraduate Credit

501. 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). Cross-listed 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. 234Q with additional emphasis on contemporary vocal and movement techniques. Prerequisites: Thea. 234Q 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 practical studio work in design for a variety of productions in dance and theatre. Prerequisite: Theatre 244.

559. Directing II. (3). R; L arr. Staging and rehearsal techniques emphasizing the problems of the period and stylized play. Prerequisites: Theatre. 259 or departmental consent and junior standing.

590. 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.

610. Directing the Musical. (3). An interdisciplinary course utilizing interdepartmental expertise (theatre, dance, music) to teach the student how to produce a musical. Prerequisite: instructor's consent.

621. 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 researching, 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
624Q. Development of the Theatre II. (3).
Division A course/elective. 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 its beginnings to the 17th century. 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, Restoration and modern nonrealistic 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 scenographic 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. 344 and 345.

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.

651. Scene Study. (3). The synthesis of all previous acting courses. Studies scenes in depth as preparation for performance. Course goal is the presentation of fully realized characterization in those scenes studied, integrating the elements of the actor's craft learned in the prerequisite courses. Prerequisites: Thea. 643 and junior standing.

653. History of Costume. (3). R; I arr. Historical survey 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.

657. Costume Design I. (3). Covers the techniques of costume design for the stage. Students strengthen and expand their knowledge of techniques in costume design for the stage, film and television. Prerequisites: Thea. 653, Art F. 145.

675. 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.

780. Theatre Internship. (3-15). Advanced theatre production work as arranged by students in direction, 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 1. for laboratory. For example, 4L; 2L means four hours of lecture
College of Health Professions

Offices: 400 Ahlberg Hall
M. Diane Roberts, Dean

Departments
Clinical Science—James Jackson, chairperson
Dental Hygiene—Salme Lavigne, director
Health, Administration and Gerontology—Stephen C. Gladhart, chairperson
Nursing—Susan Kruger, chairperson
Physical Therapy—Susan Hanrahan, director
Physician Assistant—Marvis Lary, director

The College of Health Professions offers graduate programs leading to a Master of Arts in Gerontology, Master of Health Science, Master of Science in Nursing, and Master of Physical Therapy. Admission to these programs requires a bachelor’s degree and the fulfillment of requirements listed for each program and elsewhere in the Graduate Bulletin.

Gerontology

Department of Health, Administration, and Gerontology
Graduate Faculty
Professors: Roger Kasten (communicative disorders and sciences)
Associate Professors: William Hays (gerontology), Ellen Holmes (health, administration, and gerontology), Gregory Meissen (psychology), James Snyder (psychology), Samuel Yeager (public administration)
Assistant Professors: Elwin Barrett (social work), Nancy Brooks (sociology), Helen Halstead (nursing), Jean Jordan (health, administration, and gerontology), Nancy Snyder (public administration)

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 logopedics, 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 major 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 3.00 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.
Courses for Graduate/Undergraduate Credit

501. Internship in Gerontology. (3-6). A specially designed field experience for students who need or desire training to enhance their professional abilities and skills in gerontology and for whom academic credit is appropriate. As part of the internship, students collectively meet one hour a week with the field placement supervisor. Repeatable for credit to a total of six hours. Prerequisite: 12 hours of gerontology credit and instructor's consent.


512. Issues in Minority Aging. (3). Cross-listed as Min. S. 512. Prerequisites: Min. S. 100Q, Geron. 100Q, Soc. 111Q or instructor's consent.


515. Women and Aging. (3). Sensitize students to the diverse developmental patterns of aging women and introduce methodologies appropriate for learning about their life experiences. Special emphasis on continuities and transitions in women's social roles across the lifespan, including work and family roles.

518Q. Biology of Aging. (3). Cross-listed as Biol. 518Q.


537. The Social Consequences of Disability. (3). Cross-listed as Soc. 537.

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

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

590. Legal Aspects of Health Care Administration. (3). Cross-listed as HAE 590.


663. Economic Insecurity. (3). Cross-listed as Econ. 663.

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

715. Adult Development and Aging. (3). Explores theory and research related to the development of adults and to the aging process. Utilizing an interactive, interdisciplinary perspective, the course examines the process of change, transition, growth, and development across the adult lifespan. Prerequisite: Geron. 796 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). Same as Geron. 810 but offered as part of the Cooperative Education program. See Geron. 810 for description and prerequisites.

789. Multidisciplinary Perspectives on Aging. (3). Introduction to the advanced study of the process of aging from a multidisciplinary point of view. Does not count for degree in gerontology. Prerequisite: admission to graduate school. Not open to students with an undergraduate major or minor in gerontology.

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. Emphasis on the importance of social security 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.

Health Care Administration

Department of Health, Administration, and Gerontology

Courses for Graduate/Undergraduate Credit

503. Organization and Administration of the Health Care System. (3). Analysis of the nature of health and the input to health and health care delivery. Discusses general systems theory and systems analysis in relation to health care. Emphasizes the interrelatedness of economic, political and social aspects of the health services system. Considers current trends and the role of planning and exposes students to guest lecturers with professional expertise in relevant areas. Prerequisite: departmental consent.

504. Health Economics. (3). Cross-listed as Econ. 665. An analysis of health care systems in the United States including the demand for and supply of health care services, the quantity, quality and pricing of health services; the need for insurance; and the role of the government in the health sector. Prerequisite: HAE 503 or Econ. 202.

505. The Politics of Health. (3). Cross-listed as Pol. S. 505. Shows how government in the United States makes 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. Prerequisite: HAE 503, Pol. S. 121 or departmental consent.

507. Health Planning. (3). Discusses strategic business planning in health service management. Includes a strategic management scheme that will accommodate change and encourage innovation and enhanced productivity. Presents an identification of and adaptation to strategies and options in an anticipatory time frame that provides the organization with protection against the perils of crisis decision-making in traditional entrepreneurial organizations. Prerequisites: junior standing and instructor's consent.

509. Health Care Operations Analysis. (3). An examination of methods for measuring the operational efficiency and effectiveness of health care and medical care programs. Includes methods to analyze and evaluate current operations and approaches to plan better manpower, facility, technology, financial planning and management control systems in a health setting. Prerequisites: HAE 503, Math. 111 or equivalent, Mgmt. 360 and junior standing.

510. Health Finance. (3). An examination of the principles of financial analysis and management for health care institutions. Emphasizes understanding and applying general
financial concepts to the health setting. Considering financial organization, sources of operating revenues, management of working capital and budgeting utilizing examples for hospitals and other health organizations. Prerequisites: HAE 503 and Act 210 or equivalent.

565. Concepts of Quality Assurance in Health Care. (3). For health care personnel; focuses upon current social concerns with assessing quality of health care and appropriate utilization of activities and resources. Prerequisite: departmental consent.

590. Legal Aspects of Health Care Administration. (3). Cross-listed as Ger 590. A study of the principles of law as applied to the health fields. Considers such items as release of information, subpoena, records and testimony; settlement of claims (insurance); doctor-patient-nursing home relationship and legal consent; and other topics. Prerequisite: junior standing or departmental consent.

605. Health Services Research. (3). Deals with intermediate statistical procedures and research designs that health professionals must understand in order to intelligently analyze research in the health care field and to conduct research themselves. Covers the designs of experimental, survey and case factor research plus statistical techniques, including correlation coefficients, the t test, chi square and two-way analysis of variance. Prerequisite: departmental consent.

684. Health Administration Policy. (3). Cross-listed as Mgt 684. Gives graduating seniors an understanding of the structure of health care organizations, including the various roles and responsibilities managers have within these organizations. Exposure to management, policymaking and strategic planning processes is vital if students are to function in administrative positions in health care administration. Prerequisite: HAE 503 and at least one other HAE course or departmental consent.

685. Computer Applications in Health. (3). Data reduction, summarization, editing and analysis using technical assistance of micro and mainframe computer for operational research and administrative purposes. Investigates health data bases from hospitals or other agencies such as state health department, PRO agency, HSA. More emphasis on microcomputers than on large 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.

720. Community Health Organization and Administration. (3). Introduction to the organization and activities in the health system—roles and problems. Introduction to administrative problem-solving as a structured process. Prerequisite: instructor's consent.

Courses 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 505 or instructor's consent.


825. Health Care Marketing. (3). Marketing management for health services; examines the problem of organizational response to consumer desires and needs. Covers consumer behavior and development of marketing mix, product policy and market strategy appropriate to the specific situations of various health care institutions. Prerequisite: Mkt 800 or equivalent or departmental consent.

Health Science

Department of Health, Administration, and Gerontology

Graduate Faculty

Associate Professors: Diane Huntley, James Jackson (chairperson, clinical sciences department), Diane Roberts (dean, College of Health Professions)

Assistant Professors: Jo Lynne Campbell, Mary Conrad, Stephen Gladhart (chairperson, health, administration, and gerontology department), Linda Hogan, Kenneth Pitetti, Barbara Smith

Master of Health Science (MHS)

This graduate program for health professionals is organized to meet the needs of practicing health care practitioners who hold the bachelor's degree. The programs in dental hygiene; health, administration, and gerontology; medical technology; physical therapy; physician assistant; and respiratory therapy participate in the MHS program through faculty and curricular involvement and many health professionals in these disciplines will find the MHS program applicable to their interests. The major roles within the health care system for which graduates will be prepared are those of educators, administrators, and practitioners.

Although opportunity for full-time study is available, the program has been developed especially for the employed part-time student, and a selection of required courses is available in the evening. The program must be completed within six years.

Admission Requirements

Admission to the MHS program requires that candidates be appropriately credentialed in a health field; however, students may request admission based on the applicability of the MHS degree to their goals and objectives. Admission requests based on professional necessity and background of health experience may be made to the director of the graduate program. Certain practicum courses and the advanced clinical studies emphasis have special requirements.

1. An applicant must have a bachelor's degree from a regionally accredited educational institution and credentials (if available) in a health area. The basis on which credit is awarded for the bachelor's degree must be consistent with the policies and procedures for the award of such credit at The Wichita State University. Non-health credentials will be considered on an individual basis.

2. A student must have participated in the health field. A new bachelor's student may enter the program, but will be declared a candidate for the degree only after completion of the equivalent of one year of full-time professional experience in the health care field. No more than nine hours of courses may be taken before acceptance as a candidate. Exemptions to this requirement must be approved by the MHS graduate coordinator.

3. A personal interview is necessary with the master of health science director and a designated department coordinator, or, in the absence of an appropriate department, a designated advisor.

4. The student must complete an MHS application and statement of interest.

5. The student must have earned a minimum GPA of 3.000 in the last 60 credit hours of undergraduate course work for full standing. Probationary status will be granted according to Graduate School guidelines.

6. Students may be required to meet additional requirements established by their departments.

Degree Requirements

The award of the MHS degree requires a minimum of 34 credit hours of graduate work with a thesis. At least 22 hours must be in courses numbered 700 and above. The nonthesis option requires a minimum of 37 credit hours.

The curricula are planned with study directed toward analysis, synthesis, and evaluation of the health care delivery system. Courses of study can provide com-
prehensive, in-depth review of the various forces acting upon the health care delivery system and the health care provider in their various roles. The director of the MHS should be contacted for detailed information on the curriculum.

A core of nine hours is required of all students in the MHS program. The foundation courses address concerns common to all health professions and include current issues, research, and quality assurance in the health professions. Students then continue in an area of emphasis to achieve a greater understanding of the issues and research problems facing the health field.

Areas of Concentration. The MHS director must be contacted for planning sheets which list all requirements for available concentration areas of administration, education, and clinical studies. Specific courses are required within each concentration, and electives are identified to meet the individual's specific needs and career goals. Each student is assigned an adviser designated for each area of concentration. These advisers work with the students in developing individual plans of study and in selecting and evaluating learning in light of career interests and goals. Supportive courses are drawn from many disciplines in the University, including business, education, psychology, biology, and chemistry.

Academic Standards. Students enrolled in the MHS program are expected to maintain grades of B or better in all required courses and a B average in all other course work attempted. Students in the clinical concentration are required to complete an acceptable thesis. The student must gain approval of the thesis proposal by the graduate adviser(s) and the thesis committee and must pass a final oral examination covering the thesis topic.

In lieu of a thesis, the student may choose the practicum/project option in the education or administration concentration. Seminars, reports, and independent study assignments may be required for completion of the practicum/project, resulting in a major written report.

Nondegree Students. Students not seeking degrees may take some graduate courses listed under the MHS program as long as all prerequisites are satisfied and the enrollment has the approval of the graduate coordinator. Refer to the Graduate School criteria for nondegree students.

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 supplemen-
tary 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 department 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). Study of the structure, physiology and functions of the central and peripheral nervous systems. Prerequisite: HS 310 or CDS 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 department 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.

550. Advanced Perinatal Cardiorespiratory Care. (3). Cross-listed as RT 550. Focuses on diagnostic and therapeutic modalities used in the care of high risk mothers and infants. Includes equipment and techniques used in tertiary care perinatal centers: high frequency ventilation, ECMO, air transport, and so on. Emphasizes respiratory care and medical management of critically ill and difficult-to-treat patient. Prerequisites: RT 450 and 203 or instructor's consent.

570. Interpretations of Sexuality for Health Professions. (3). Cross-listed at Nurs 570. Elective. Strategies to assist clients and families cope with sexual problems and disorders. Emphasizes relating varying interpretations of the biological, psychological and cultural aspects of sexuality to the helping professions. Open to nonnursing majors.

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 departmental consent.


701. Issues in Health Care. (3). An in-depth look at current issues facing health professionals. Topics may be presented in lecture, small groups, simulation and with guest speakers. Presents trends in health care, ethics, consumerism and current research findings; includes disease prevention and health promotion, ethics, consumerism and current research findings as they relate to current trends in the health professions. Prerequisite: graduate standing.

703. Evaluation in the Health Professions. (3). Presents the background and methods for evaluating performance in the health professions. Emphasizes the planning, development and use of evaluation tools in the clinical setting as well as the planning and use of evaluation tools in educational and professional settings.


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
may be under the direction of a field instructor/peerceptor from the host agency.

885. Thesis. (1-3). Repeatable to a maximum of six hours. Prerequisite: consent of thesis adviser.

**Medical Technology**

**Department of Clinical Sciences**

Although there is no graduate degree in medical technology, the following courses are available for graduate credit.

**Courses for Graduate/Undergraduate Credit**

**550. Clinical Endocrinology.** (3). Describes 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. 103Q or 111Q or equivalent or instructor's consent. An understanding of biochemistry is recommended.

**752. 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.

**760. Hematologic Neoplasms.** (3). Deals with the etiology, pathophysiology, and morphology of hematologic neoplasms and the health care practitioners' interactions with persons with those disorders.

**765. Advanced Clinical Hemostasis.** (3). Advanced studies in the mechanisms of hemostasis, pathologic changes that can occur in the hemostatic mechanism and the laboratory evaluation of those changes. Prerequisites: Med. T. 462 or instructor's consent.

**775. Advanced Clinical Pathophysiology.** (3). Advanced studies in the mechanisms of the disease process and pathologic changes that can occur in various pathophysiological states. Prerequisites: HS 400 or 15 hours of biology or instructor's consent.

800. Seminar in Laboratory Sciences. (1). Discusses recent issues and advances in the field of clinical laboratory science, including the areas of microbiology, chemistry, hematology, immunology and immunohematology. Students are responsible for assigned topics, using current journal articles as resource material. Prerequisite: departmental consent.

890. Thesis. (1-3). Repeatable to a maximum of six hours. Prerequisite: consent of thesis adviser.

**Nursing**

**Department of Nursing**

Graduate Faculty

Professor: Donna Hawley (director of graduate program)

Associate Professors: Alicia Huckstadt, Susan Kruger (interim chairperson)

Assistant Professors: Helen Halstead, Kathleen Hanna, Jeanette Jeffers, Barbara Ott, Martha Shawver, Elaine Steinke, Betty Sullivan, Yvonne Ulrich

**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 nursing 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 Department 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 The Wichita State University.
3. Cumulative grade point average of 3.000 or better in the last 60 hours for full standing.
4. Department of Nursing approval.
5. Evidence of Registered Nurse licensure.
6. Coverage by professional liability insurance, to be renewed annually.
7. One year of nursing practice following professional licensure is recommended.
8. Admission to the Family Nurse Practitioner Specialization 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 Department 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 the Family Nurse Practitioner):

**A. Phase I (Core)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurs. 703</td>
<td>Foundations of Nursing</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 705</td>
<td>Nursing Research</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 711</td>
<td>Issues in Nursing</td>
<td>3</td>
</tr>
</tbody>
</table>

**B. Phase II**

1. **Clinical Concentrations: Student selects one (12 hours)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurs. 833</td>
<td>Adult Nursing Practicum</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 834</td>
<td>Adult Nursing Practicum</td>
<td>3</td>
</tr>
</tbody>
</table>

2. **Functional Role:** Student selects one

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurs. 812</td>
<td>Nursing Administration Practicum</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 827</td>
<td>Resource Management in Nursing</td>
<td>3</td>
</tr>
</tbody>
</table>

3. **Electives or selected courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurs. 813</td>
<td>Foundations of Nursing Education</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 814</td>
<td>Nursing Education Practicum</td>
<td>3-6</td>
</tr>
<tr>
<td>Nurs. 807</td>
<td>Clinical Nurse Specialist: Role</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 806</td>
<td>Clinical Nurse Specialist: Practicum</td>
<td>3</td>
</tr>
</tbody>
</table>

4. **Options**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurs. 821</td>
<td>Thesis</td>
<td>6</td>
</tr>
<tr>
<td>Nurs. 823</td>
<td>Project</td>
<td>3</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 must complete 42 hours rather than 36 hours Electives may be taken, with department approval, prior to enrollment in nursing courses.

**Phase I courses must be completed before beginning Phase II courses.** The student, with an academic adviser, will determine the subsequent sequencing of course work. 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 Specialization**

The Department of Nursing has a Certificate/MSN specialization for Family Nurse Practitioners (FNP). Students completing the 36 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 42 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 Department of Nursing for admission to this specialty.

**Curriculum Plan for Full-Time Students**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td>Nurs. 705</td>
<td>Research</td>
<td>3</td>
</tr>
<tr>
<td>Fall</td>
<td>Nurs. 711</td>
<td>Issues</td>
<td>3</td>
</tr>
<tr>
<td>Fall</td>
<td>Nurs. 791B</td>
<td>Pathophysiology for Primary Care</td>
<td>3</td>
</tr>
<tr>
<td>Fall</td>
<td>Nurs. 791A</td>
<td>Pharmacology for Primary Care</td>
<td>3</td>
</tr>
<tr>
<td>Spring</td>
<td>Nurs. 804</td>
<td>Clinical Management I</td>
<td>3</td>
</tr>
<tr>
<td>Spring</td>
<td>Nurs. 805</td>
<td>Primary Care I</td>
<td>3</td>
</tr>
<tr>
<td>Spring</td>
<td>Nurs. 807</td>
<td>Role</td>
<td>3</td>
</tr>
<tr>
<td>Summer</td>
<td>Nurs. 831</td>
<td>Clinical Concepts</td>
<td>3</td>
</tr>
</tbody>
</table>

**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: departmental consent.


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; students focus on 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 lifespan. Emphasis on detailed health history taking, differentiation, interpretation, and documentation of normal and abnormal findings. Includes lecture, supervised practice, and demonstration of history taking, and an integrated physical assessment. Prerequisites: Nurs. 340 or approved undergraduate health assessment course. Current enrollment in family nurse practitioner specialization, MSN program, or completed continuing education enrollment. Enrollment limited.

703. Foundations of Nursing. (3). Focuses on the nature of theory and the process of theory development. Traces the historical development of nursing theory and explores projections for the future. Analyzes selected conceptual models of nursing in terms of implications for nursing practice, nursing research and nursing education. Prerequisites: admission to Graduate School.

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. Nursing Research. (3). Building on an initial research experience, course assists the student in understanding premises which govern research design, implementation and evaluation. Considers current issues in nursing research, the researcher, the populations studied and the consumer of research. Prerequisites: statistics course accepted by the Department of Nursing, an undergraduate research course and admission to Graduate School.

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.

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 lifespan, 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 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 theoretical, sociocultural and ethical perspectives. Prerequisites: admission to Graduate School.

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 providers of health care and public services in the community. Prerequisite: graduate standing or instructor's consent. NURS 841 is prerequisite for community only.

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 hour seminar accompanies the practicum.

750. Workshops in Nursing. (1-4). An opportunity for intensive study of special topics related to nursing practice, research or education. 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 departmental consent.

796. Nursing Practicum in Special Settings. (1-6). Directed practice in various settings, including clinical specialties, nursing administration, nursing education and consultation. Prerequisites: admission to Graduate School and departmental 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 departmental consent.

Courses for Graduate Students Only

804. Clinical Management I: Health Promotion. (3). Concentrated clinical practicum in a primary care setting that addresses individuals and families throughout the lifespan within the context of the community. Theory and research used in clinical settings. Health promotion, maintenance, and prevention interventions emphasized. Prerequisites: NURS 701, 791A, 791B, and 711A.

805. Primary Care I: Health Promotion. (3). Focuses on the wellness of individuals through the lifespan, as well as on families seeking to maintain or improve health and prevent illness. Theory, research, and interventions reflect a preventative framework, enhanced with an understanding of health and lifestyle behaviors. Nursing diagnoses and assessment of risk factors supports nurse practitioner interventions and systematic planning and evaluation. Prerequisites: MSN program and completion of either the Core (NURS 703, 705, 711) or first semester of the FNP specialization (NURS 701, 705, 711, 791A, 791B).

807. Advanced Nurse Practice Roles. (3). Designed for the student preparing for an advanced practice role. Historical development of the advanced practice roles; ethical, legal, political, and economic issues affecting such a role and current trends and future directions for the role. Demonstrates components of the advanced roles identified and approaches for implementation examined. Prerequisite: Admission to graduate nursing program. Nurse practitioner specialization, completion of NURS 701, 791A, 791B. For CNS majors, completion of core courses, or instructor 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. Prerequisites: NURS 807 (or concurrent enrollment).

809. Primary Care II: Assessment and Management of Health Problems. (3). Emphasizes manifestations and management of common health problems across the lifespan. Collection of clinical data, analysis of data in light of current research, and the decision-making process. Includes common conditions affecting major body systems and specific therapeutic modalities applicable to specific problems. Prerequisite: Admission to Family Nurse Practitioner Specialization.

810. Clinical Management II: Common Health Problems. (3). Emphasizes assessment and management of common health problems across the life span, based upon knowledge of theory and research. Weekly seminars focus upon analysis and evaluation of clinical situations and cases. Prerequisite: Admission to Family Nurse Practitioner Specialization.

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. Prerequisites: departmental consent prior to registration. Prerequisites or corequisites: NURS 703, 705 and 711.

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 student to explore theoretical and practical aspects to curriculum development and teaching of nursing in higher education and continuing education. Prerequisite: departmental consent. Prerequisites or corequisites: Nurs. 703, 705 and 711.

814. Nursing Education Practicum. (3 or 6). Student, under professional guidance becomes directly involved in clinical and classroom teaching, continuing education and higher education. Seminar accompanies the field experience. Prerequisites: departmental consent and Nurs. 813.

815. Primary Care III. The Childbearing Family. (1). Focuses on care of the childbearing family who is at low risk for complications. Addresses health promotion and maintenance of the childbearing family during the reproductive years. Prerequisites: Nurs. 815, 817, and the infant's first year. Prerequisite: Admission to the Family Nurse Practitioner Specialization.

816. Clinical Management III. The Childbearing Family. (2). Application of knowledge to care for the childbearing family at low risk for complications. Students focus on developing and maintaining health of the childbearing family during the reproductive years, pregnancy, postpartum, and the infant's first year. Prerequisite: Admission to the Family Nurse Practitioner Specialization.


821. Thesis. (1-6). Graded S/U only. Student, in conjunction with the academic advisor and a three-member thesis committee, designs and conducts a formal research project. Prerequisites: admission to Graduate School and departmental consent prior to registration.

822. Psychiatric/Mental Health Nursing: Practicum I. (3). Intensive clinical experience; student plans, implements and evaluates nurse-therapist strategies with individual patients. A seminar accompanies the practicum. Prerequisites or corequisites: 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, historical study, a philosophical paper, or other type project developed in conjunction with the student's faculty adviser. Prerequisites: admission to Graduate School and departmental consent.

825. Independent Study. (1-6). Provides opportunity for the student to develop, in collaboration with a departmental faculty member, objectives and protocol for independent work related to the practice of nursing. Prerequisites: admission to Graduate School and departmental consent.

827. Resource Management in Nursing. (3). Focuses on the assessment of the 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. 703, 705 and 711.

829. Foundations of Maternal-Child Nursing. (3). Provides the foundation for all courses in the maternal-child clinical concentration. Seminars enable students to investigate major theories, clinical concepts and research studies related to maternal-child nursing. Prerequisites: Nurs. 703, 705 and 711.

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: admission to Family Nurse Practitioner Specialization.

832. Maternal-Child Nursing: Practicum I. (3). An intensive clinical experience; student focuses on the process of systematic assessment of individuals and groups within a family system. A seminar accompanies the practicum. Prerequisites or corequisites: Nurs. 829.

833. Adult Nursing I. (3). Examines clinical concepts and issues related to the maintenance of optimal health states of adults. Emphasizes assessment, measurement and nursing interventions related to these concepts. Prerequisites: Nurs. 703, 705 and 711.

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. 703, 705, 711 or instructor's consent. Prerequisites: Nurs. 833 or 839 may be concurrent.

835. Perspectives in Maternal-Child Nursing. (3). Critically examines health care delivery systems for maternal and child health. Analyzes the effects of political, economic and social factors on maternal and child health. Examines nursing roles in the delivery of maternal and child health care. Prerequisites: Nurs. 703, 705, 711 and 829.

836. Maternal-Child Nursing: Practicum II. (3). An intensive clinical experience; student analyzes, designs, implements and evaluates nursing systems for individuals and groups within a family system. Prerequisites: Nurs. 703, 705, 711, 829 and 832. Prerequisites: 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. 833 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. 703, 705 and 711.

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. Prerequisites: Nurs. 703, 705, 711.

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 effects 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.

847. Primary Health Care IV: Management of Urgent Health Problems. (2). Focuses on the nursing assessment, diagnoses, and management of urgent health problems for individuals and families throughout the life span. Includes urgent health problems such as trauma, poisoning, sudden airway obstructions, cardiac arrests, stroke, thermal and childbirth emergencies, and psychosocial crises. Current research data will be used to analyze treatment strategies. Protocols for assessment, treatment, and referrals will be reviewed. Prerequisite: admission to the Family Nurse Practitioner Specialization.
Admission to the program requires that

Admission Requirements

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

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 any 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 to the Department of Physical Therapy after September 1 and before March 1, for the following fall admission.

Applications will be reviewed anytime after September 1 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 submitted 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

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<thead>
<tr>
<th>Course</th>
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<tr>
<td>HS 700, Gross Anatomy</td>
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<tr>
<td>PT 705, Clinical Medicine I</td>
<td>4</td>
</tr>
<tr>
<td>PT 710, Principles of Physical Therapy I</td>
<td>3</td>
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<td>PT 712, Research I</td>
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<td>HS 720, Neurosciences</td>
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<td>PT 715, Seminar II</td>
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Second Year

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<tr>
<td>PT 810, Principles of Physical Therapy III</td>
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<tr>
<td>PT 815, Physical Therapy Management I</td>
<td>3</td>
</tr>
<tr>
<td>PT 825, Seminar II</td>
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<tr>
<td>PT 826, Clinical Medicine III</td>
<td>2</td>
</tr>
<tr>
<td>PT 835, Physical Therapy Theory and Procedures II</td>
<td>4</td>
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<tr>
<td>PT 840, Independent Study</td>
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<tr>
<td>PT 830, Principles of Physical Therapy IV</td>
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<tr>
<td>PT 840, Independent Study</td>
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<tr>
<td>PT 845, Seminar III</td>
<td>1</td>
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<tr>
<td>PT 850, Clinical Education II</td>
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<tr>
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<tr>
<td>PT 870, Clinical Education IV</td>
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</tbody>
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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 when 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

emphasizing causes, effects and treatment. Emphasizes the medical model. Coordinated by the department. Prerequisite: departmental consent.

710. Principles of Physical Therapy I. (5) 3R; 6L. Development of ability to differentiate causes of musculoskeletal problems and development of basic treatment programs using scientific rationale for treatment selection. Prerequisite: departmental consent.

712. Research I. (1). 1R. Discussion and application of principles of critiquing scientific literature. Prerequisite: departmental 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: departmental 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 department. Prerequisite: PT 705.

730. Principles of Physical Therapy II. (5) 3R; 6L. 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: departmental 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: departmental consent.

799. Experimental Courses. (1-4) One-time course offerings. Prerequisite: departmental consent.

Courses for Graduate Students Only

800. Clinical Education I. (6) 40P. 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: departmental 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: departmental 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 consideration, marketing, communication with the public, private sector and government officials. Prerequisite: departmental consent.

820. Physical Therapy Management II. (2) 2R. Study of management systems including assessment, planning, organization, control and evaluation of personnel management, fiscal considerations, electronic device utilization and management styles. Prerequisite: departmental 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: departmental 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, birth injuries, obstetrics-gynecology, development of clinical protocols to screen well babies, work situations for injury prevention and children for scoliosis. Prerequisite: departmental consent.

835. Physical Therapy Theory and Procedures II. (4) 3R; 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: departmental consent.

840. Independent Study. (1) Individual study with objectives developed in collaboration with a departmental faculty member. Repeatable for credit with departmental consent. Prerequisite: departmental 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: departmental consent.

850. Clinical Education II.* (6) 40P. 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: departmental consent.

860. Clinical Education III.* (6) 40P. Second 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: departmental consent.

870. Clinical Education IV.* (6) 40P. Third 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: departmental consent.

890. Thesis. (1-6) Repeatable to a maximum of six hours. Prerequisites: enrollment in graduate studies and consent of thesis adviser.

[Note: The text contains a series of courses, each with detailed descriptions and prerequisites.]

Respiratory Therapy

Department of Clinical Sciences

Although there is no graduate degree in respiratory therapy, the following course is available for graduate study.

Course for Graduate/Undergraduate Credit

550. Advanced Perinatal Cardiorespiratory Care. (3). Cross-listed as HS 550. Focuses on diagnostic and therapeutic modalities used in the care of high risk mothers and infants. Involves equipment and techniques used in tertiary care perinatal centers: high frequency ventilation, ECMO, air transport, and so on. Emphasizes the respiratory care and medical management of critically ill and difficult-to-treat patient. Prerequisites: RT 450 and 205 or 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.
Facilities

Students in the Wichita State MAJ degree program have access to excellent computer and research facilities, as well as a criminalistics laboratory. Students also may use local, state, and federal criminal justice agencies for field research or internship placements.

Courses for Graduate/Undergraduate Credit

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.

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

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 roles of the administrative structure of each governmental agency and the impacts of governmental and nongovernmental agencies as related to prevention, investigation and enforcement processes of environmental protection. Special emphasis on the contribution of the role of the administrative structure of environmental agencies can make toward development and implementation of effective environmental public education and assistance programs.

630. Security, Theory and Practice. (3). Advanced course emphasizing the interrelations among theories underlying contemporary security practice. Prerequisite: AJ 231 or departmental consent.

641. Forensic Psychiatry. (3). Analysis of the role of psychiatry in the administration of justice. Introduces the student to concepts and procedures of forensic psychiatry.

643. Forensic Science. (3). Analysis of the medical and psychological role of the forensic science in the administration of justice. Emphasizes the roles and responsibilities of forensic specialists, such as the role of experts in the field of forensic medicine and psychology.

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.
Courses for Graduate Students Only

851. Workshop in Administration of Justice. (3). Open only to AJ graduate students. Offered by the department cooperative education coordinator. Open only to AJ graduate students. Offered by the department cooperative education coordinator.

852. Workshop in Administration of Justice. (3).

853. Advanced Special Topics in Administration of Justice. (1-3). Detailed study of topics in administration of justice with particular emphasis established according to the expertise of the various instructors. Prerequisite: departmental consent.

Courses for Graduate Students Only

851. Workshop in Administration of Justice. (3). Open only to AJ graduate students. Offered by the department cooperative education coordinator. Open only to AJ graduate students. Offered by the department cooperative education coordinator.

852. Workshop in Administration of Justice. (3).

853. Advanced Special Topics in Administration of Justice. (1-3). Detailed study of topics in administration of justice with particular emphasis established according to the expertise of the various instructors. Prerequisite: departmental consent.

American Studies

Graduate Faculty

Associate Professors: Dorothy Billings, Donald Blakeslee (chairperson), Robert Lawless, Clayton Robarchek

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 requires the completion of 30 semester hours, including the presentation of a thesis. At least 18 of these hours must be in courses numbered 700 or 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 as undergraduates.

Examinations
All students must pass a written proficiency examination in the fundamentals of anthropology. Students must complete a minimum of 15 semester hours of graduate work in anthropology before taking the examination. Before a degree is granted, candidates must pass an oral defense of their thesis. 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 and techniques available to archaeologists and the theoretical rationale leading to sound interpretations of the structure of extinct cultures. 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 controversies that presently animate discussions of the role, methods and content of modern anthropology. Prerequisites: Anthr. 102Q or 124Q.

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 current theories, methods and issues. Required of all graduate students in anthropology. Prerequisite: Anthr. 101Q or equivalent.


508Q. Ancient Civilizations of the Americas. (3). Division B course/elective. A cultural survey of the Aztec, Maya and Inca. Prerequisite: Anthr. 124Q or instructor's consent.

511. The Indians of North America. (3). A survey of tribal societies and native confederations north of Mexico from the protohistoric through the historic period. Prerequisite: Anthr. 102Q or 124Q.

514. Anthropological Perspectives in Gerontology. (3). Cross-listed as Gerol. 514. An anthropological analysis of the latter stages of the life cycle with historical and cross-cultural perspectives. Prerequisite: Anthr. 100Q, 102Q or 124Q or Soc. 111Q.

515Q. Chinese People and Culture. (3). Division B course/elective. An introduction to the peoples of China and aspects of their culture: economy, government, society, religion and the arts. Historical attention on the many adjustments the Chinese have made during the twentieth century following political revolutions, industrialization and expanding trade relations.

516Q. Japan: People and Culture. (3). Division B course/elective. An introduction to the culture of Japan including its history and prehistory, aspects of traditional culture and 20th century Japan, its economy, politics and social organization.

519. Applying Anthropology. (3). The application of anthropological knowledge in the solution of social problems in industry, public health and public administration. Prerequisite: 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 tribe organizations. Prerequisite: six hours of anthropology.

538. Early Man in the New World. (3). A critical examination of facts and theories concerning early man in the New World from the peopling of the continent to the beginning of the Archaic Tradition, and of the role of cultural contacts between eastern Asia and North America. Prerequisite: Anthr. 124Q or 305Q.

540. The Indians of the United States: Conquest and Survival. (3). An anthropological inquiry into four centuries of cultural contact, conflict, resistance and acculturation. Prerequisite: Anthr. 124Q 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. Fossil Evidence for Human Evolution. (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.

556. Human Variability. (3). A critical examination of the biological aspects of contemporary human variation, stressing human adaptations. Prerequisites: 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.


597. Topics in Anthropology. (3). A detailed study of topics in anthropology with particular emphasis being established according to the expertise of the various instructors.

600. Forensic Anthropology. (3). Cross-listed as AJ 600. Encompasses the area of criminal investigation involving biological evidence: blood, hair, fingerprint, dentition and skeletal remains. Emphasizes collection of evidence, preservation, marking, transportation, referral, laboratory analysis, classification and identification emphasizing anthropological interpretation.

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

606. Museum Methods. (3). An introduction to museum techniques relating to the acquisition of collections and related procedures, such as accessioning and 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.

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

611. Southwestern Archaeology. (3). A comprehensive survey of the prehistoric, historic and living cultures of the American Southwest particularly emphasizing the cultural continuities and changes covering 11,000 years. Prerequisites: one introductory course in anthropology or departmental consent.
Archaeology of the Great Plains. (3). The archaeology of the Great Plains area from the protohistoric period to the present. Prerequisites: six hours of anthropology and departmental consent.

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.

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.

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.

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

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.

Advanced Studies in Archaeology and Ethnography. (3). Special area and theory problems in a historical approach to culture. Prerequisite: six hours of anthropology and departmental consent.

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

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

Advanced Physical Anthropology. (3). In-depth coverage of selected topics in physical anthropology, including population dynamics, primatology, growth and development and current research methods. Prerequisite: Anthr. 101Q or instructor's consent.

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

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

Seminar in Physical Anthropology. (3). Analysis of fossil, skeletal and modern biological differences among people. Emphasizes methods and techniques of analysis with a consideration of current interpretive models. Prerequisite: Anthr. 556 or 557 or departmental consent.

Seminar in Cultural Anthropology. (3). Intensive study of advanced theoretical questions in cultural anthropology. Repeatable up to six hours. Prerequisite: five hours of anthropology.

Colloquium in Anthropology. (1-2). 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.

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.

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

Thesis. (2-3). Students may pursue a Master of Science degree in biology under either a research thesis option or nonthesis option. The more traditional thesis option, which includes a minimum of 30 semester hours in graduate course work, requires the successful completion and defense of a research project. Each student pursuing this option works individually with a graduate faculty member who directs the research activity of the student. The nonthesis option requires a minimum of 36 semester hours in graduate course work and successful completion of written comprehensive examinations in two areas of biology. The nonthesis option is primarily 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 biological principles.

Nonmajor Courses

Courses for Graduate Students Only

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

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

Seminar in Physical Anthropology. (3). Analysis of fossil, skeletal and modern biological differences among people. Emphasizes methods and techniques of analysis with a consideration of current interpretive models. Prerequisite: Anthr. 556 or 557 or departmental consent.

Seminar in Cultural Anthropology. (3). Intensive study of advanced theoretical questions in cultural anthropology. Repeatable up to six hours. Prerequisite: five hours of anthropology.

Colloquium in Anthropology. (1-2). 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.

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.

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

Thesis. (2-3). Students may pursue a Master of Science degree in biology under either a research thesis option or nonthesis option. The more traditional thesis option, which includes a minimum of 30 semester hours in graduate course work, requires the successful completion and defense of a research project. Each student pursuing this option works individually with a graduate faculty member who directs the research activity of the student. The nonthesis option requires a minimum of 36 semester hours in graduate course work and successful completion of written comprehensive examinations in two areas of biology. The nonthesis option is primarily 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 biological principles.

Nonmajor Courses

Courses for Graduate/Undergraduate Credit

Courses for Graduate/Undergraduate Credit

Foundations of Human Heredity. (4). Division C course/ elective. Introduction to the mechanisms and societal significance 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.

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

**Major Courses**

(Used to satisfy the requirements for the major)

**Courses for Graduate/Undergraduate Credit**

**500. Cell Physiology. (3).** Bridges the gap between molecules and organisms by focusing on the function and the structure as it relates to function, of the basic units of life, cells. Includes a detailed treatment of individual cellular components and processes, the cytoskeleton, membrane transport control of gene expression, cell-cell communication and a consideration of cellular evolution. Also discusses the contemporary techniques used to study cells. Students earning graduate credit produce a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisites: Biol. 204 and Chem. 531.

**502. Vascular Plants. (4).** 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 produce a term paper based on the technical literature on a topic chosen in consultation with the instructor and deliver a 30-minute oral presentation to the class. Prerequisite: Biol. 204.

**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).** An introduction to vertebrate systematics. Students seeking graduate credit submit a term paper based upon library research on a topic in mammalian physiology chosen in consultation with the instructor. Prerequisites: Biol. 204 and Chem. 531 or instructor's consent.

**525. Mammalian Physiology Lab. (3).** A laboratory approach to mammalian physiology. Students seeking graduate credit submit a 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. Comparative Embryology. (4).** An introduction to the morphological, physiological, 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. Prerequisite: Biol. 204.

**554. Histology. (4).** The microscopic anatomy of vertebrate tissues emphasizing mammals. 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.

**555. Mammalian Physiology Laboratory. (3).** Methods of immunization and techniques for qualitative and quantitative determinations of antigen-antibody reaction. Prerequisite: Biol. 534 or instructor's consent.
must complete a Directed Independent Study form and obtain departmental approval prior to enrollment. Prerequisite: Biol. 204 and instructor’s consent.

620. Behavioral Ecology. (3). A study of the biological basis of social behavior, stressing the underlying evolutionary and ecological mechanisms. Lectures will examine altruism and kin selection, kin recognition mechanisms, sexual behavior, sexual selection and mate choice, mating systems, and reproductive strategies from the perspective of natural selection. Students earning graduate credit 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. (2-4). See Biol. 610. Prerequisite: Biol. 204 and instructor’s consent.

654. Pathogenic Microbiology. (4). 2R; 4L. An introduction to the important pathogenic microorganisms and their relationships to health and disease in humans. Students earning graduate credit prepare a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisite: Biol. 330.

658. Microbial Physiology. (3). The physiology and metabolism of microorganisms. All students prepare a term paper based on the technical literature on a topic chosen in consultation with the instructor, and those earning graduate credit make an oral presentation on this topic to the class. Prerequisites: Biol. 330 and Chem. 531.

659. Microbial Physiology Laboratory. (3). 6L. An introduction to the basic techniques involved in the study of microbial physiology. Students earning graduate credit design and perform an additional experiment in consultation with the instructor and present the results in written form using the format of a scientific journal chosen in consultation with the instructor. Prerequisites: Biol. 330 and Chem. 531.

660. Topics in Microbiology. (2-4). Lab fee. 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. 204, Chem. 662 and 663.

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

750. Biology Workshop. (1-3).

756. Microbial Genetics. (4). The relationship between development, metabolism and genetics in microorganisms. Students earning graduate credit prepare a term paper on the technical literature on a topic chosen in consultation with the instructor. Prerequisites: Biol. 330 and 584 or departmental consent.

771. Evolutionary Ecology. (4). 3R; 2L. Presents a synthesis of basic principles in population genetics and ecology as a framework for the study of topics in evolutionary ecology. Emphasizes (1) the maintenance and structure of population level genetic variation; (2) mating systems and the evolutionary advantages of sex; (3) individual, kin, group selection; (4) population demographic structure; (5) population regulation and dispersal; (6) life history strategies in heterogeneous environments; and (7) demographic and genetic covariance. Teaches basic techniques in population ecology on several short field trips throughout the semester. Prerequisite: Biol. 584. Biol. 418 also is recommended.

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

790. Advanced Immunology. (3). Contemporary problems in immunologic research. Includes lectures, assigned readings and reports. Students earning graduate credit produce a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisite: Biol. 590 and instructor’s consent.

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

Courses for Graduate Students Only

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

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

Chemistry

Graduate Faculty
Associate Professors: Anneke S. Allen, William T.K. Stevenson, Melvin E. Zandler
Assistant Professors: Dennis H. Burns, John B. McCarten, Kandagate 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 meet admission requirements of the Graduate School and hold an undergraduate degree with a major in chemistry. International students must have a minimum TOEFL score of 570. Students whose preparation is equivalent to the BS program recommended by the American Chemical Society Committee on Professional Training are considered well prepared for graduate study.

When admitted to the graduate program in chemistry, students are required to take orientation examinations. The results are used by an advising committee of the department to counsel graduate students about which courses are appropriate.

Students must select a faculty member to be their research adviser by the beginning of their second semester in the graduate 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 numbered above 701 must be taken, including at least one 700-level course from four of the following five areas: analytical chemistry, inorganic chemistry, organic chemistry, physical chemistry, and biochemistry. Students must successfully complete Chem. 700 once, and full-time students must register each semester in Chem. 701. Additional courses, which may be outside the major field, are selected by students in consultation with their 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, 712, 714, 811, 881, or other approved courses. It is recommended 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.

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

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


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 introduction to 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.

524. 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. 531.

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. 534 simultaneously. Credit is not allowed for both Chem. 533-534 and 531. This course does not meet the needs of chemistry majors or premed students. Prerequisite: Chem. 112Q or equivalent.

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, thermochrometry, second and third laws, phase equilibria, solutions, chemical equilibria, electrochemistry and surface chemistry. Prerequisites: Chem. 112Q, Math. 344 or its equivalent and one semester of college physics.

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.

602. Numerical Methods. (2). Application of numerical methods to problems in chemistry and physics. Roots of equations; curve fitting; interpolation, extrapolation, and smoothing of experimental data; numerical differentiation and integration; and computer programming. Prerequisite: instructor's consent.

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 resins, techniques of polymer characterization, stress and strain in polymers, and reaction mechanisms 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 be able to use computer programs in the design and reaction of drugs. Includes transport, basic receptor theory, metabolic transformations 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, coordination compounds, inorganic ring systems and polymers, inorganic environmental chemistry, mechanisms of inorganic reactions and solid state chemistry. Prerequisite: 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 interesting 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 oxidations; photosynthesis; and introduction to intermediary metabolism. A fundamental background of biology or microbiology is recommended but not essential. Biochemistry field majors should enroll concurrently in Chem. 664. Prerequisites: Chem. 523 and 552 or equivalents.

663. Biochemistry of Cell Metabolism, Biosyntheses, Structure, Function and Regulation of Proteins and Nucleic Acids. (3). Study of metabolism and control of carbohydrates, lipids, phosphoglycerides, sphingolipids, 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.

665. Special Topics in Biochemistry. (3) (Offered spring semester in odd 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.

666. Research in Biochemistry. (2). Cross-listed as Biol. 669. S/U grade only. Students in the biochemistry major may participate in a biochemistry research project under the direction of a faculty member. Requires a written report summarizing the results. May be repeated once for credit. Prerequisites: Biol. 500 and Chem. 662 or 663 and 664.

667. 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.

670. 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.

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

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

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


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.

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

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

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

715. 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.

716. 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 structures 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 equivalent.

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

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 spectroscopy; X-ray methods. Lectures and discussions on theory and practice. Particular emphasis on instrumentation and the acquisition of artifact-free data. Prerequisite: Chem. 524 or equivalent.

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

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

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

833. Natural Products Chemistry. (3). Discussion of the structure, chemistry and biosynthesis of the alkaloids, 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 663 and 732.

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

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

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

844. 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.

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

847. Chemistry of Condensed Matter. (3). Includes thermodynamics, statistical mechanics, quantum chemistry and structural determinations of condensed phase matter. Emphasizes metals, alloys, intermetallic compounds, composite materials and advanced materials. Prerequisites: Chem. 741 and 745 or equivalents.

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

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

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

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

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

864. Physical Biochemistry II: Techniques. (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 throughout to illustrate specific applications.

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

900. 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: Vernon Keel (director, Elliott School)
Associate Professors: Philip Gaunt
Assistant Professors: Les Anderson, Richard Armstrong (graduate coordinator), Lori Bergen, Susan Huxman, Sharon Iorio, David Kamerer, Frank Kelly, Christopher Leland, Keith Williamson

Master of Arts in Communication
The Elliott School of Communication coordinates a flexible program composed of a Communication Area and a Theatre/Drama Area. There is a thesis option (30 hours, four of which may be thesis hours) and a non-thesis option (36 hours). Thesis option students must successfully defend their thesis before a faculty committee. Fifteen hours of the program are comprised of required courses. For communication students these courses are: Comm. 801, 802, 803, 865, and 702. For theatre/drama students required core courses are: Comm. 801 and 802 and Thea. 623Q, 624Q, and either 823 or 824. Remaining hours are selected, with advisor approval, to meet the student's personal and/or professional goals. All student must pass a written comprehensive examination over their course work before a degree is awarded.

Admission Requirements
Admission requirements include at least a 3.00 GPA on the last 60 hours of course work, submission of Graduate Record Exam results, and a letter of purpose for pursuing the Master of Arts in Communication degree. In addition, international students must score at least 600 on the TOEFL; at least 270 on the TSE if applying for a teaching assistantship.

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. (3). 1R; 4L. For juniors and seniors; the techniques of reporting and writing the more complex and important types of news stories. Covers police beat stories, sports and economic reporting 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. Prerequisite: Comm. 301 with a grade of C or better, junior standing or departmental consent.

510. Editing for Print. (3). Sections 1R; 4L. For advanced students; 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.

520. Advanced Broadcast News. (3). R; 3L. Advanced techniques of preparing news for radio and television presentation emphasizing actual work in radio and television newrooms. Lab periods arranged with instructor. Prerequisite: Comm. 324.

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

530. 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.

535. Media Performance. (3). Provides experiences 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. Prerequisite: 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. Prerequisite: 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. Prerequisite: 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. Prerequisite: Comm. 301 and instructor's consent.

584. 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. 301 or instructor's consent.

585. Electronic Media Programming. (3). Planning, developing and scheduling based upon audience and market analysis, program ratings, principles of evaluation and criticism.

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

591. 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.

592. 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 advisor's consent. Prerequisite: Comm. 522 or instructor's consent.

595. Public Relations Campaigns. (3). Instruct­ion and practice in planning and developing total public relations campaigns. Prerequisite: Comm. 390 and 392 or instructor's consent.

596. Advertising Campaign Research. (1). 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.

625. Advertising Campaign Production. (2). Work in this course builds on research conducted in Comm. 626 for planning and developing a complete advertising campaign. Students will 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. Their impact on the political, economic and social history of this nation from colonial time to the present is assessed.

635. Leadership Techniques for Women. (3). Cross-listed as Wom. 5. 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 speaking for the academically mature student. 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 training and development. Course includes the application of these elements 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). Cross-listed as CDS 705. 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.

702. Contemporary Theories of Oral Communication. (3). Conceptual models useful in the scientific study of speech and application from selected areas of psychology, sociology, anthropology, and other related fields.

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. 112 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). Conversation is the form 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, conversation in the media and conversation analysis. Prerequisites: Comm. 112 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 non-experimental 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. 826. Directed research and experimentation for graduate students in some phase of (a) speech communication, (b) electronic media or (c) speech education. Repeatable for credit up to a total of six hours.

830. Theories of Rhetoric Classical. (3). Cross-listed as Eng. 825. An intensive study of the rhetorical theories of classical writers from 666 B.C. to the decline of Roman oratory. Principal emphasis on Socrates, 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, Fehlen, Balser, 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 project. Repeatable for credit with departmental consent. Prerequisite: departmental consent.

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

Computer Science

Graduate Faculty
Professor: Jan Zytlow, Dharam Chopra (interim chairman), Mary Edgington (emeritus)
Associate Professor: Shiang-Ching Chou
Assistant Professors: Rajiv Bagai, Ashvin Raviya, Mahesh Rathi (graduate coordinator), Vasant Shanbhogue, Rajshiekar Sunderraman, Prakash Raman

The Department of Computer Science offers two graduate degree programs, the Master of Computer Science (MCS) and the Master of Science (MS).

Master of Computer Science (MCS)
The MCS is a professionally oriented degree aimed at candidates with substantial background in the computing profession but not necessarily a degree in computer science. Through a wide range of electives outside the computer science department and a sizable graduate project called Practicum, the MCS program seeks to emphasize the impact of computers in application areas. The MCS with software engineering emphasis is an option available for MCS candidates.

Master of Science (MS)
This program offers the more traditional graduate degree intended primarily for candidates with an undergraduate degree in computer science. Through a combination of coherent electives and a research/thesis segment, 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 seeking to pursue graduate study in computer science are expected to meet the usual requirements for admission to the Graduate School, including the completion of a bachelor's degree with a minimum GPA of 2.750 in the last 60 hours of course work. All candidates must earn a minimum score of 1500 on the GRE aptitude test. English language competency must be established by earning a minimum score of 550 on the TOEFL (Test of English as a Foreign Language) Examination. Although neither the MCS nor the MS program requires that the prior bachelor's degree be in computer science, both programs require the following minimum background in the computer science area.

Background Course Work
The equivalent WSU course work is given in parentheses.

(a) Programming
Introductory knowledge of computer programming including documentation practices and the knowledge of programming language Pascal (CS 210)

(b) Foundations of Theoretical Computer Science
Introductory knowledge of discrete mathematics, logic, and applications to computer science (CS 320)

(c) Basic Data Structures
Introductory knowledge of computer algorithms and elementary data structures (CS 300)

(d) Computer Organization
Introductory knowledge of the functions and interplay of the components of a digital computer (CS 440)

Requirements (a)-(d) are prerequisites to graduate-level course work in computer science. They may be met by (1) completing the equivalent WSU courses, (2) equivalent course work from another accredited institution, (3) passing proficiency tests administered by the department, or (4) a satisfactory score on the GRE subject test in computer science.

(c) Foundation Courses

In addition to the prerequisite course work, all master's candidates must complete three foundation courses:

Programming Languages (CS 510)
Operating Systems and Architecture I (CS 540)
Data Structures (CS 560)

For admission to candidacy, MCS candidates must have completed one of these courses and MS candidates must have completed all three.

If taken for graduate credit, MCS candidates may count two of these courses toward the graduate degree. MS candidates cannot apply any credit from these courses toward the graduate degree.

Full or part waiver is given to those students earning above-median scores in the GRE subject test.

Requirements by Category

Admission to graduate study in the Department of Computer Science may be recommended in one of three categories depending upon the candidate's interests and background.

I. Degree Category

All candidates seeking the MCS or MS degree must be admitted to this category. The extent of deficiency in the basic requirements determines the initial status, as follows:

A. Full-standing

Must meet all the requirements with no more than six hours of deficiency in the background course work, (a)-(e), with a minimum GPA of 3.000 in all CS-related courses.

B. Conditional

Must meet all the requirements with no more than 12 hours of deficiency in the background course work, (a)-(e), and with a minimum GPA of 3.000 in all CS-related courses. The conditional status normally must be removed within one year of admission.

C. Probationary

Candidates fulfilling the requirements for full-standing or conditional status except for the minimum GPA requirements may be recommended for admission in this status. Each applicant's case is evaluated on the basis of other merits which may justify admission.

II. Nondegree A Category

Applicants not seeking a graduate degree may be admitted to this category provided they meet the same requirements as set forth for the Degree Category. The admission criteria for the two statuses in this category—full-standing and probationary—are the same as those of the corresponding statuses in the Degree Category, with the exception that the GRE aptitude and the GRE subject tests are not required for the category.

III. Nondegree B Category

Applicants with substantial deficiencies for the Degree or the Nondegree A categories may be recommended for admission to this category provided they meet the Graduate School requirements for admission and there is reasonable evidence of interest and ability to pursue graduate-level course work. Students in this category are restricted from taking courses numbered 800 or above.

Dental of Admission

Individuals with substantial deficiencies in their background and/or a low GPA in previous course work usually can remedy their deficiencies by enrolling in the College of Liberal Arts and Sciences and satisfactorily completing required background course work. The departmental adviser in computer science will help plan a course of study toward this end.

Degree Requirements—MCS

Candidates for the MCS degree must complete a minimum of 30 credit hours of graduate-level coursework, as follows:

A. Foundation courses (0-6 credit hours)—All foundation courses (see (e) above) must be completed. Up to six credit hours from this group may be applied toward the minimum credit hours for this degree.

B. Computer theory (3 credit hours)—CS 720, Theoretical Foundations of Computer Science.

C. Core courses (12 credit hours)—All candidates must complete at least four 800-level computer science courses below 890 or CS 898.

D. Electives (9 credit hours)—Each MS candidate must complete a coherent block of technical electives from computer science or a closely related field, as approved by the candidate's gradu-
ate-level course work, including two credit hours of CS 890 (Graduate Seminar), specifically approved for this purpose.

F. Final Examination—(1) Each MS candidate writing a thesis must pass a final examination by an ad hoc faculty committee. This examination will pertain to, but is not limited to, the subject matter of the thesis. (2) MS candidates opting for additional course work in place of a thesis must pass a final comprehensive written examination. This examination will cover a variety of topics which are normally addressed in the foundation, theory, and core course work or in the background course work.

Examinations
See “Admission Requirements” above for entry examinations. See the category marked “Final Examination” under each degree for exit examinations.

Courses for Graduate/Undergraduate Credit

501. Numerical Programming Techniques. (3) 2R; 2L. A study of the programming techniques used to solve nonlinear equations, interpolyate, 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. Prerequisite: Math 243 and CS 300 with grades of C or better.

510. Programming Language Concepts. (3) 3R; 1L. Covers the fundamental principles of operating systems: process synchronization, scheduling, resource allocation, deadlocks, memory management, file systems. Studies a specific operating system in depth. Programming assignments consist of modifications and enhancements to the operating system studied. Prerequisite: CS 410 with a grade of C or better.

560. Data Structures and Algorithms II. (3) 3R; 1L. Design and analysis of algorithms. Studies specific data structures, e.g., trees, graphs, etc. Emphasizes algorithm design techniques such as greedy, divide and conquer, dynamic programming. Analyzes time and space complexity of various algorithms. Prerequisites: CS 300, 320 and Math 344 or 511 and Stats. 460 with a grade of C or better in each.

585. Software Design and Testing. (2) 2R; 1L. Program design tools and techniques and program testing. Includes top-down and bottom-up design, various design paradigms, bottom-up and top-down testing techniques. Emphasizes large programming systems, illustrated by several programming projects. Prerequisite: CS 410 with a grade of C or better.

611. Ada and Software Engineering. (3) 2R; 2L. An in-depth study of the programming language Ada emphasizing understanding the software engineering principles on which its design is based. Focuses on the novel features the language has to offer such as packages, generics, separate compilation and multilanguage systems. Emphasizes hands-on programming experience to reinforce textbook knowledge of the language. Prerequisite: CS 510.

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

615. Compiler/Interpreter Techniques. (3) 3R; 2L. Review of programming language structures, translation and implementation. Compilations of simple expressions and statements. Overall design and organization of compilers and interpreters, including lexical and syntactic scan, construction of symbol tables, object code generation, diagnostic error messages and optimization techniques. Prerequisite: CS 510 or equivalent with a grade of C or better.

640. VLSI Systems Design. (3) 3R; 2L. Includes introduction to VLSI system, microprocessor, overview of an LSI computer system, architecture and design of system controllers, and system timings and highly concurrent systems. Prerequisite: CS 440 with a grade of C or better.

641. Small Systems Architecture. (3) A course on minicomputers and microcomputers and on how small computers are used to construct larger ones. Includes general concepts of computer architecture particularly the differences between large computers and small computers and the special features of small computers, such as horizontal and vertical micro-programming; use of display terminals, cassettes, tapes and discs; networks of small computers, and trends in small computer use and design. Prerequisite: CS 440 with a grade of C or better or departmental consent.

665. Data Base Design. (3) Principles of data base design and management for computer information systems. Examines several logical organization and file design techniques. Also discusses problems of security and integrity of data. Prerequisite: CS 300 and 320 with a grade of C or better.

674. Artificial Intelligence and Philosophy. (3) Cross-listed as Phil. 674. Transfer of ideas between artificial intelligence and philosophy: concepts and techniques of artificial intelligence and their application in philosophy (search, heuristic problem solving, knowledge representation, learning, discovering); sources of insight for artificial intelligence in different branches of philosophy. The analogy between minds and computers "cognition is a computation and the mind is a computer" is contrasted with "there are mental features not accessible to computation." Discusses the relevance of God's theorem and of other results in the domain of computability. Prerequisites: at least one 300-level course in computer science or philosophy; Math. 243; five hours toward the major in any of the physical or biological sciences; or departmental consent. A grade of C or better must be earned in each prerequisite.

680. Introduction to Software Engineering. (3) 2R; 2L. An introduction to the body of knowledge, presently available tools and current theories and conjectures regarding the process of program development. Studies these topics from several different viewpoints ranging from the individual program statement to a large programming project. Prerequisite: CS 585 with a grade of C or better.

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

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

720. Theoretical Foundations of Computer Science. (3) Provides an advanced level introduction to the theoretical bases of computer science. Computer science theory includes the various models of finite state machines, both deterministic and nondeterministic, and concepts of decidability, computability and formal language theory. Prerequisite: CS 420 or equivalent with a grade of C or better or graduate standing.

742. Computer Communication Networks. (3) 3R; 2L. Introduction to computer communication networks, including networking goals, data transmission and network technologies, performance analysis, delay analysis for networks of M/M/1 queues, network architectures, protocol hierarchies, design issues for layers of the ISO reference model and protocol descriptions for present computer communication networks. Prerequisite: CS 440 with a grade of C or better or departmental consent.

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

771. Artificial Intelligence. (3) Heuristic versus algorithmic methods, principles of heuristic approach and cognitive processes. Also cov-
ers objectives and methods of artificial intelligence research and simulation of cognitive behavior. Includes a survey of appropriate examples from various areas of artificial intelligence research. Prerequisite: CS 303.

773. Pattern Recognition. (3). An introduction to pattern recognition and image processing including clustering algorithms, cluster validity, feature extraction, classifier design, Bayes decision theory, parameter estimation, discriminant functions, syntactic pattern recognition, image enhancement, image registration, FTT, texture and application in various fields. Prerequisites: CS 212 and 300 and Math. 211 or 511, 243 and 331q with grades of C or better. Stat. 370 recommended but not required.

776. Expert Systems. (3). Planning, construction and application of expert systems. Discusses major aspects of expert systems; illustrates with various examples, including data representation, knowledge bases, inference engines, user interfaces, explanatory facilities, metarules and dealing with uncertainty. Introduces basics of a production system language. Prerequisite: CS 680 or instructor's consent.

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

Courses for Graduate Students Only

No computer science graduate students will be admitted to 800-level courses until they have completed CS 720.


821. Analysis of Algorithms. (3). Introduction to the techniques used to analyze both specific algorithms and classes of algorithms. Covers popular models, including Knuth's Mix and random access machine. Studies specific techniques, such as divide-and-conquer, recurrence equations and dynamic programming. Analyzes applications to set operations, hashing, graph searching, transitive closure and partitioning. Prerequisites: CS 560 and either 420 or graduate standing.

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


843. Distributed Computing Systems. (3). A study of hardware and software features of online multiple computer systems emphasizing network design and telecommunications. Includes distributed data bases, interprocessor communication and centralization versus distribution. Also includes study of the use of microcomputers in representative configurations. Prerequisite: CS 540 or 641 or EE 694.

852. Principles of Data Base Design. (3). An advanced treatment of the principles of database design. Addresses logical design, including relational model; physical design, including new technological advances in implementing very large data bases; security and integrity of data; and distributed data base networks. Prerequisite: CS 560.

872. Machine Learning and Discovery. (3). An advanced study of computer programs that learn, improve performance and make discoveries. Includes objectives, methods and research paradigms for such systems, a survey of existing methods and applications, including most recent developments; theoretical principles for learning and discovery systems; computational theories of learning processes and cognitive models of human learning; concept and theory formation, and use of analogy in learning. Includes participation in a group project such as developing a computer learning system. Prerequisites: CS 771 or 776 or 214 and 574, or CS 214 and 773.

873. Computer Vision. (3). An introduction to computer vision, a rapidly growing subfield of artificial intelligence. The basic topic is the understanding or description of images by a computer or robot. Covers two-dimensional Fourier analysis, scene matching and understanding, texture, motion, shape recognition, relational image structure and human perception. Prerequisite: CS 773 or instructor's consent.

874. Simulation and Modeling. (3). An up-to-date treatment of the important aspects of a simulation study, including data generation and testing, construction and verification of simulation models, simulation with high-level programming languages and simulation with GPS. Prerequisites: CS 300 or AE 327, Math. 344 and Stat. 571 or IE 354.

881. Software Specification and Design. (3). A detailed presentation of the techniques and tools available for the specification of software requirements and their translation into a design. Includes formal specification and design methods such as structured analysis, object-oriented design and JSD. Prerequisite: CS 680.


886. Software Project Management. (3). Presents the knowledge, techniques and tools necessary to manage the development of software products. Topics center on ensuring quality in the product, productivity in the team and reducing risk in the project life cycle. Course may not be repeated by students who have taken it under previous numbers. Prerequisite: CS 680.

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

891. 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 departmental seminar where their practicum experiences are shared with other students and faculty. Graded S/U only. Prerequisite: departmental consent.

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

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

898. 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 (Distinguished Professor of Humanities)

Professors: Lawrence M. Davis (chairper-
son), Frank S. Kastor, Philip H. Schneider


Assistant Professors: Roger A. Berger, Christopher K. Brooks, Alvin L. Gregg, Diane D. Quantic, 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 The 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 countries in which English is not the native language must score at least 600 on the TOEFL (Test of English as a Foreign Language) Examination before being admitted to the MA degree program in English.

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

Transfer of Credit. Students must complete 24 hours of credit at Wichita State within the English department. Students may transfer up to 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 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) should normally 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, 667, and 672. Engl. 515 may be taken to fulfill in part the major author and/or option course requirements of the degree plans. Engl. 521, 522, 524, 526, and 527 may be taken to fulfill the period and/or option 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 Engl. 817-825 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 (Engl. 825 or 826); one course in composition theory and pedagogy (Engl. 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 advisor in each of the three examination fields will designate up to five books, in addition to those covered in the candidate's course work, for which the student will be responsible. The book list will thus include a maximum of 15 works. This list must be approved by the Graduate Coordinator.

Plan B requires 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 is a terminal one in which emphasis is placed on the development of attitudes, skills, and understanding in the practice of imaginative writing, along with related academic study. The WSU program is not conceived as a solely skill-oriented program. It places emphasis on the development of fine writers who also are able, as a result of additional course work in English, to demonstrate skills useful in teaching, editing, and in pursuing other areas related to creative writing. The program allows for a core of activity in creative writing and for a thesis which will necessitate specialization in poetry, short fiction, the novel, or work in some other appropriate form. Flexibility is provided in additional areas of required study to allow for a variety of possible emphases.

Since all MFA students participate in the English department's graduate program, they are required to take Eng. 800 (Introduction to Graduate Study in English). Teaching assistants are required to 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 that they have a 3.00 grade point average in their previous work in English courses. 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 in English and American literature and creative writing or in other work acceptable to the English department. 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. Gifted writers may study in the program as special students with no specific degree intentions.

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

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

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 (one short story or 20 pages), poetry (four to six poems), or other appropriate form to the director of creative writing at the time they seek admission.

A student may be admitted into the MFA degree program in creative writing on a conditional basis pending approval of a manuscript demonstrating enough talent to suggest successful completion of the degree. Students may submit such a manuscript prior to beginning their course work or may wait until their first semester. In no case may the manuscript be submitted later than the first semester of course work. Students are notified of the dates by which manuscripts are to be submitted.

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 and the student will establish a Plan of Study that takes 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 MFA degree in creative writing 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 other transfers of credit will not apply; 24 hours may be accepted toward the MFA.

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. Engl. 800 should normally be included in the student's first semester of graduate study.
3. Three hours in Engl. 830 (Graduate Studies in Drama), 832 (Graduate Studies in Fiction), or 834 (Graduate Studies in Poetry). With departmental consent, each course may be repeated for a maximum of six hours credit.
4. Three hours in Eng. 841, 860, or another 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 emphasizing fiction and poetry must take at least three graduate hours of comparative literature, literature in translation, foreign language, literary editing, or an applied course in another art or discipline. 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

All candidates must successfully complete a minimum of 15 elective hours in English courses numbered 800 and above, with the exception of English courses numbered 515 through 527, which may be taken for graduate credit. Candidates may take up to 26 elective hours in English courses numbered 800 and above and in the approved 500-level courses. Other exceptions may be made as approved by the director of creative writing and with the consent of the graduate coordinator. 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 performance set by professors. Elective courses may be taken to strengthen areas of weakness; to pursue historical, technical, or theoretical studies that candidates find useful; or to enrich their degree program appropriately. As many as nine hours of Eng. 880 (Writer’s Tutorial: Fiction), Eng. 881 (Writer’s Tutorial: Poetry), and Eng. 855 (Directed Reading) may be offered in technical studies related to creative writing.

Comprehensive Examination. All candidates are required to pass a written comprehensive examination in the final semester of their course work. This examination is based on a reading list of 40 books chosen by the candidate’s thesis director and the director of creative writing in 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 current 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: Engl. 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). Cross-listed as Thea. 516 and 517. Not repeatable for credit.

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

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

604. Writing Seminar: Fiction. (3). Advanced course primarily for the nontraditional student, both graduate and undergraduate, who desires intensive experience in the conceptualization and writing of prose fiction. Not credited toward the MFA degree. Prerequisites: six hours of undergraduate creative writing or instructor’s consent based on submitted manuscript. Departmental consent required for undergraduate enrollment.

605. Writing Seminar: Poetry. (3). Advanced course primarily for the nontraditional student, both graduate and undergraduate, who desires intensive experience in the conceptualization and writing of poetry. Not credited toward the MFA degree. Prerequisites: six hours of undergraduate creative writing or instructor’s consent based on submitted manuscript. Departmental consent required for undergraduate enrollment.

Courses for Graduate Students Only

801. Creative Writing: Fiction. (3). Advanced work in creative writing. Repeatable for credit. 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).

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


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 principles of English syntax, covering the major facts of English sentence construction and relating them to linguistic theory. Prerequisite: Eng. 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: Eng. 315 or departmental consent.

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

740. Graduate Studies in Linguistics. (3). Cross-listed as Ling. 740. Selected topics in theories 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 of the last 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.


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


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

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

536. Writing by Women. (3). Cross-listed as Wom. S. 536Q. Explores various themes in critical approaches to literary works 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.

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, Fénéon, 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

Distinguished Professor: Daniel F. Merriam (Endowment Association Distinguished Professor of Natural Sciences)

Professors: James N. Gunderson, Salvatore J. Mazzullo, Peter G. Sutterlin

Associate Professors: William E. Fiedler, John C. Gries (Chairperson and graduate adviser)

Emeritus: J. Robert Berg, Paul Tasch

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

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

In general, students entering the program must have the same background required for a WSU Bachelor of Science degree, including science courses in chemistry, physics, and biology; mathematics and statistics; language (English, speech, and a modern foreign language); 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 Ph.D. Also it is important to have a certain level of proficiency in statistics and computer programming (FORTRAN, BASIC, and/or Pascal are recommended.)

Examinations. The student is required to present the thesis proposal—Geol. 890—orally before the faculty to obtain approval before initiating work on the project. The proposal must be presented in enough detail to assure the faculty of the research promise of the topic and that the candidate can complete satisfactorily the project in the allotted time. Upon passing the oral examination, the written proposal is approved. After completing the thesis, the student must give a public oral defense. All graduate students are required to enroll in Geol. 701, a one-hour credit seminar, as an introduction to experimental skills in research.

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 weathering, sedimentation and soil-forming processes; elements of stratigraphy; geologic history of the Pleistocene and Recent Epochs; relative and absolute age dating; mineralogy of clays, carbonates and iron and metalurgical processes of antiquity. Prerequisite: Anthr. 501 or equivalent or instructor's consent.

520. Optical Mineralogy. (3). 1R; 6L. Optical properties of amorphous and crystalline materials in polarized light. Introduces use of the petrographic microscope in the qualitative determination of rock-forming minerals and mineraloids in thin section and immersion oil methods. Prerequisite: Geol. 320.

526. 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 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: Geol. 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; driving forces for plate tectonics; the history of the development of plate tectonic theory. Prerequisites: Geol. 111Q and Math. 112 or 123 or equivalent mathematical background.

544. Structural Geology. (3). 2R; 3L. Stress-strain theory and mechanics of rock deformation, description and genesis of secondary structural features in crustal rocks resulting from diastrophism elements of global tectonics and laboratory solution of geologic problems in three dimensions and time. May require field trips and field problems. Prerequisites: Math. 112 or 123 and Geol. 552 (or taken concurrently).

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 binocular microscopic examination 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. (3). 2R; 3L. Identification and interpretation of the genesis of landforms and a critical examination of processes producing the landforms, including elements of quantitative geomorphology. Requires field trips (instructor's option). Prerequisite: Geol. 111Q.

562. Regional Geology of the United States. (3). A detailed regional survey of the general geology, geomorphology, stratigraphy and structural geology of the United States and their interrelationship in the United States. Requires field trips (instructor's option). Prerequisite: Geol. 560 or instructor's consent.

564. Map and Airphoto Interpretation. (3). 2R; 3L. Elements of map and aerial photograph composition; interpretation and application of maps and photos in geology, geography, urban planning, land-use inventory and engineering works. Introduces remote sensing methods. Requires field trips (instructor's option). Prerequisite: Geol. 111Q, Geol. 201 or equivalent.

570. Biogeology. (3). 2R; 3L. Systematic survey of major fossil biogeological materials, analysis of the origin and evolution of life and paleoecological interpretation of ancient environments and climates. Includes hand lens and binocular microscopic examination of major fossil biogeological materials. Includes application of analyzed fossil data to the solution of problems in paleoecology, paleoecology, paleoecology, and paleoecology. Gives examples from fields of invertebrate, vertebrate, and micropaleontology, and paleontology. 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 systems, taxonomy and paleontological 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. Treatment of numerical data in geology, including univariate and bivariate statistics and elementary programming in FORTRAN. A study of geological data and computer techniques used to analyze them as well as case histories of applications are emphasized. Prerequisites: Geol. 111Q, Stat. 370, CS 200Q and 201 or instructor's permission.

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, preferably including a field-mapping methods course or instructor's consent. Offered jointly with Kansas State University.

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. 552 and Math. 243 or equivalent.

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


680. Economic Geology. (3). 2R; 3L. Occurrence of metallic and nonmetallic economic mineral deposits and the physicochemical principles governing their origin. Also includes a laboratory examination of ores and industrial minerals and elements of mineral beneficition. May require field trips. Prerequisite: Geol. 524.

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. 526 and 552.

684. Subsurface Geology. (3). 2R; 3L. All subsurface methods, including laboratory, logging, testing and treatment, valuation and mapping methods. Requires field trips (instructor's option). Prerequisites: Geol. 682 and Phys. 214Q or equivalent.

690. Special Studies in Geology. (1-3). Systematic study in selected areas of geology. Content differs and is repeatable for credit. Requires laboratory work or field trips (instructor's option). Offered on demand. Prerequisite: instructor's consent.

698. 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, (h) stratigraphy, (i) geophysics and (k) petroleum. Independent study in selected areas of geology with a required written final report. Prerequisite: consent of sponsoring faculty.

701. Seminar. (1). Current topics in geology. Reports on current student and faculty research. Required of all new degree-seeking graduate students.

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

725. Clay Mineralogy. (3). 2R; 3L. An evaluation of compositional and structural elements of clay-mineral families, related phyllosilicates and associated diagenetic authigenic minerals in sedimentary environment. Also laboratory identification and classification of minerals by x-ray powder diffraction and thermal analysis. Prerequisite: 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 analyses of modern and ancient depositional system. May require field trips. Prerequisites: Geol. 526, 552 or equivalent.

727. Carbonate Diagenesis. (3). 2R; 3L. An in-depth analysis of diagenesis of carbonate sediments and rocks. Includes mineralogic stability in natural waters, meteoric, marine and diagenetic environments, 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 726.

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 lithofacies and geochemical sample analysis and evolution of sedimentary facies systems and ancient depositional system. May require field trips. Prerequisites: Geol. 682, 684 or instructor's consent.

750. Workshop in Geology. (1-3). Short-term courses with special focus on geological problems. Prerequisites: graduate standing and/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 instrumentation for acquisition on land and sea; seismic processing; structural and stratigraphic modeling; 3-D seismic exploration; and seismic refraction techniques. Prerequisite: graduate standing 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.

831. Special Studies in Geochemistry. (3). A systematic study in selected areas of geochemistry. Content differs upon demand to provide in-depth analysis in fields of (a) sedimentary carbonate and silicate geochemistry and mineralogy, (b) organic geochemistry, (c) high pressure and temperature thermodynamics of earth materials, (d) exploration geochemistry, (e) diagenetic geochemical cycling, (f) stable isotope geochemistry. May be repeated for credit to cover all six areas listed. May require some laboratory work. Prerequisite: Geol. 720 or instructor's consent.

823. Igneous and Metamorphic Petrology. (3). 6L. Mineral paragenesis, bulk chemical compositions, physical chemical relationships, textures, structures, origins and classifications of igneous and metamorphic rocks. Thin-section studies to facilitate rock identification and the determination of petrogenetic relationships. May require field trips. Prerequisite: Geol. 520.

826. Sedimentary Petrology. (3). 2R; 3L. Detailed study of sedimentary rocks and their origins. Facilitates determinations of mineral compositions, textures, structures, fabrics and petrogenetic relationships by the use of thin sections, peels and geochemical analyses. May require field trips. Prerequisite: 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, travel, lodging and board 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 sources and current research investigations. Required field problem and field trips. Prerequisite: Geol 544 and 552 or instructor’s consent.

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

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

History

Graduate Faculty

Distinguished Professors: H. Craig Miner (Willard W. Garvey Distinguished Professor of Business History), William E. Unruh (Endowment Association Distinguished Research Professor)

Professors: John E. Dreifort (chairperson), James C. Duram, Phillip D. Thomas

Associate Professors: John D. Born, Jr. (graduate coordinator), Donald M. Douglas, Anthony P. Gythiel, Richard A. Todd

Assistant Professors: Rebecca Conard, Helen Hundley, Judith R. Johnson, Willard Klunder

Master of Arts and Areas of Specialization

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

Admission Requirements

Admission to the MA program in history requires completion of an undergraduate major in history, or the equivalent; a grade point average of 2.750 or better, including all undergraduate hours; and a 3.00 grade point average in history. Under unusual circumstances applicants with less than a 3.00 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. 727, Readings in History</td>
<td>3</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>6</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>3</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>6</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 36 credit hours. Students must satisfy the foreign language requirement and pass written examinations in three comprehensive fields. One of these fields must be in American history.

Plan 2, Nonthesis Program. In Plan 2 students must complete a minimum of 36 hours, including Hist. 725, which must be taken during the first year of enrollment. Nonthesis students must take 21 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>
</tbody>
</table>

The remaining nine hours must be taken in history courses numbered 500 or above.

Students are encouraged to take at least three hours in an outside discipline such as anthropology, geography, business, performing arts, or creative writing.

Students must satisfy the foreign language requirement and pass an oral examination in defense of the thesis. A written exami-
nation must precede the oral examination.

Comprehensive Fields. Fields of study included in the comprehensive examinations for the MA are:

- Ancient Greece and Rome
- Early and late Middle Ages
- Early Modern Europe to 1815
- Modern Europe since 1789
- American Colonial and Revolutionary Period

United States to 1865

United States since 1865

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.


525. 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.

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). Looks at the interaction of human activity with the physical environment in North America from prehistoric times to the end of the Pocahontas War, 560: the 17th century and the Hellenistic period.

532. The American City: from Village to Metropolis. (3). A study of urbanization and urban life from colonial times to the present, with particular attention to political development, urban architecture, ethnic assimilation, emergence of the suburbs, technological 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, with particular attention to political development, urban architecture, ethnic assimilation, emergence of the suburbs, technological 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.

535Q. 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-White Relations since the early 17th 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 Versailles to the rise of the Third Reich. Examines the establishment and collapse of the Weimar Republic.

545Q. Neither War Nor Peace: The World Since 1945. (3). Division A course/elective.

553. History of Mexico. (3). Pre-Columbian Mesoamerica; the Spanish conquest and the colonial period; the independence movement; Juarez, the Reform and the French Intervention; the Porfirato; 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.

559Q & 560. Greek History. (3 & 3). 559Q: Division A course/elective. The classical world from prehistoric times to the Persian Wars, 560: the 6th century and the Hellenistic period.


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, 1815-1914. (3).

582. Europe, 1914-1914. (3).


588. History of Early Russia. (3). Covers the social, political, and cultural history of Kievan and Muscovite Russia.

591. Imperial History. (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 dispossessed in Soviet society, the press, literature and art, health care, and prospects for the country's future.

613. 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.

615. Hitler and the Third Reich. (3). The establishment and collapse of the Weimar Republic,
the rise and fall of Hitler’s Third Reich, the divided Germany of the present and the role of each in world affairs, 1914 to the present.

616. Germans and Jews. (3). The history of antisemitism in central Europe, 19th and 20th centuries.

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.

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

629. 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 support and corporate history. Students learn the philosophies, techniques and practices that comprise the field and ways these areas interact with their academic training. Prerequisite: graduate standing or instructor’s consent.

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. Student learn to discern various components of historical texts to use in the design of interpretation materials on their own. Prerequisite: Hist 701 or instructor’s consent.

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.

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

732. Seminar in European 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. Prerequisite: 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 general survey of world geography, including an analysis of the physical, political, economic, historical and human geography of the major world regions.

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.

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

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 upon demand and is repeatable for credit when content differs. May require field trips. Prerequisite: instructor’s consent.

**Course for Graduate Students Only**

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

**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


between languages and reconstructing protolanguages. Includes a survey of the major language families of the world and typological comparisons of languages and the problem of language universals. Prerequisite: Ling. 315.

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


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

Associate Professors: Prem N. Bajaj, Stephen W. Brady, Gary D. Crown, Peter Kuchment, Kirk E. Lancaster, Kenneth G. Miller (graduate coordinator), Hari Mukerjee, Phillip E. Parker, William H. Richardson, Ziqi Sun, Robert C. Wherrett

Assistant Professors: Shahar Boneh, Thomas Delillo, Lop-Hing Ho, Gonzalo Mendieta, Han-Kun Wang

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 major 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 a nonthesis 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.

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

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

Course Requirements: A total of at least 84 hours of graduate credit is required. Engineering Mathematics I and II and mathematics or statistics courses numbered below 700 may not be included. At least 36 hours must be in mathematics and statistics courses numbered above 800 (exclusive of PhD Dissertation). 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 either in two foreign languages or in one foreign language and one high level computer language. The foreign languages are French, German, and Russian. The lan-
guage 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. (5). A study of topics necessary to an understanding of the elementary school curriculum, such as set theory, real numbers and geometry. Not for major or minor credit. Prerequisite: Elementary education major and Math. 111 or equivalent 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 or corequisite: 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. 413 and 511 with 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 a 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 periods in which they arose. Requires mathematical skills. Prerequisite: 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. 544 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. 544 and 415 with C or better in each.

550. Ordinary Differential Equations. (3). Includes separation of variables, integrating factors, variation of parameters, undetermined coefficients, LaPlace transform and power series substitution. Credit not allowed in both Math. 550 and 555. Prerequisite: Math. 344 with a grade of C or better.

551. Numerical Methods. (3). Approximating roots of equations, interpolation and approximation, numerical differentiation and integration and the numerical solution of first order ordinary differential equations. Some computer use. Prerequisite: Math. 544 with a grade of C or better and a knowledge of FORTRAN, or departmental consent.

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

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. 344 with grade of C or better.

558. 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.

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

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

640. Advanced Calculus II. (3). An examination of the calculus of functions of several variables and line and surface integrals. Prerequisites: Math. 511 and 547 with a grade of C or better.

657. Optimization Theory. (3). Introduces selected topics in linear and nonlinear optimization. Develops the revised simplex method along with a careful treatment of duality. Then extends the theory to solve parametric, integer and mixed integer linear programs. Prerequisite: Math. 511 with C or better.

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

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


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

725. Topology I. (3). Studies the results of point set and algebraic topology. Prerequisite: Math. 547 with C or better or departmental consent.

743. Real Analysis I. (3). Includes a study of the foundations of analysis and the fundamental results of the subject. Prerequisite: Math. 640 with C or better or departmental consent.

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. Prerequisite: Math. 511, 547 and 551 with C or better in each, or departmental consent.

733. Ordinary Differential Equations. (3). Covers existence, uniqueness, stability and other qualitative theorems of ordinary differential equations. Prerequisite: Math. 545 or 547 with C or better or departmental consent.

785. 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. Engineering Mathematics I. (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. No credit for this course toward a graduate degree in mathematics. Prerequisite: Math. 500 or 555 with C or better.

786. Engineering Mathematics II. (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 with grade of C or better.

Courses for Graduate Students Only

813. Abstract Algebra II. (3). A continuation of Math. 713. Prerequisite: Math. 713 or equivalent.

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. (3-3). Advanced topics in mathematics of interest to engineering students, including tensor analysis, calculus of variations and partial differential equations. Not applicable toward the MS in mathematics.

859. Selected Topics in Applied Mathematics. (2-3). Repeatable with departmental consent.

880. Proseminar. (1). Oral presentation of research in areas of interest to the students. Prerequisite: major standing.

881. Individual Reading. (1-5). Prerequisite: departmental consent. Repeatable up to a maximum of six hours with departmental consent.

885. Thesis. (1-4). May be repeated to a maximum of six hours credit. Prerequisite: departmental consent.


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. (2-3). Topics of current interest in applied mathematics. Repeatable for credit with departmental consent. Prerequisite: instructor's consent.

981. Advanced Independent Study in Applied Mathematics. (1-3). Arranged individual directed study in an area of applied mathematics. Repeatable to a maximum of six hours. Prerequisite: must have passed the PhD qualifying exam and instructor's consent.

985. PhD Dissertation. (1-9). Repeatable to a maximum of 24 hours. Prerequisite: 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, cluster and systematic sampling, along with selection of sample size, ratio, estimation and costs. Applications studied include problems from the social and natural sciences, business and other disciplines. Prerequisite: any elementary course in statistics, such as Stat. 370, Soc. 501 or 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.

761. Probability. (3). A study of axioms of probability, discrete and continuous random variables, expectation, examples of distribution functions, moment generating functions and sequences of random variables. Prerequisite: Math. 344 with a grade of C or better.

762. Applied Stochastic Processes. (3). Studies random variables, expectation, limit theorems, Markov chains and stochastic processes. Prerequisite: Stat. 761 or 771 with C or better or departmental consent.

763. Applied Regression Analysis. (3). Studies linear, polynomial and multiple regression. Includes applications to business and economics, behavioral and biological sciences, and engineering. Uses computer packages for doing problems. Prerequisite: Stat. 571 and Math. 344 and 511 with C or better in each or departmental consent.

764. Analysis of Variance. (3). An introduction to experimental design and analysis of data under linear statistical models. Studies single-factor designs, factorial experiments with more than one factor, analysis of covariance, randomized block designs, nested designs and Latin square designs. Uses computer packages for doing problems. Prerequisites: Stat. 571 and Math. 344 and 511 with C or better in each or departmental consent.

771-772. Theory of Statistics I and II. (3-3). An examination of stochastic dependence distributions of functions of random variables limiting distributions, order statistics, theory of statistical inference, nonparametric tests and analysis of variance and covariance. Prerequisite: Math. 545 or 547 with grade of C or better or departmental consent.

773. 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. 651 and 652 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. 651 or departmental consent.

776. Applied Statistical Methods II. (3). Covers selected topics from multivariate analysis including statistical theory associated with the multivariate normal, Wishart and other related distributions, partial and multiple correlation, principal component analysis, factor analysis, classification and discriminant analysis, cluster analysis, James-Stein estimates, multivariate probability inequalities, majorization and Schur functions. Prerequisite: Stat. 652 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 individually. Direct study in an area of probability or statistics. Repeatable to a maximum of 6 hours. Prerequisites: must have passed the PhD qualifying exam and instructor's consent.

986. PhD Dissertation. (1-9). Repeatable to a maximum of 24 hours. Prerequisite: must have passed the PhD preliminary exam.

Minority Studies
Graduate Faculty
Assistant Professor: Anna M. Chandler (chairperson)

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 General Programs—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: Min. St. 100Q, Geron. 100, Soc. 111Q or instructor's consent.

540. Advanced Cross-Cultural Communications. (3). An advanced study on special topics in human relations. Prerequisite: Min. St. 380 or concurrent enrollment.

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

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

725. Concepts of Cross-Cultural Communica-
750. Workshop. (1-4). Focuses on the nature and scope of minority studies. Emphasizes the unique nature of the experiences of minority groups in this country.

Modern and Classical Languages and Literatures
Graduate Faculty
Professors: Pedro Bravo-Elizondo, Dieter Saalmann
Associate Professors: Ginette Adamson Wilson Baldridge, John Koppenhaver (chairperson), Enicce Myers (graduate coordinator), Gisela Ritchie, Michael Vincent
Assistant Professors: Carl Adamson, Judy Berry-Bravo, Wilma Detjens, Patrick E. Kehoe, Roxana Recio, Enrique Rodrigo, Brigitte Roussel, Gary Toops, Servanne Woodward

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. Fren. 300 is a prerequisite for all upper-division literature and civilization courses, unless otherwise indicated. All literature courses, including Fren. 223 and 300, may fulfill the general education literature requirement.


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, (k) conversation and (m) phonetics. Repeatable for credit. Prerequisite: departmental consent.

525. Advanced Conversation. Designed to increase proficiency in spoken French. Assignments include oral reports, dialogs, and work in the language laboratory. Prerequisite: Fren.

227 and either 220 or 223, or departmental consent.

526. Advanced Composition and Grammar. Emphasizes theme writing, original compositions and detailed study of modern French grammar. Prerequisite: Fren. 220 or departmental consent.

540Q. French Literature in English Translation. División 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. División 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. 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.

552. Contemporary French Civilization. Emphasizes the major events, themes, ideas, trends and movements in French civilization since the Revolution. Course is interdisciplinary in nature and is designed to complement French language and literature courses. Class work and readings are in French. Prerequisite/corequisite: Fren. 300.

623. Seminar in French. Seminar in French language, literature or civilization. Prerequisite: Fren. 300. Repeatable for credit.

630. Medieval and Renaissance French Literature. Prerequisite: Fren. 300.

631. 17th Century French Literature. Prerequisite: Fren. 300.

632. 18th Century French Literature. Prerequisite: Fren. 300.

633. 19th Century French Literature. Prerequisite: Fren. 300.

634. Contemporary French Literature. Prerequisite: Fren. 300.

635. Introduction to Romance Language Linguistics. 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.

750. Workshop in French. (2-4). Repeatable for credit.

Course for Graduate Students Only

815. Special Studies in French. Prerequisite: departmental consent. Repeatable for credit.

German
Although a complete graduate program is not available currently in German, the following courses may apply toward a master's degree if approved in advance of enrollment by the student's 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

524. Advanced Conversation and Composition. Prerequisites: Germ. 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 I: from the medieval period through the Age of Goethe; (c) survey II: 19th century to 1945; (d) contemporary literature: the literature of both Germany and the literatures of the United States. Emphasizes the major events, themes, ideas, trends and movements in German civilization since the Revolution. Course is interdisciplinary in nature and is designed to complement German language and literature courses. Class work and readings are in German. Prerequisite/corequisite: Fren. 300.

750. Workshop in German. (2-4). Repeatable once for credit.

Course for Graduate Students Only

815. Special Studies in German. Prerequisites: Germ. 324 or instructor's consent. May be repeated for credit when the topic changes. Prerequisite: 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. Special Studies. (1-4). Topic announced by instructor. Repeatable for credit. Prerequisite: Greek 224 or instructor's consent.

531. Advanced Greek. (3). Sophocles and Euripides. Prerequisite: Greek 224.

532. Advanced Greek. (3). Thucydides. Prerequisite: Greek 531.

Latin
Although a complete graduate program is not available currently in Latin, the following courses may apply toward a master's degree.
Courses for Graduate/Undergraduate Credit

Latin 224 or departmental consent is the prerequisite for all upper-division courses.

541. Roman Lyric Poetry. (3). The lyric poems of Catullus and Horace emphasizing imagery, symbolism, structure, diction and meter.

542. Vergil’s Aeneid. (3). Selected books of the Aeneid in the original and the rest in translation. Studies imagery, symbolism, structure, meter and diction. Gives consideration to the place of the Aeneid in the Augustan Rome and in the epic tradition.

543. Roman Drama. (3). A study of Roman comedy and tragedy, their Greek background and their influence on European literature. Includes selected plays of Plautus, Terence and Seneca, some in the original and some in translation.

545. The Roman Novel. (3). Reading of the Satyricon of Petronius and the Golden Ass of Apuleius. The portions that are not read in Latin are read in English. Gives consideration to the development of the novel from its Greek beginnings up to the time of Apuleius and beyond.

546. Advanced Latin. (3). Directed reading of Latin. Reading may be combined with Latin prose composition at the option of the students. Repeatable for credit when content varies.


652. Cicero. (3). The orations, letters and essays of Cicero. Concentrates on Cicero as the master of Latin prose and as one of the most important political figures of the fall of the Roman Republic.

653. Lucretius and Epicureanism. (3). Reading of Lucretius’ De Rerum Natura and study of Epicureanism, the atomic theory and Democritean materialism. Gives consideration to the place of Lucretius in Latin poetry.

750. Workshop in Latin. (2-4). Repeatable for credit.

Russian

Although a complete graduate program is not available currently in Russian, the following courses may apply toward a master’s degree.

Courses for Graduate/Undergraduate Credit

505. Russian Phonology. (2). Cross-listed as Ling. 505. Corrective pronunciation and auditory perception for non-native speakers of Russian. Includes articulatory phonetics, phonemics, and morphophonemics, as well as the study and production of intonation contours. (intonacionnye konstruktsii).

515. Special Studies. (1-3). Advanced reading and translation in Russian social sciences, literature, and civilization. Repeatable for credit.

Prerequisite: departmental consent.

540Q. Russian Literature in English Translation. (3). Consideration of the works of one or two major authors, a literary movement, trend, or specific genre. No knowledge of Russian is necessary, although some is desirable. Repeatable once for credit. Prerequisite: departmental consent.

Spanish

509. 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, 831, 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 survey courses—531, 532, 620, 621—if their equivalents were not taken as undergraduate courses.

A candidate for a degree must pass Span. 526 or an equivalent course with a 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) the 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.

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 and legal 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.


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.

627. Latin-American Civilization. (3). Intensive study of Latin-American culture, including the historical and geographical factors of its development and its contributions to world civilization. Prerequisite or corequisite: Span. 300 or departmental consent.

628. Contemporary Latin-American Theater. (3). A study of contemporary theater from 1900 to present. Prerequisite: Span. 300 or departmental consent.

629. Latin-American Short Story. (3). Study of the main writers in contemporary Latin-American literature. Prerequisite: Span. 300 or departmental consent.

630. Latin-American Short Story. (3). Study of the main writers in contemporary Latin-American literature. 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.

632. Seminar in Latin-American Literature. (3). (a) colonial period, (b) contemporary novel, (c) short story, (d) poetry, (e) modernism, (f) essay, (g) theater, (h) Latin-American literature.

Although there is no graduate degree in philosophy, the following courses are available for graduate credit.

Courses for Graduate/Undergraduate Credit

518. Recent British-American Philosophy. (3). Examination of philosophical ideas and movements in recent British and American philosophy. Discusses movements such as logical positivism, pragmatism, ordinary language philosophy and analytic philosophy. Readings are selected from figures such as Russell, Wittgenstein, Pierce, Dewey and Quine.

519. Empiricism. (3). A study of the philosophical views that emphasize sensory experience rather than reasoning as a source of knowledge with particular attention to the philosophies of Hobbes, Locke, Berkeley, Hume and Mill.

540. Theory of Knowledge. (3). A critical examination of the nature of knowledge and of the philosophical problems concerning skepticism and the nature of self, material objects, experience and reality. The course involves reading and discussion of major philosophical works.

546. 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 philosophies 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 God, the problem of mind-body interaction, the nature of truth, the relation of invariance and processes, the existence of universal standards of thought and conduct, the problem of knowledge, skepticism, the nature of language and the character of philosophical inquiry.

550. Metaphysics. (3). An exploration of some basic topics in the theory of reality. Includes such notions as space, time, substance, causality, particulars, universals, appearance, essence and being. Prerequisite: one course in philosophy.

555. Philosophy of the Social Sciences. (3). Studies such topics as the relations of social science with natural science and philosophy, methodology 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 exploration 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.

585. Studies in a Major. (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.

590. Special Studies. (3). Topic for study announced by instructor. Repeatable for credit. Prerequisite: instructor’s consent.

674. Artificial Intelligence and Philosophy. (3). Cross-listed as CS 674. Transfer of ideas between artificial intelligence and philosophy: concept and techniques of artificial intelligence and their application in philosophy (search, heuristic, problem solving, knowledge representation, learning, discovering); sources of insight for artificial intelligence in different branches of philosophy. The analogy between minds and computers “cognition is computation, and the mind is a computer,” is contrasted with “there are mental features not accessible to computation.” Discusses the relevance of Godel’s theorem and of other results in the domain of computability in this context. Prerequisites: at least one 300-level course in computer science or philosophy, Math 243 and 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


826. Grammar and Stylistics. (3). Intensive study of advanced grammar and stylistic usage.

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, (l) literature, (m) 20th-century theatre, and (n) contemporary Spanish novel.
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), Pawan K. Kabol, Gerald D. Loper, Jr. (associate dean, Fairmount College of Liberal Arts and Sciences), Joseph L. Strecker, Syed M. Taher (graduate coordinator)
Assistant Professors: Elizabeth Behrman, Donald L. Foster
Emeritus: Henry Unruh, Jr.

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 six of the required hours chosen from Chem. 611, 725, 741, 742, 745, 746, 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). 3L. A series of courses covering basic physical concepts which provide physical science background for teachers. Repeatable for a maximum of 5 hours. Prerequisite: in-service or pre-service teacher.

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). 4L. 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 stressing the features of atomic nuclear and solid state physics that require modifications of classical physics for their explanation. Prerequisite: Phys. 514Q 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. 514Q 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 for 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. Prerequisites: 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.


618. Computational Physics Laboratory. (3). 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. 514Q or 314Q and Math. 344 with grades of C or better.

625. Electronics. (2). 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. 514Q 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.

671. Thermodynamics. (3). The laws of thermodynamics, distribution functions, Boltzmann equation, transport phenomena, fluctuations, and an introduction to statistical mechanics. Prerequisites: Phys. 514Q 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.
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 advisor'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; A 806 or 833. They must complete the thesis, intern, or nonthesis option. Courses should constitute a structured area, and other courses may be selected with the advisor'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 Pol. S. 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 Ger. 800 are required. Students must choose two of the following: Ger. 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 of 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.

506. Politics of Aging. (3). Cross-listed as Geron. 506. Focuses on the role of the elderly as competitors in the political arena. Examines the elderly strengths and weaknesses, course analyzes the effects of aging on political behavior, strategies of the aging—both individual and collective and the responses of the political system.

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 about the future development of communism in China. Includes Chinese communism and the ideological heritage; political culture; political leadership; leadership succession; political participation; the Chinese Communist Party; 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 current 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 on 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 the legislative branch of government especially the U.S. Supreme Court—in the American political system. Emphasizes the separation of powers, the federalism, the tax power and the commerce clause.

552Q. Civil Liberties. (3). Division B course/elective. An analysis of the role of the legislative branch of government especially 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 relationship 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 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 relationships between administrative institutions and 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 those philosophical and methodological issues that distinguish political science from other social sciences. Exposes students to recent works of methodological importance 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 relation to 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). Intensive study 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 along the following: labor-man-
Admission Requirements

For all students: Applications for admission should be filed with the dean of the Graduate School by March 1 for enrollment the following fall. In addition to the usual application information, the following are required: (1) three letters of reference from people acquainted with the applicant's academic background and potential and (2) a brief autobiographical statement describing particular interests, experiences, and goals related to academic and professional work in psychology.

For doctoral students: In addition to the above, doctoral applicants must submit scores on the Graduate Record Exam (verbal, quantitative, and advanced).

Applicants are evaluated with respect to (1) undergraduate grade point average, (2) amount, type, and scope of undergraduate preparation, and (3) reference letters. Applicants are informed of admission or rejection by approximately April 1. Applications received after 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. In addition, depending upon the intended area of study, the following courses are required:

Community/Clinical: Applicants for this program are expected to have interdisciplinary strengths in the social sciences, humanities, and related fields. In addition, students must have Psychology of Learning and one of the following: Psychology of Motivation, Physiological Psychology, Psychology of Consciousness, Cognitive Psychology, Comparative Psychology, and Psychology of Perception.

Students also must have Abnormal Psychology and two of the following: Social Psychology, Child Psychology, Developmental Psychology, Psychology of Personality, Community Psychology, and Psychology of Aging.

General-Experimental: Three of the following—Physiological Psychology, Psychology of Learning, Comparative Psychology, Psychology of Motivation, and Psychology of Perception.

Human Factors: Applicants for this program are expected to have interdisciplinary strengths in the sciences, mathematics, computer technology, and related fields. In addition, students must have three of the following: Psychology of Learning, Psychology of Motivation, Physiological Psychology, Comparative Psychology, Cognitive Psychology, or Psychology of Perception.

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 master's and doctoral degree programs. The psychology department expects all degree-bound students to make satisfactory progress toward the completion of their degree programs.

Community/Clinical: The following courses are required for each student enrolled in the community/clinical master's degree program: Univariate Research Design, Seminar in Community-Clinical Psychology I and II, Practicum in Community-Clinical Psychology, and either Multivariate Research Design or Research in Community Psychology. Additionally, each student must take either Seminar in Cognitive Behavioral Assessment and Seminar in Behavior Therapy, or Seminar in Prevention and Research in Community Psychology. Each student also must take 6-8 hours of electives.

All community/clinical master's degree students are required to complete a thesis with enrollments in Psy. 875 and 876. In addition to regular course examinations, all students must pass an oral examination based on their thesis and program area. The thesis will ordinarily be a major research project which must be preceded by approval of a formal written proposal by the student's thesis committee.

General-Experimental: Each student must take four of the following—Advanced Social Psychology, Seminar in Behavioral Development, Seminar in Learning, Seminar in Comparative Psychology, Seminar in Motivation and Emotion, and Seminar in Perception. In addition, the student must take 12 hours of electives determined in consultation with an adviser. The elective hours may be used to produce a subspecialty tailored to the student's needs and interests. Those students interested in the Human Factors Psychology.
Psychology subspecialty will take as their elective hours Computer Applications to the Behavioral Sciences, Aerospace Psychology, R&D Procedures and Practices in Human Factors, and Human Factors in Engineering.

Human Factors: The following courses are required for each student enrolled in the human factors doctoral degree program: Biological Foundations of Behavior, Cognitive/Affective Foundations of Behavior, Personality/Individual Differences, Social/Developmental Foundations of Behavior, Univariate Research Design, and Multivariate Research Design. Each student must also take Seminar in Sensory Processes, Seminar in Motor Processes, Measurement and Management of Information in Human Performance, Seminar in Human Factors Psychology, Aerospace Psychology, and Research and Development Methods in Applied Settings. Each student must take 21 hours of elective courses, 12 of which will be outside of the Psychology Department, selected in consultation with his or her adviser. Finally, each student must enroll in one hour of Research Seminar each semester for a total of six credit hours.

Each student must complete a predoctoral research program before admission to candidacy. Students will take a comprehensive examination prior to acceptance for doctoral candidacy and the onset of data collection for the dissertation. During each semester of supervised work on the dissertation, each student will be enrolled in Psy. 900. Each student will complete a Research Internship of three hours per semester over a period of two semesters for a total of six hours.

Courses for Graduate/Undergraduate Credit

502Q. Comparative Psychology. (3). Division B course/elective. Compares and contrasts psychological and ethological analyses of behavior. Stresses the evolution and development of behavior. Includes a critique of the instinct doctrine and sociobiological interpretations of behavior. Field trips supplement lectures. Prerequisite: one course from Group One.

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.

512. Primatology. (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. 324Q.

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.


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, the role of hormones in behavior and neurochemical correlates of behavior. Prerequisite: Psy. 111Q.

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.

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.

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.

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.

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. Prerequisite: Psy. 111Q and instructor's consent.


546. Practicum in Applied Behavior Analysis and Social Learning. (3) 1R; 4L. Placement in local human services 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.

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.

568. Computer Applications to the Behavioral Sciences. (3). 2R; 2L. Introduces computer applications to the behavioral sciences including 1) techniques of analyzing experimental data, 2) statistical applications, 3) interactive computing, 4) "canned" statistical programs, 5) word processing and 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 naturalistic assumptions and research methods on 20th century psychology. Prerequisites: nine hours of psychology or instructor's consent.

704. Advanced Social Psychology. (3). An intensive review of selected contemporary issues in social psychology. Prerequisite: Psy. 304Q.

728. Seminar in Psychotherapy. (3). Provides an in-depth description and critical analysis of various theories and methods of psychotherapy, an examination of the efficacy of these therapeutic approaches and a survey of common issues in psychotherapy, such as process and outcome, and client and therapist variables in the therapeutic process. Prerequisites: Psy. 111Q and instructor's consent.

748. Research and Development in Applied
Settings. (3). 2R; 2L. An introduction to research and development activities in industry. Lectures cover sources of research ideas, funding sources, use of company resources, technical communications, assembling literature, research design and publishing practices. Lab work involves practice in preparing industry-type proposals and presentations, schedules and budgets and analysis of industry research proposals. Prerequisite: 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.

756. Aerospace Psychology. (3). Exploration of the many roles of scientific psychology in aviation and aerospace science. Surveys the research and literature in areas such as psychophysiological aspects of flight, environmental effects on human performance in aviation, aircraft skill requirements and training, pilot workload, stress control and disruption systems and aviation safety. Prerequisites: 15 hours of psychology or instructor's consent.

Courses for Graduate Students Only

802. 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 knowledge and the application of that knowledge to human psychosocial problems. Prerequisite: instructor's consent.

803. Seminar in Community-Clinical Psychology II. (3). Introduces methods of assessment and intervention used to promote human functioning in the contexts of primary and secondary 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 theoretical and methodological issues of intervention, including psychotherapy, consultation, social action and organizational development. Students apply these theories and methods to selected psychosocial problems. Prerequisite: Psy 802.

804. Seminar in Behavioral Development. (3). A critical analysis of the concept of development and of theories of behavioral development. Begins with a review of the concept of integrative levels and proceeds to a discussion of modern evolutionary thought. Examines the concept of development from psychological, biological and anthropological perspectives. Also critically evaluates various theories of human development. Prerequisite: instructor's consent.


815. Clinical Research and Practice. (3). Gives the student further experience in clinical skills and clinical research. Students are supervised in their clinical work with individual clients seen through the departmental clinic. May be taken for a maximum of six credit hours. Prerequisite: instructor's consent.

821. Biological Foundations of Behavior. (3). Reviews various biological influences on behavior and evolution genetics, biochemistry and physiology. A consideration of the development and anatomy of the nervous system forms the core of the course. The position developed is that behavior depends on biological as well as environmental factors. Prerequisite: instructor's consent.

822. Cognitive Foundations of Behavior. (3). Focuses on human beings as information processing systems. This approach views the individual as an active, constructive and planning person in remembering and organizing new stimuli. Includes knowledge of such areas as psychological assessment, intervention and consultation, program evaluation. Special emphasis on how to use applied research methods to precipitate positive change, community and organizational change and social reform. Prerequisite: instructor's consent.

823. 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.

824. Social and Development Foundations of Behavior. (3). Examines basic assumptions and, themes and methods in social and developmental psychology. Describes and analyzes research concerning the functional significance of social relationships for development and the embeddedness of behavior in social, ecological and cultural contexts, focusing on a number of substantive issues such as person perception and social cognition, affiliation and attachment, socialization and interpersonal interaction, social support and social roles and contexts over the life span. Considers applications of theories and research in social-development psychology to the solution of individual and social problems. Prerequisite: instructor's consent.

825. Seminar in Environmental Psychology. (3). Explores historical, theoretical and empirical bases of environmental psychology. Presents contemporary models of environmental psychology including the ecological, social, community and human factors perspectives along with a historical review of the field. Could include behavior-environment congruence, person-environment fit, social impact assessment, social policy and the prevention of psychosocial problems through environmental intervention. Prerequisite: Psy 824.

826. Seminar in 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.

830. Seminar in Community Psychology. (3). Comprehensive overview of theory, research and practice in the emerging field of community psychology from the perspective of general systems theory. Includes prevention, consultation, community mental health and a community vs. individual perspective to human and social problems. Prerequisite: instructor's consent.

831. Research in Community Psychology. (3). An examination of the perspective of community psychology specifically concerning the applied methods of needs assessment and program evaluation. Special emphasis on how to use applied research methods to precipitate positive change, community and organizational change and social reform. Prerequisite: instructor's consent.

832. Practicum in Community-Clinical Psychology. (3). Provides supervised practice in such areas as psychological assessment, intervention and consultation, program evaluation and development, paraprofessional training and preventive programs in community-clinical agencies and organizations. Repeatable for a maximum of nine credit hours. Prerequisite: instructor's consent.

833. Psychological Service Agencies. (3). An in-depth examination of psychological service agencies with regard to structure, functions, financing, goals, planning, development, evaluation and accountability. Prerequisite: instructor's consent.

834. Seminar in Consultation and Counseling. (3). Examines the theories and techniques of consultation, counseling and interviewing as applied to individuals, organizations and systems. Prerequisite: instructor's consent.

835. Seminar in Prevention. (3). Reviews the historical, theoretical and empirical bases of prevention psychology. Presents contemporary models of prevention psychology including the ecological, social and community mental health perspectives. Could include primary prevention, empowerment, community based prevention, self-help, social policy and the prevention of psychosocial problems through environmental intervention. Prerequisite: instructor's consent.

844. Seminar in Personality and Psychosocial Disorders. (3). Relationship of normal behavior development and maladjustment and also a critical review of theory and research. Prerequisite: instructor's consent.

845. 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. Discuss-
es implications for preventative and clinical interventions. Prerequisite: instructor’s consent.

852. 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.

853. Advanced Research Methods II. (4). 3R; 3L. Continuation of Psy. 852. Statistical techniques emphasized are a continuation of multiple regression, structural analyses including Path Analysis and LISREL, factor analysis, canonical correlation and discriminant analysis. Includes advanced design issues. Students carry out research projects as part of the course requirements. The associated lab provides additional computer skills for access to the mainframe and some basic training in SPSS-X, SAS and BIOMED statistical routines. Prerequisites: Psy. 852 and instructor’s consent.

865. 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.

870. 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.

872. 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. 502Q and instructor’s consent.

873. Seminar in Motivation and Emotion. (3). Intensive study of theory and research in motivational and emotional processes. Prerequisite: instructor’s consent.


883. Seminar in Perception. (3). Intensive study in theory and research in perceptual processes. Prerequisites: Psy. 332, or equivalent, and instructor’s consent.

900. Doctoral Dissertation. (3). Graded S/U only. Repeatable for credit. Prerequisite: admission to candidacy and instructor’s consent.

901. Research Seminar. (1-3). Graded S/U only. Repeatable for credit. Exposes students to research in its varied forms and at its various stages, i.e., its conceptualization, design, execution and presentation. Prerequisite: instructor’s consent.

902. 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.

903. 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 selection might be human factors in the aging population; human factors in airport security and baggage marking; and human factors in third-world industrialization. Prerequisites: completion of 9 hours of Foundations of Psychology doctoral courses; for doctoral students from other disciplines, instructor’s consent after an interview.

904. Seminar in Motor Processes. (3). Focuses on motor processes in human performance. Motor processes, sensory processes, cognitive processes and affective processes comprise the major domains of human factors psychology. Seminar explores the macro-anatomy of human motor performance theories of human control responses; the nature and retention of skilled performance; and constraints on ability and strength which impact on the design of the human-machine interface. Prerequisites: any three of the following foundations courses: Psy. 821, 822, 823, 824 and instructor’s consent.

905. Seminar in Sensory Processes. (3). Focuses on human sensory systems, their roles and functions in the processing of physical stimuli and their conversion to information; and explores the application of sensory behavior in human factors psychology. After review of the anatomy and neurophysiology of sensory processes, emphasis on contemporary research and literature in human sensory behavior. Prerequisite: instructor’s consent.

968. Seminar in Software Psychology. (3). Intensive study of psychological and methods of Engineering Psychology (human factors) applies to the design and evaluation of computer systems. 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.

986. 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. 822; and instructor’s consent after interview for doctoral students from other disciplines.

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 formally offered by the department. Repeatable for credit. Prerequisite: departmental consent.

Sociology/Social Work
Graduate Faculty
Professor: John J. Hartman (chairperson and graduate coordinator)
Associate Professors: Nancy Brooks, William C. Hays (gerontology)

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. 800, Research Methods in Sociology, and 845, Seminar in Sociological Theory, and two 800-level graduate seminars as well as completion of their thesis hours. Sixty percent of the 32 hours must be 700 level or above.

Nonthesis Program. Students in the nonthesis program must take a total of 36 hours. They must take at least 21 hours of courses numbered 800 or above, including Soc. 800, 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, Geron. 800, and three of the gerontology courses listed below.

Nonthesis Program. Students must complete the sociology core, Geron. 800, and four of the gerontology courses listed below.

Sociology Core Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Soc. 510, Introduction to Methods or Soc.</td>
<td>3</td>
<td>Quantitative Research</td>
</tr>
<tr>
<td>(Geron.) 513, Sociology of Aging .......</td>
<td>3</td>
<td>Sociology of Aging</td>
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<tr>
<td>Soc. 800, Research Methods in Sociology</td>
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<tr>
<td>Soc. 845, Seminar in Sociological Theory</td>
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<tr>
<td>Soc. 875-876, Thesis*</td>
<td>3-6</td>
<td></td>
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<tr>
<td>Seminar electives (3 seminars above 800)</td>
<td>9</td>
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Gerontology Courses

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<thead>
<tr>
<th>Course</th>
<th>Hrs</th>
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<tr>
<td>Geron. 800, Seminar I .....................</td>
<td>3</td>
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<tr>
<td>and three of the following courses</td>
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<tr>
<td>Aging</td>
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<tr>
<td>Geron. (Anthro.) 514, Anthropological</td>
<td>3</td>
<td></td>
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<tr>
<td>Perspectives in Aging</td>
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<tr>
<td>Geron. (Biol.) 518Q, Biology of Aging.....</td>
<td>3</td>
<td></td>
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<tr>
<td>Geron. (CESP) 731, Growth and Development:</td>
<td>3</td>
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<tr>
<td>Adults</td>
<td></td>
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<tr>
<td>Geron. (Econ.) 663, Economic</td>
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</tbody>
</table>

Insecurity ...................................... 3
Geron. 801, Field Research in Gerontology | 3   |             |
Total Hours .................................... 36-39

*Thesis must be aging related.

Examinations

Students electing the thesis program in sociology must pass an oral defense of the thesis.

Sociology

Courses for Graduate/Undergraduate Credit

501. Sociological Statistics. (3). Generally offered fall semester only. Application of descriptive and inferential statistical techniques to sociological problems. Includes measures of central tendency, dispersion and association, simple linear regression, hypothesis testing and analysis of variance. Prerequisites: Soc. 111Q and Math. 111 or 311Q or equivalent.

510. Field Research Methods. (3). An examination of various qualitative research tools and techniques used by sociologists. As part of the learning experience students are involved in direct field observation in natural social environments. Prerequisite: Soc. 111Q.

511. Applied Quantitative Research. (3). An examination of the survey as a tool used to address sociological questions. Includes survey design, sampling, data collection techniques and interpretation of results. Students gain experience in designing and administering surveys. Prerequisite: Soc. 212.

513. Sociology of Aging. (3). Cross-listed as Geron. 513. Analysis of the social dimensions of old age, including changing demographic structure 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 men'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.

523. Sociology of Law. (3). The study of law and legal institutions within their social context. Prerequisite: Soc. 111Q.

526. Political Sociology. (3). Social basis and consequences of political behavior. Also includes the study of power and authority problems in the development and maintenance of viable democratic political structures and bureaucratic organization and power. Prerequisite: Soc. 111Q.

527. Violence and Social Change. (3). 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 Geron. 537. An eclectic survey of the social aspects of disability showing the impact of social values, institutions and policies upon adults with disabilities. Appropriate for both students of sociology and the service professions. Prerequisite: Soc. 111Q.

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 sociological 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.

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.

645. History of Sociological Theory. (3). Analysis of emergence of sociological theory. Prerequisite: nine hours of sociology.

646. Principles and Concepts of Sociology. (3). Critical evaluation of major principles and concepts, their derivation and relationship to systematic theory. Prerequisite: nine hours of sociology.

651. Directed Research. (3). Gives the student further research skills in an area of special interest. All students are under the direction of a member of the graduate faculty who guides them in developing research skills. Prerequisites: Soc. 510 or 511 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. (1-4). Provides practical experience, under academic supervision, that complements the student’s academic program. Consultation with and approval by an appropriate faculty advisor are necessary. Graded CR/NCR only.

Courses for Graduate Students Only

800. Research Methods in Sociology. (3). The application of research methods to sociological data. Includes research design sampling, data collection techniques, computer based analysis of data, scaling and report writing. Students design their own research projects. Prerequisites: Soc. 510 or 511 and departmental consent.

815. Seminar on the Family. (3). Review of recent research on the family and the theoretical implication 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.

834. Seminar in Urban Sociology. (3). Independent research projects in urban sociology. Prerequisite: departmental consent.

845. 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. 645 or 646 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 but 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). Focuses on the teaching of sociology. Emphasis on teaching techniques, course organization and evaluation. 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).

Social Work

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 and Services I. (3). Descriptive and analytical approach to the social welfare system, emphasizing its historical, structural and value bases. Includes alternative program strategies of meeting individual and group needs. Prerequisites: Soc. 600Q and Soc. 212.

502. Strategies and Techniques in Interven­ tive Skills. (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 experimental learning. Required for practice credit to remain open to nonmajors. Prerequisite: Soc. 201 for social work majors, departmental consent for nonmajors.

550. Social Welfare Policy and Services II. (3). Analytical approach to social welfare problems, policies, programs and issues, including an analysis of the influence of values on the formation of social welfare policy. Includes in-depth examination of selected issues in public and voluntary areas and alternative methods of meeting needs. Prerequisite: Soc. Wk. 500.

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 Soci­ ety. (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 these entities to beginning professional social work practice. Prerequisites: Soc. Wk. 200Q and 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 advisor.

570. Internships in Social Work. (3-6). 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.

601. Advanced Social Work Practice. (3). Advanced practice theory emphasizing becoming both knowledgeable and skilled in applying theory to practice. Focuses on developing a clear understanding of concepts, principles, techniques and processes of social work methods 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: Soc. Wk. 502 and departmental consent.

602. Practicum I. (4). Placement in community social welfare agencies for supervised periods of observation and direct service assignments emphasizing performance of basic practice
skills and understanding of the social welfare agency and its role in the community service network. To be taken concurrently with Sc. Wk. 601 except by departmental consent. Prerequisite: 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. Sc. Wk. 604 is to be taken concurrently except by departmental consent. Prerequisite: Sc. Wk. 602.

610. Aging: Personal, Social and Professional Perspectives. (3). Cross-listed as Geron. 610. A realistic look at the comprehensive role of social work practice and the helping professions in work with the aging. Focuses on work with individuals, groups and community organizations. Links social with economic and political factors. Highlights current and future developments in social policy, human service practice and demography as the total life cycle is conceptualized. Prerequisite: 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 (director), Carol Konek, Dorothy C. Miller, Elise Shore (psychology)

Assistant Professors: Deborah Gordon

Students may earn a master's degree in several areas with an emphasis in women's studies. These include curriculum and instruction; counseling, educational, and school psychology; sociology; and cross-cultural communications. Women's studies may be included as one of two or three areas of interest under the MA degree in liberal studies, an individually designed, interdisciplinary graduate program (described in General Programs). 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. Both conventional and newly developed methodologies in women's history research are included.

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. Literacy 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. Prerequisite: Engl. 101, 102, and one course in literature.

536Q. Writing by Women. (3). Cross-listed as Engl. 536Q. 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 3 hours of English literature.

541. Women and Poverty. (3). Addresses the problem of poverty among women in the US. 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 Anthrop. 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 contributions 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. 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 laboratory.
General Programs

Communication—Richard N. Armstrong, coordinator

Liberal Studies—Supervisory Committee, Tina Bennett-Kastor, chairperson and graduate coordinator

Public Administration—Edward Flentje, director; George Platt, graduate coordinator

Communication

Graduate Faculty
Professors: Leroy Clark (chairperson, School of Performing Arts), Vernon A. Keel (director, Elliott School), Bela Kira-Ilyalvi
Associate Professors: Judith Babnich, Joyce P. Cavarozzi, Philip Gaunt
Assistant Professors: Les Anderson, Richard N. Armstrong (graduate coordinator), Lori Bergen, J. David Blatt, Susan Huxman, Sharon Iorio, David Kammerer, Francis L. Kelly, Chris Leland, Keith Williamson

The graduate program in communication at the Wichita State University 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.

Master of Arts in Communication

And Areas of Emphasis

The Master of Arts in Communication (MAC) degree program 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 3.00 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:

Comm. 702, Contemporary Theories of Oral Communication ..............................2
Comm. 801, Introduction to Communication Research ........................................3
Comm. 802, Historical and Qualitative Methodologies in Communication Research ........................................3
Comm. 803, Empirical/Quantitative Methodologies in Communication Research ........................................3
Comm. 865, Organizational Communication ........................................3

MAC students emphasizing the Theatre-Drama area must complete the following courses:

Comm. 801, Introduction to Communication Research ........................................3
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

Other Courses. In addition to the required courses, students in each area of interest, with 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 non-thesis 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 MEd program provides extensive study in secondary education with content emphasis in speech communication, including rhetoric and public address, theatre, broadcasting, and speech education. The course of study is a 36-hour, non-thesis program, and the Plan of Study includes 18 prescribed hours in secondary education. The remaining hours may be taken in the communication arts.

Courses
For course listings, see Communication, Elliott School of, in Fairmount College of Liberal Arts and Sciences.

Liberal Studies
Graduate Coordinator: Tina Bennett-Kastor
Supervisory Committee: Collette Burke (geology), John Gries (geology), Judith Johnson (history), James Snyder (psychology)

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 their own program of study to answer their particular needs and interests.

Admission Requirements
Applicants should have a bachelor's degree from an accredited institution and, generally, have a grade point average of 3.000 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.

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.

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

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 36 semester hours of credit from at least three disciplines
2. No more than 12 semester hours from any one department
3. A maximum of 12 hours in a college other than liberal arts and sciences
4. At least 22 of the 36 total hours in courses numbered 700 or above
5. Three of the 36 hours must be taken in LAS-I 800, Research Goals and Strategies, which should be taken within the first 12 hours of course work in the MALS program.

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, a practicum or internship for either three or six hours' credit, or a comprehensive examination covering all course work and related activities and carrying no credit hours. 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.

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

885. Terminal Project. (2-6) 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 be enrolled in this course until the project is completed and all project requirements have been satisfied.

Public Administration
Graduate Faculty
Regents Professor of Urban Affairs: Glenn W. Fisher
Professor: Clark D. Ahlberg, H. Edward Flentje, Joe P. Piciotte (director, Hugo Wall Center for Urban Studies), Samuel J. Yeager
Associate Professors: George M. Platt (director of graduate studies), Nancy McCarthy Snyder
Assistant Professor: John Wong

Master of Public Administration
The Master of Public Administration (MPA) degree at The Wichita State University is designed to prepare students for professional careers in public and quasi-public organizations. The program is interdisciplinary in nature and is structured to respond to the unique clientele of an urban university.

The philosophy underlying the MPA degree is that interdisciplinary approaches are essential for understanding the changing urban environment and for effective performance in management and staff positions in government. In their degree programs students have the opportunity for exposure to the methods and perspectives of the social and behavioral sciences, engineering and technology, and the humanities. The link between these disciplines and the problems of public management are emphasized through methods which include use of practitioners in the classroom, policy relevant research assignments, public affairs seminars led by successful professionals, and internships. Most faculty contributing to the degree program have significant professional experience in state and local government and are involved in research relevant to state and local governments and nonprofit organizations in Kansas.

Graduates of the program have gone on to hold positions ranging from city managers to budget analysts in state government to management analysts in major hospitals. Although the majority are employed in the public sector, some graduates of the program hold positions in the private sector, while still others have pursued additional study in law, doctoral education, or other specializations.

Admissions Requirements
Applicants for the degree program must meet the requirements for admission to the Graduate School. In addition, students must have completed introductory college professional courses in the areas of microeconomics, public administration, and statistics. Students may be admitted to the program with deficiencies in background areas, but the deficiencies must be overcome within the first academic year. Courses taken to fulfill deficiencies will not count toward the 39-hour degree requirement.

International students must attain a minimum score of 600 on the Test of English as a Foreign Language (TOEFL).

Degree Requirements
The Master of Public Administration degree consists of 39 graduate hours, taken over at least three semesters of study. The degree is made up of three elements—the core curriculum, and area of specialization, and a completion option.

Core Curriculum. All degree candidates are required to complete the seven core courses:
- P. Adm. 625, Computer Applications for Public Policy. Introduces the student to microcomputer uses in the public sector.
- P. Adm. 702, Research Methods in Public Administration. An examination of research tools used to analyze public policy and administrative performance.
- P. Adm. 710, Scope of Public Administration. An examination of the field of public administration and issues shaping the future of the discipline.
- P. Adm. 730, Decision Making. A study of the relationship of political considerations to administrative decision making.
- P. Adm. 770, Environment of Public Administration. Examines the polit
and economic environment of public administration.


Areas of Specialization. The degree allows students to develop a specialization in one of three specialization options: management, financial management, or policy analysis.

Completion Options. Students may complete the degree program in one of two ways:

Applied Research Option—Students may choose the applied research option for completion of the degree and earn three hours credit. In this option the student conceptualizes and researches a policy relevant question and delivers a finished product with policy application. Students must successfully defend the paper before a faculty committee.

Thesis Option—This option is designed for students planning graduate work beyond the MPA degree or careers in research. Six credit hours may be earned in writing an acceptable thesis. Candidates must pass an oral defense of the thesis.

Specializations

Courses required for the specializations are as follows:

Management

Required Courses

P. Adm. 755R, State and Local Government Administration and at least one of the following:

P. Adm. 761, State and Local Financial Systems

Elective Courses

Minimum of two of the following courses or other related courses approved by adviser and graduate coordinator:

Pol. S. 821, Budgetary Process

P. Adm. 755J, Local Government Law

Mgmt 665, Organization Development

Mgmt 667, Organization Structure and Design

Mgmt 860, Management of Organizations

Mgmt 862, Organizational Behavior

Mgmt 865, Communication

HRM 666, Selection, Training, and Placement

HRM 867, Seminar in Personnel Administration

HRM 868, Wage and Salary Administration

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 graduate coordinator:

P. Adm. 740, Policy Evaluation

P. Adm. 755J, Local Government Law

Acct. 801, Managerial Accounting

Econ. 602, Mathematical Methods in Economics

Econ. 653, Public Finance

Econ. 688, Urban Economics

Fin. 640, Financial Management

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 graduate coordinator:

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

Psy. 852, Univariate Research Design

Psy. 853, Multivariate Research Design

Econ. 631, Intermediate Business Statistics

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 Hugo Wall Center for Urban Studies has an excellent placement record.

Financial Assistance

The Board of Trustees of The Wichita State University, through the Graduate School and the Hugo Wall Center for Urban Studies, 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 center's teaching, research, and public service activities.

The Hugo Wall Center for Urban Studies 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 Center 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. (3). Familiarizes 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.

700. Urban Affairs. (3). A 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. (3). Acquaints students with applied public policy research methods. Emphasizes locating, collecting, appraising and utilizing both primary and secondary sources of data of the type used in policy, planning and administrative research. Students must complete several short research projects. Prerequisite: enrollment in the MPA program or instructor's consent.

710. Scope of Public Administration. (3). Cross-listed as Pol. S. 710. Reviews the scope of the field of public administration including a survey of key concepts and schools of thought underlying the field and identification of issues shaping the future development of the field.

720. State and Local Administrative Systems. (3). Examines the administrative systems characteristic of state and local governments. Managerial functions of agency heads are examined both in theory and with relation to the political framework within which administrators work. Prerequisite: instructor's consent.

730. Decision Making. (3). Cross-listed as Mgmt. 680. Includes theories of decision-making ability under varying degrees of uncertainty. Includes theories of decision making, environment for stimulating creativity, cognitive
inhibitors to problem identification, alternative evaluation techniques, decision implementation and utilization of quantitative tools in decision making. Prerequisite: instructor's consent.

740. Policy Evaluation. (3). Assists public sector monitoring and control of program 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. (3). Provides students with an opportunity to engage 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. (3). Deals with selected aspects of state and local government financial management. Introduction to fund accounting, costing of government services, capital budgeting and asset management.

770. The Environment of Public Administration. (3). Surveys the political and economic institutions that underlie the practice of public administration. Includes political systems, constitutional authority, legislative process, inter-governmental 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. (3-3). Prerequisite: adviser's consent.

890. Internship. (3). Integrates academic pursuits and practical experience. Students admitted to the internship are assigned to work in an approved government, community or private organization for a period of three to 12 months.

898. Applied Research Paper. (3). The applied research paper under the direction of a faculty committee develops and measures competency in the areas of writing research and policy conceptualization. Each paper addresses a policy relevant question and the delivery of a finished product with policy application. To be taken in the last semester of course work.
Graduate Faculty 1992-93

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 Engineering (1967). BS, Iowa State University, 1957; ME, University of Montana, 1960; EdD, Arizona State University, 1967.

Alley, Robert D., Professor, Curriculum and Instruction (1967). BS, Iowa State University, 1957; MS, University of Montana, 1960; EdD, Arizona State University, 1967.


Armstrong, Richard N., Assistant Professor, Elliot School of Communication (1987). BA, Southern Utah State College, 1972; MA, Brigham Young University, 1974; PhD, Bowling Green State University, 1978.


Bajaj, Prem 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, Counseling, Educational, and School Psychology (1985). BA, Northern Michigan University, 1960; MS, Utah State University, 1973; 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.

Bateman, Morita M., Associate Professor, Finance, Real Estate, and Decision Sciences (1966). BS, North Carolina State University, 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.


Benningfield, Lloyd M., Professor Electrical Engineering (1967). BSEE, Kansas State University, 1951; MS, University of Missouri, 1957; PhD, Purdue University, 1965.

Bereman, Nancy, Assistant Professor, Management (1980). BA, The Wichita State University, 1969; MBA, 1974; PhD, University of Minnesota, 1983.


Bernhart, Walter D., Professor, Aerospace Engineering (1954, 1964). BS, Kansas State University, 1950; MS, The Wichita State University, 1959; PhD, Oklahoma State University, 1964; Licensed Professional Engineer—Kansas.


Billings Dorothy K., Associate Professor, Anthropology (1968). BA, University of Wisconsin, 1955; PhD, University of Sydney, 1972.

Bissel, William, Associate Professor, 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.

Blazieck, Donald L., Assistant Professor, Administration of Justice (1976). BA, Northern Illinois University, 1967; MA, 1970; PhD, Michigan State University, 1976.

Born, 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 (1965). 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, 1959; 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.

Boyden, 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). BA, 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.


Carroll, Jeri Ann, Associate Professor, Curriculum and Instruction (1982). BME, University of Kansas, 1965; MS, 1973; PhD, 1980.

Carter, John W., Associate Professor, Health, Administration, and Gerontology (1990). BS, Southern Nazarene University, 1968; MS, Trinity University, 1972; PhD, University of Texas Medical School-San Antonio, 1975.

Chambers, Randall, Distinguished Professor, Industrial Engineering (1988). BA, Indiana University, 1948; MA, University of Missouri, 1951; PhD, Case Western Reserve University, 1954.


Chaudhuri, Jharna, Associate Professor and Boeing Fellow, Mechanical Engineering (1984). BS, Lady Brabourne College, Calcutta University, 1967; MS, State University of New York, 1975; PhD, Rutgers University, 1982.

Cho, Dong Woo, Professor and Chairperson, Economics (1972). BA, Seoul National University, Seoul, Korea, 1965; MA, Wayne State University, 1969; PhD, University of Illinois, 1973.

Choi, In-Chan, Assistant Professor, Industrial Engineering (1990). BS, Korea University, 1982; BSIE Iowa State University, 1982; MS, Columbia University, 1986; MS, 1988; PhD, 1990.

Chopra, Dharam Vir, Professor, Mathematics and Statistics and Interim Chairperson, Computer Science (1967). BA, Panjab University India, 1950; MA, 1953; MA, University of Michigan, 1961; AM, 1963; PhD, University of Nebraska, 1968.

Chou, Sang-Ching, Associate Professor, Computer Science (1991). BS, Shanghai Teacher's College (China), 1965, MS, University of Texas at Austin, 1984; PhD, 1985.

Christ, Ronald, Associate Professor, School of Art and Design (1976). BFA, Kansas City Art Institute, 1972; MFA, Indiana University, 1974.

Clark, James E., Assistant Professor, Economics and Director, Center for Economic Education (1976). BA, Michigan State University, 1969; MA, Northwestern University, 1971; PhD, 1976.

Clark, Leroi, Professor and Chairperson, School of Performing Arts (1990). BA, University of Maine, 1966; MFA, University of Oklahoma, 1966; PhD, Kent State University, 1976.


Conard, Rebecca A., Assistant Professor, History (1992). BS, California State Polytechnic University, 1973; MA, University of California-Los Angeles, 1978; PhD, University of California-Santa Barbara, 1984.

Corbett, Donald L., Professor, School of Music (1971). BME, The Wichita State University, 1953; MME, 1959; EdD, University of Kansas, 1977.


Cranton, Jerry L., Associate Professor, Communicative Disorders and Sciences (1985). BA, The Wichita State University, 1964; PhD, Vanderbilt University, 1969.


Crum, Dorothy E., Associate Professor, School of Music (1973). BA, Barrington College, 1966; MM, Western Kentucky University, 1969; DMA, University of Colorado.

Dadashtadeh, Mohammad, Associate Professor, Finance, Real Estate, and Decision Sciences (1989). MS, Massachusetts Institute of Technology, 1978; MBA, American International College, 1979; PhD, University of Massachusetts, Amherst, 1985.


Davis, Gayle R., Associate Professor and Director, Women's Studies (1982). BA, Muskingum College, 1968; MA, Michigan State University 1975; PhD, 1981.


deSilva, Dharma, Associate Professor Management (1976). BSBA, University of Evansville, 1957; MS, Southern Illinois University 1959; PhD, Indiana University, 1966.


Dotzour, Mark G., Associate Professor and Barton Fellow, Finance, Real Estate, and Decision Sciences (1987). BBA, The Wichita State University, 1976; PhD, University of Texas at Austin 1987.

Dreifort, John E., Professor and Chairperson, History (1970). BS, Bowling Green State University, 1965; MA, 1966; PhD, Kent State University, 1970.

Duell, Dennis C, Associate Professor, Economics (1967). BS, Kansas State University, 1961; MS, 1963; PhD, University of Illinois, 1969.
Duell, Orpha K., Associate Professor, Counseling, Educational, and School Psychology (1967). BS, Kansas State University, 1963; MS, University of Illinois, 1965; PhD, 1967.

Durham, Charles G., Associate Professor, School of Music (1967). BS, Western Michigan University, 1961; MA, 1963; PhD, Wayne State University, 1968.


Egbert, Robert L., Associate Professor, Electrical Engineering and Director, WSU Center for Energy Studies (1980). BSEE, University of Missouri at Rolla, 1972; MSEE, 1973; PhD, 1976; Licensed Professional Engineer—Missouri, Kansas.


El-Sayad, Moheen M., Associate Professor, Physical Therapy (1992). BS, Cairo University, 1967; MS, 1974; MA, Indiana University, 1978; PhD, 1981.

Ercolani, David F., Assistant Professor, Political Science (1992). BA, Wayne State University, 1972; MA, University of Michigan, 1978; PhD, University of Chicago, 1987.

Farnsworth, David N., Professor, Political Science (1956). BA, The Whiting State University, 1953; AM, University of Illinois, 1955; PhD, 1959.

Fatehi-Sedeh, Kamal, Associate 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 Engineering (1986). BEng, NED University of Engineering and Technology, Karachi, Pakistan, 1982; MSIE, Texas Tech University, 1983; PhD, 1986.

Fillion, Bryant P., 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, Nancy Joyce, Associate Professor, School of Accountancy (1979). BS, University of California at Los Angeles, 1963; MS, The Wichita State University, 1967; PhD, Oklahoma State University, 1965; CPA—Kansas.

Foster, Mary Sue, Associate Professor, School of Art and Design (1966). BSE, University of Kansas, 1961; MSEE, 1963; MFA, 1971.


Fry, Maurice A., Professor, Educational Psychology and Dean, Education (1988). BS, University of South Dakota, 1957; MEd, 1963; PhD, University of Iowa, 1967.

Ful, William E., Associate Professor, Geology (1982). BS, University of Notre Dame, 1969; MS, University of Illinois-Chicago Circle, 1980; PhD, University of South Carolina, 1982.

Furtwengler, Carol, Associate Professor, Educational Administration and Supervision (1990). BS, Bowie State University, 1972; MA, George Mason University, 1976; PhD, Vanderbilt University, 1980.

Furtwengler, Willis, Professor, Educational Administration and Supervision (1990). BS, University of Maine 1959; MA, Syracuse University, 1965; PhD, 1971.

Gaunt, Philip, Associate Professor and Director, Research and International Program, Elliott School of Communication (1990). BA, Reading University, 1959; MA, Indiana University, 1968; PhD, 1969.

Gibson, George, Professor, School of Music (1967, 1980). BM, University of Miami, 1956; MM, University of Texas, 1959; DMA, University of Southern California, 1971.


Goodell, Phillips W., Assistant Professor, Marketing and Small Business (1986). AB, Princeton University, 1953; MBA, Stanford University, 1957; PhD, Texas Tech University, 1987.

Gosman, Albert L., Professor, Mechanical Engineering (1967). BSME, University of Michigan, 1950; MSME, University of Colorado, 1953; PhD, University of Iowa, 1965.

Graham, A. Richard, Professor, Mechanical Engineering and Director, Center for Technology Application (1965). BSME, Kansas State University, 1957; MS, 1960; PhD, University of Iowa, 1966.


Greywall, Mahesh S., Professor, Mechanical Engineering (1969). BSC, University of Allahabad, Indila, 1953; BS, University of California at Berkeley, 1957; MS, 1959; PhD, 1962; Licensed Professional Engineer—Kansas.

Gries, John C., Associate Professor and Chairperson, Geology (1971). BS, University of Wisconsin, 1962; MS, 1965; PhD, University of Texas, 1970.


Halcomb, Charles G., Professor, Psychology (1990). BA, Oklahoma Baptist University, 1958; PhD, Baylor University, 1964.

Hamdeh, Hussein, Assistant Professor, Physics (1989). BS, Lebanese University 1976; MS, Northeastern University, 1980.

Hardy, James L., Professor, School of Music (1965). BSEd, Southwest Missouri State University, 1948; MME, University of Kansas, 1956; EdD, 1969.


Hendry, William J. III, Associate Professor, Biological Science (1992). BA, Northeastern University, 1974; MA, 1978; PhD, Clark University, 1982.

Hersch, Philip, Associate Professor, Economics (1983). BA, Queens College, 1974; MA, Ohio State University, 1978; PhD, 1982.


Ho, James C., Distinguished Trustees Professor and Chairperson, 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.

Hoag, Gerald B., Associate Professor, English (1967). AB, Loyola University, New Orleans, 1951; MA, Tulane University, 1955; PhD, 1965.


Hoffmann, Klaus A., Associate Professor, Aerospace Engineering (1990). BS, University of Texas at Austin, 1972; MS, 1975; PhD, 1983.


Hommertzheim, Donald L., Professor and Chairperson, Industrial Engineering (1976). BA, Friends University, 1965; MS, The Wichita State University, 1970; PhD, University of Arkansas, 1975.

Hooper, Steven J., Associate Professor, Aerospace Engineering (1987). BS, Iowa State University, 1973; MS, The Wichita State University, 1978; PhD, Iowa State University, 1983.


Huckstadt, Alicia A., Associate Professor, Dental Hygiene (1976). BS, University of Bridgeport, 1968; MA, State University of New York at Buffalo, 1971; PhD, Kansas State University, 1985.

Hutchinson, John J., Professor, Mathematics and Statistics and Director, Center for Aviation Safety Research (1976). BA, St. Benedict's College, 1962; MA, University of Kansas, 1966; PhD, 1968.

Huxman, Susan M., Assistant Professor and Director, Oral Communication, Elliott School of Communication (1990). BA, Bethel College, 1982; MA, University of Kansas, 1986; PhD, 1988.

Iacovetta, Ronald G., Associate Professor, Administration of Justice and Assistant Dean, Graduate School (1973). BS, Colorado State University, 1965; MS, 1967; PhD, University of Connecticut, 1972.

Iorio, Sharon H., Assistant Professor, Elliott School of Communication (1990). BA, University of Oklahoma, 1965; MS, Oklahoma State University, 1984; PhD, 1991.


Janekse, Galen B., Associate Professor and Chairperson, Administration of Justice (1974). BA, University of Minnesota at Duluth, 1971; MS, Mankato State University, 1973; PhD, Iowa State University, 1975.

Jarnagin, Bill D., Professor and Allen, Gibbs, and Faculty Fellow, School of Accountancy (1987). BSBA, Arkansas Polytechnic University 1969; MBA, University of Arkansas, 1970; PhD, 1976. CPA—Oklahoma.

Jeffers, Carol S., Assistant Professor, School of Art and Design (1992). BA, University of Maryland-College Park, 1972; PhD, 1991.


Jewell, Ward T., Associate Professor and Boeing Fellow, Electrical Engineering (1987). BSEE, Oklahoma State University, 1979; MSEE, Michigan State University, 1980; PhD, Oklahoma State University, 1986.

Johnson, Everett L., Professor, Electrical Engineering (1971). BSEE, University of Kansas, 1962; MSEE, University of New Mexico, 1964; PhD, University of Kansas 1969. Licensed Professional Engineer—Kansas.

Johnson, Judith R., Assistant Professor, History (1988). BS, University of Maryland 1964; MA, University of New Mexico, 1983; PhD, 1987.


Johnson, Richard T., Professor and Chairperson, Mechanical Engineering (1989). BSME, University of Missouri School of Mines and Metallurgy, 1962; MSME, University of Missouri at Rolla, 1964; PhD, University of Iowa, 1968; Licensed Professional Engineer—Missouri.

Jones, W. James, Professor, School of Music (1969). BM and BSE, Ohio State University, 1960; MA, 1962; PhD, University of Iowa, 1970.

Jong, Mark M. T., Professor, Electrical Engineering and Associate Dean, Engineering (1967). BSEE, National Taiwan University, 1960; MSEE, South Dakota
School of Mines and Technology, 1965; PhD, University of Missouri, 1967. Licensed Professional Engineer—Kansas.

Kahol, Pawan, Associate Professor, Physics (1988). BS, Panjab University, India, 1973; MS, 1974; PhD, Northwestern University, 1979.

Kasten, Roger N., Professor, Communicative Disorders and Sciences (1971). BSE, Bowling Green State University, 1955; MA, 1956; PhD, Northwestern University, 1964.

Kear, Dennis J., Associate Professor, Curriculum and Instruction (1978). BSE, Emporia State University, 1970; MSE, 1975; PhD, Arizona State University, 1978.

Keel, Vernon A., Professor and Director, Elliott School of Communication (1989). BA University of North Dakota, 1963; PhD, University of Minnesota, 1973.

Kelley, James W., Associate Professor and Associate Vice President for Student Affairs, and Dean, University College (1982). BS, Oregon State University, 1964; MA, University of Denver, 1966; PhD, 1970.

Kemme, David M., Professor and Barton Fellow, Economics (1986). BA, Miami University, Oxford, Ohio, 1973; MA, Ohio State University 1974; PhD, 1980.

Kiralyfalvi, Bela, Professor, School of Performing Arts (1973). BA, Phillips University, 1963; MA, University of Kansas, 1965; PhD, 1972.

Klingsporn, M. James, Assistant Professor, Psychology (1965). AB, University of Nebraska, 1957; MA, 1962; PhD, 1965.


Konek, Carol W., Associate Professor, Women's Studies and Associate Dean, Liberal Arts and Sciences (1969). BS, University of Kansas, 1961; MA, The Wichita State University, 1968; PhD, University of Oklahoma, 1977.


Mitchusson, Linda C., Associate Professor, School of Accountancy (1977). BS, East Central University, 1968; MBA, University of Arkansas, 1969; PhD, 1975. CMA—Kansas.

Moore, Kenneth D., Professor and Department Chair, Curriculum and Instruction (1991). BA, The Wichita State University, 1969; MSE, 1971; EdD, University of Houston, 1975.

Moore-Jansen Peer, Assistant Professor Anthropology (1989). BA, Texas Tech University, 1977; MA, University of Arkansas, Fayetteville, 1982; PhD, University of Tennessee, Knoxville, 1989.

Motavalli, Saeid, Assistant Professor, Industrial Engineering (1990). BS, Tehran Polytechnic, 1976; MS, University of Southern California, 1979; PhD, University of Pittsburgh, 1989.


Murdoch, Katherine, Associate Professor, School of Music (1985). BA, Humboldt State University, 1971; BA, 1977; MA, San Francisco State University, 1980; PhD, Eastman School of Music, University of Rochester, 1986.

Murphey, Dwight D., Associate Professor, Finance, Real Estate, and Decision Sciences (1967). BS, University of Denver, 1957; JD, 1959.

Myers, Eunice D., Associate Professor, Modern and Classical Languages and Literatures (1981). BA, University of North Carolina-Chapel Hill, 1971; MA, 1973; PhD.

Myers, Walter T., Professor, School of Music, and Acting Dean, College of Fine Arts (1963). BS, Ohio State University, 1959; MME, University of Colorado, 1961; MM, Performance, 1966; DMA University of Missouri at Kansas City, 1969.

Nagati, M. Gawad, Associate Professor, Aerospace Engineering (1984). BS, Cairo University, Egypt, 1956; MS, The Wichita State University, 1975; 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.

Norris, Roy H., Professor and Chairperson, Electrical Engineering (1959). BS, The Wichita State University, 1959; MS, 1962; PhD, Oklahoma State University, 1972.

O'Flaherty, Kathleen, Assistant Professor, Sociology (1983). BA, Clarke College 1979; MA, Miami University, 1980; PhD, Purdue University, 1984.

Olive, Raymond D., Associate Professor, School of Art and Design (1976). BA University of South Florida, 1972; MFA, University of Illinois, 1976.


Papadakis, Michael, Associate Professor and Boeing Fellow, Aerospace Engineering (1986). BEng, Loughborough University, England, 1979; MSc, 1981; PhD, The Wichita State University, 1986.


Paske, Gerald H., Professor, Philosophy (1967). BS, University of Wisconsin, 1958; MS, 1962; PhD, 1964.


Pfannern, Maurice, Associate Professor, Economics (1966). BA, Fort Hays State University, 1960; MS, Oklahoma State University, 1966; PhD, 1967.


Piletti, Kenneth H., Associate Professor Health, Administration, and Gerontology (1987). BS, University of San Francisco 1968; MS, Ft. Hays State University, 1970; PhD, University of Texas Health Science Center-Dallas, 1986.

Quantic, Diane D., Assistant Professor, English (1973). BA, Kansas State University 1962; MA, 1966; PhD, 1971.


Ravikumar, Tiruvadi S., Associate Professor, Mechanical Engineering (1991). BE, University of Madras, 1978; ME, Howard University, 1981; PhD, Iowa
State University, 1986. Licensed Professional Engineer-Iowa.


Reed, Paul E., Associate Professor, School of Music (1966). BM, Drake University, 1956; MM, 1957.

Rhatigan, James J., Professor, Education, Vice President, Student Affairs and Dean of Students (1965). BA, Coe College, 1957; MA, Syracuse University, 1959; PhD, University of Iowa, 1965.

Richards, R. Malcolm, Professor of Finance and Dean of Barton School of Business (1991). BA, University of Utah, 1968; MBA, 1970; PhD, University of Michigan, 1974.

Ritchie, Gisela F., Associate Professor, Modern and Classical Languages and Literatures (1965). MA, Free University of Berlin, 1952; PhD, University of Michigan, 1965.

Robarchek, Clayton A., Associate Professor, Anthropology (1985). BA, University of Nebraska, 1970; PhD, University of California, 1977.

Roberts, M. Diane, Associate Professor, Health Science and Dean, Health Professions (1984). BS, Mississippi State University, 1963; MS, 1964; DPH, University of Texas School of Public Health, 1976.

Rogers, Ben F., Associate Professor, Philosophy (1966). BA, University of Tennessee, 1958; MAT, Vanderbilt University, 1961; MA, Indiana University, 1966; PhD, 1970.


Romig, Charles A., Associate Professor, Counseling, Educational, and School Psychology (1985). BA, University of Illinois, 1977; MA, Trinity Evangelical Divinity School, 1979; PhD, Purdue University, 1982.


Schneider, Philip H., Professor, English (1967). BA, State University of New York College at Oneonta, 1965; MFA, University of Iowa, 1967.


Schrag, Robert L., Professor, Electrical Engineering (1957). BSEE, Kansas State University, 1945; MSEE, California Institute of Technology, 1946; PhD, Pennsylvania State University, 1954.

Schuh, John H., Professor, Counseling and School Psychology and Associate Vice President, Student Affairs (1987). BA, University of Wisconsin, Oshkosh, 1969; Master of Counseling, Arizona State University, 1972; PhD, 1974.

Scudder, Rosalind R., Associate Professor and Chairperson, Communicative Disorders and Sciences (1972). BA, The Wichita State University 1964; MA, 1972; PhD, 1978.

Sethi, Awanti P., Associate Professor, and Chairperson, Finance, Real Estate, and Decision Sciences (1988). BS, Gauhati University, 1974; MS, Kanpur University, 1978; MSIA, Carnegie-Mellon University, 1982; PhD, 1983.


Sheffield, James F., Associate Professor, Political Science (1974). BA, Mississippi State University, 1969; MS, Florida State University, 1970; PhD, 1973.


Shore, Elsie R., Associate Professor, Psychology and Associate Dean, Liberal Arts and Sciences (1981). BA, Brooklyn College, 1967; MA, University of Nebraska-Lincoln, 1970; PhD, 1981.


Smith, Bert L., Professor and Chairperson, Aerospace Engineering (1966). BSME, University of Missouri at Rolla, 1953; MSME, 1960; PhD, Kansas State University, 1966.

Smith, Nicholas E., Associate Professor, School of Music (1975). BM, Pittsburgh State University, 1970; MM, Eastman School of Music, 1972; DMA 1980.

Smith, Patrick S., Associate Professor, School of Art and Design (1991). BA, University of Notre Dame, 1972; MA, University of North Carolina, 1975; PhD, Northwestern University, 1982.

 Snyder, Jacqueline J., Associate Professor, American Studies, and Dean, Continuing Education (1975). BA, College of St. Catherine, 1963; MA, Indiana University, 1966; DA, University of Oregon, 1971.


Scoles, David E., Associate Professor, Philosophy (1974, 1982). BA, University of Pittsburgh, 1969; PhD, Johns Hopkins University, 1977.

Scoles, Deborah H., Associate Professor Philosophy (1973, 1975). BA, George Washington University, 1969; MA, Johns...
Hopkins University, 1973; PhD, 1975.


Stanga, John E., Jr., Associate Professor and Chairperson, 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, 1980; MS, 1984; PhD, 1989.

Stephens, Frances C., Associate Professor, English (1970). BA, Texas A&M University, 1956; MA, University of Texas, 1967; PhD, 1970.


Stone, Brian J., Assistant Professor, 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, Governmental and Industrial Relations (1964). BA, The Wichita State University, 1958; MA, 1960.


Sutterlin, 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, 1958.

Taher, Syed M., Associate Professor, Physics (1976). BS, Dacca University, 1964; MS, 1966; MA, California State University, Long Beach, 1970; PhD, Washington State University, 1974.

Talaty, Erach R., Professor and Chairperson, Chemistry (1969). BSC (Honors), Nagpur University, Nagpur, India, 1948; PhD, 1954; PhD, Ohio State University, 1957.


Terrell, William T., Associate Professor, Economics (1967). BS, Oklahoma State University, 1958; MS, 1961; PhD, Vanderbilt University, 1970.


Thomas, Phillip D., Professor, History (1965, 1984). BA, Baylor University, 1960; MA, University of New Mexico, 1964; PhD, 1965.


Tilford, Michael, Associate Professor, Secondary Education and Dean, Graduate School (1967). BS, Langston University, 1957; MA, Johns Hopkins University, 1958; EdD, Oklahoma State University, 1970.

Toops, Gary H., Assistant Professor, Modern and Classical Languages and Literatures (1989). BA, McGill University, 1975; MA, University of British Columbia, 1979; MA, Yale University, 1980; MPhil, 1982; PhD, 1985.

Trechak, 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.


van Boer, Bertil H., Associate Professor, School of Music and Interim Associate Dean, Fine Arts (1987). AB, University of California-Berkeley, 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.

Walshock, Phillip G., Professor, Chemistry (1972). BS, University of Illinois, 1954; PhD, 1958.


Wentz, William H., Jr., Distinguished Professor, Aerospace Engineering; Executive Director, National Institute for Aviation Research; and Director, Center for Basic and Applied Research (1957, 1963). BS, The Wichita State University, 1955; MS, 1961; PhD, University of Kansas, 1969. Licensed Professional Engineer—Kansas.


Wilhelm, William, Professor, Engineering Education and Dean, Engineering (1979). BME, Auburn University, 1958; MS 1963; PhD, North Carolina State University 1968. Licensed Professional Engineer—Kansas, West Virginia.

Williamson, L. Keith, Assistant Professor, Elliott School of Communication (1977). BA, The Wichita State University, 1965; MTh, Southern Methodist University, 1968; PhD, Temple University, 1975.


Wimalasena, Kandategue, Assistant Professor, Chemistry (1989). BS, University of Peradeniya, Sri Lanka, 1977; PhD, Georgia Institute of Technology, 1986.
Wolfe, Donna J., Professor, 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, 1980.


York, Paul K., Professor, Electrical Engineering (1989). BSEE, Texas A&M University, 1961; MSEE, University of New Mexico, 1963; PhD, Texas A&M University, 1967.

Zandler, Melvin E., Associate Professor, Chemistry (1966). BA, Friends University 1960; MS, The Wichita State University, 1963; PhD, Arizona State University, 1965.


Zoller, Peter T., Associate Professor, English and Associate Vice President, Academic Affairs (1973). BA, University of San Francisco, 1965; MA, Claremont Graduate School, 1966; PhD, 1970.


Associate Membership


Ackerman, Paul D., Assistant Professor and Associate Chairperson, Psychology (1968). BA, University of Kansas, 1964; MA, 1966; PhD, 1968.


Babbinc, Judith, Associate Professor, School of Performing Arts (1984). BA, Edgecliff College, 1974; MA, University of Cincinnati, 1976; PhD, University of California, 1981.

Bagal, Rajiv, Assistant Professor, Computer Science (1990). MS, Birla Institute of Technology and Science, 1983; MS, University of Victoria, 1987; PhD, 1990.


Bees, Julie I., Associate Professor, School of Music (1986). BM, Peabody Conservatory, 1974; DMA, University of Colorado, Boulder, 1982.


Blatt, Jerald D., Assistant Professor, School of Performing Arts (1990). FA, University of Utah, 1979; MFA, 1983.

Boneh, Shahar, Assistant Professor, Mathematics and Statistics (1989). BA, Tel-Aviv University, Israel, 1984; MA, University of California-Santa Barbara, 1987; PhD, 1989.

Bowman, Barbara E., Assistant Professor, Biological Sciences and Director of Affirmative Action (1966). BS, University of Utah, 1954; MSE, The Wichita State University, 1966; PhD, University of Kansas, 1979.

Cavarozzi, Joyce P., Associate Professor, School of Performing Arts (1965). BSE, Ohio University, 1953; MA, Ohio State University, 1963.


Cheng, Jen-Chi, Assistant Professor, Economics (1989). BA, National Chengchi University, 1978; MA, National Taiwan University, 1982; PhD, Vanderbilt University, 1989.

Christensen, Donald G., Assistant Professor, Finance, Real Estate, and Decision Sciences (1988). AA, Olympic College, 1974; BBA, Memphis State University, 1979; MBA, 1982, PhD, University of South Carolina, 1988.

Christensen, Linda F., Assistant Professor, School of Accountancy (1988). BSBA, University of Missouri-Columbia, 1973; MBA, Memphis State University, 1981; PhD, University of South Carolina, 1989. CPA—Tennessee.

Ciboski, Kenneth N., Associate Professor, Political Science (1968). BA, University of Kansas, 1961; MA, 1965; PhD, University of Washington, 1971.

Clark, Frances, Assistant Professor, Curriculum and Instruction (1992). BA, Southwestern College, 1966; MSED, University of Kansas, 1971; PhD, 1981.


Coffman, Geraldine A., Assistant Professor, Curriculum and Instruction (1992). BS, Kansas State University, 1978; MS, Emporia State University, 1980; EdD, University of Kansas, 1992.


Conrad, Mary Elaine, Assistant Professor, Medical Technology (1980). BS, Kansas Newman College, 1957; MS, Kansas State University, 1974; PhD, 1991.


Dekins, 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.

Detjen, Wilma E., Assistant Professor, Modern and Classical Languages and Literatures (1990). BA, University of California-Davis, 1971; MA, California State University-Sacramento, 1982; PhD, University of California-Berkely, 1990.

Distler, Donald A., Associate Professor, Biological Sciences (1963). 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.

Dunning, Wayne W., Assistant Professor, Administration of Justice (1961). BS, Iowa State University, 1952; MS, 1959; PhD, 1964.


Fox, L. Raymond, Professor, Biological Sciences (1979). BA, University of California, Santa Barbara, 1963; PhD, 1967.


Gregg, Alvin L., Assistant Professor, English (1968). BA, Texas Tech University, 1956; MA, 1957; PhD, University of Texas, 1969.


Halstead, Helen L., Assistant Professor, Nursing (1970). BSN, University of Kansas, 1955; MEd, University of Minnesota, 1959; PhD, Kansas State University, 1982.


Hartman, John J., Professor and Chairperson, Sociology (1968). BS, Southwest Missouri State University, 1961; MS, University of Missouri, 1963; PhD, 1966.

Headley, Dean, Assistant Professor, Marketing and Small Business (1988). BSB, Emporia State University, 1970; MPH, University of Oklahoma, 1974; MBA, The Wichita State University 1982; PhD, Oklahoma State University, 1989.


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, Lop-Hing, Assistant Professor, Mathematics and Statistics (1989). BA, Chinese University of Hong Kong, 1979; MA, Princeton University, 1982; PhD, 1984.

Hogan, Linda, Assistant Professor, Medical Technology (1972). BA Emporia State University, 1965; MT (ASCP), 1965; BB (ASCP), 1972; MEd, The Wichita State University, 1977.


Houts, Sandra S., Assistant Professor, Sociology (1991). BA, Drake University, 1969; MPA, University of Missouri at Kansas City, 1978; PhD, Pennsylvania State University, 1986.

Huber, Tonya, Assistant Professor, Curriculum and Instruction (1990). BS, Pennsylvania State University, 1982; MEd, 1985; PhD, 1990.

Hundley, Helen S., Assistant Professor, History (1990). BA, University of Florida 1972; MA, University of Georgia, 1977; PhD, University of Illinois-Champaign-Urbana, 1984.


Kamerer, David J., Assistant Professor, Elliott School of Communication (1991). BA, University of Iowa, 1978; MA, Kansas State University, 1983; PhD, Indiana University, 1989.


Kelly, Francis L., Assistant Professor, Elliott School of Communication (1965). BA, De Paul University, 1954; MT, University of Illinois, 1959; PhD, Ohio State University, 1972.


Kneil, Thomas R., Assistant Professor,
Communicative Disorders and Sciences (1967). AB, Bowdoin College, 1955; MS, Syracuse University, 1960; PhD, University of Iowa, 1972.


Lause, Timothy W., Assistant Professor, Sociology (1978). BS, Central Missouri State University, 1973; MA, 1974; PhD, St. Louis University, 1981.


Mallory, J. William, Assistant Professor, Philosophy (1965). BA, Northwestern University, 1957; MA, 1962; PhD, 1970.


McCullum, Shirley, Assistant Professor, School of Art and Design (1975). BFA, University of Texas, 1968; MFA, North Texas State University, 1974.

McKenney, James W., Associate Professor, Political Science and Director, Honors Program (1966). BA, Willamette University, 1958; MA, University of Oregon, 1964; PhD, 1969.


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.


Neidengard, Linn G., Assistant Professor, Management (1989). BS, California Polytechnic State University, 1975; MBA, 1976; MA, California State University, 1985; PhD, Ohio State University, 1991.

Nielsen, Carl C., Associate Professor, Finance, Real Estate, and Decision Sciences (1968). BS, Dana College, 1956; MA, University of Nebraska, 1963; PhD, 1966.


Ott, Barbara B., Assistant Professor, Nursing (1992). BSN, California State College-Turlock, 1978; MSN, Catholic University of America, 1981; PhD, Texas Women's University, 1986.

Platt, George M., Associate Professor and Director of Graduate Studies, Hugo Wall Center for Urban Studies (1969). BS, South Dakota State University, 1953; MA, Syracuse University, 1955; PhD, 1962.


Rathi, Mahesh, Assistant Professor, Computer Science (1988). MSc (Hons), Birla Institute of Technology and Science, Pilani, India, 1980; MS, University of Cincinnati 1983; MS, Purdue University, 1985; PhD, 1988.

Richardson, William H., Associate Professor and Associate Chairperson, Mathematics and Statistics (1962). AB, California State University, Chico, 1959; MS, Iowa State University, 1961.

Roush, Dean, Assistant Professor, School of Music (1988). BFA, Ohio University, 1973; MM, Bowling Green State University, 1975; DMA, Ohio State University, 1985.

Roussel, Brigitte, Assistant Professor, Modern and Classical Languages and Literatures (1990). BA, University of La Sorrone, 1976; MA, 1981; PhD, University of Kansas, 1991.


Shawver, Martha M., Assistant Professor, Nursing and Associate Vice President for Academic Affairs (1975). BSN, Eastern Mennonite College, 1965; MA in Nursing, University of Iowa, 1974; PhD, University of Kansas, 1985.

Steinke, Elaine, Assistant Professor, Nursing (1990). BSN, The Wichita State University, 1979; MN, 1982; PhD, Kansas State University, 1987.


Thomas, James H., Associate Professor, Anthropology (1976). BA, The 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, 1965; MM, Syracuse University, 1962.

Ulrich, Yvonne M., Assistant Professor, Nursing (1987). BSN, The Wichita State University, 1975; MN, 1979; PhD, University of Texas at Austin, 1989.


Wells, Candace, Assistant Professor,
Wherritt, Robert C., Associate Professor of Mathematics and Statistics (1962). BS, Tulane University, 1955; MS, 1961; PhD, New Mexico State University, 1971.

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.

Map Legend
Facilities are identified with a letter corresponding to their location on the map. "P" signifies parking areas.

Buildings
Ablah 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)
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)
Henrion Hall (C)
Heskett Center (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)
McKinley Hall (B)
McKnight Art Center (B)
Media Resources Center (D)
Memorial 70 (B)
Morrison Hall (C)
National Institute for Aviation Research (E)
Neff 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 (C, 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)

*Under construction

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.

Wichita State
Office of Undergraduate Admissions
(316) 689-3085
or toll-free: 1-800-362-2594
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, with the hours of practicum per week given in front of the letter (6-8P means six to eight hours of practicum per week).

Abbreviations

The following abbreviations of academic departments and areas are used in references to courses offered by those departments.

Acct. Accounting
AE Aerospace engineering
AJ Administration of justice
Am. St. American studies
Anth. Anthropology
Art E. Art education
Art F. Art and design foundation
Art G. Graphic design
Art H. Art history
Art S. Studio arts
Av. Mgt. Aviation management
B. Law Business law
Biol. Biological sciences
Bus. E. Business education
CDS Communication disorders and sciences
CESP Counseling, educational, and school psychology
Chem. Chemistry
Chin. Chinese
CI Curriculum and instruction
Comm. Communication
CS Computer science
Dance Dance
DH Dental hygiene
DS Decision sciences
EAS Educational administration and supervision
Econ. Economics
EE Electrical engineering
Engl. English language and literature
Engr. General engineering
Entre. Entrepreneurship
Fin. Finance
Fren. French
Geog. Geography
Geol. Geology
Germ. German
Geron. Gerontology
HAE Health, administration, and gerontology
Hist. History
Hnrs. Honors Program
HS Health sciences
HRM Human Resource Management
IE Industrial engineering
I. Tec. Industrial technology

Ital. Italian
Japan Japanese
LAS-I Liberal arts interdisciplinary
Latin Latin
Legal Legal assistant
Ling. Linguistics
Math. Mathematics
ME Mechanical engineering
Med. T. Medical technology
Mgmt. Management
Min. St. Minority studies
Mkt. Marketing
Mus. A. Applied music
Mus. C. Musicology-composition
Mus. E. Music education
Mus. P. Music performance
Nurs. Nursing
PA Physician assistant
P. Adm. Public administration
PE Health, physical education, and recreation
PE-R Physical education-recreation
Phil. Philosophy
Phys. Physics
Pol. S. Political science
Port. Portuguese
Psy. Psychology
PT Physical therapy
RE Real estate and land use economics
Rel. Religion
RT Respiratory therapy
Russ. Russian
Sc. Wk. Social work
Soc. Sociology
Span. Spanish
Stat. Statistics
Thea. Theatre
UC University College
Wom. S. Women's studies
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