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M = Master      S = Specialist in Education      D = Doctoral
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Academic Calendar

Fall Semester 1997

Aug. 18-22.........................Fall semester registration
Aug. 25..............................Classes begin
Aug. 30-Sept. 1....................Labor Day holiday
Sept. 15............................Final date for filing Application for Degree card in Graduate School Office
Oct. 17..............................Midterm point
Oct. 31..............................Final date for withdrawal with nonpenalty grades
Nov. 19-25.........................Early registration period for spring semester
                              (exact dates published in the Schedule of Courses)
Nov. 27-Dec. 1.....................Thanksgiving recess
Dec. 5..............................Final date for all degree requirements to be met and reported to the Graduate School,
                              including: oral defense, comprehensive exam, incomplete grades, bound thesis*
                              All departmental requirements must have been met*
Dec. 11..............................Last day of classes
Dec. 13-19..........................Final examinations
Dec. 20..............................Fall semester ends

Spring Semester 1998

Jan. 12-16.........................Spring semester registration
Jan. 19..............................Martin Luther King, Jr. Day, holiday
Jan. 20..............................Classes begin
Feb. 9..............................Final date for filing Application for Degree card in Graduate School Office
March 22-28.......................Spring recess
March 13............................Midterm point
March 30............................Classes resume
April 3..............................Final date for withdrawal with nonpenalty grades
April 16-23.......................Early registration period for fall semester
                              (exact dates published in the Schedule of Courses)
May 1..............................Final date for all degree requirements to be met and reported to the Graduate School,
                              including: oral defense, comprehensive exam, incomplete grades, bound thesis*
                              All departmental requirements must have been met*
May 11..............................Last day of classes
May 12..............................Study day
May 13-19..........................Final examinations
May 16..............................Commencement
May 20..............................Spring semester ends

These dates may be subject to change.
*Graduate School deadlines to insure graduation that semester.
Summer Semester 1998
May 25..................................Memorial Day, holiday
May 26-June 5............................Preession and workshops
June 2-5.................................Summer Session registration
June 8....................................Classes begin, first four-week term
June 12.................................Final date for filing Application for Degree card in Graduate School Office
July 2.....................................Last day of first four-week term
Classes begin, second four-week term
July 3.....................................Independence Day holiday
July 24.................................Final date for all degree requirements to be met and reported to the Graduate School, including: oral defense, comprehensive exam, incomplete grades, bound thesis* All departmental requirements must have been met*
July 31.................................Summer Session ends

Fall Semester 1998
Aug. 17-21...............................Fall semester registration
Aug. 24..................................Classes begin
Sept. 7..................................Labor Day, holiday
Sept. 16.................................Final date for filing Application for Degree card in Graduate School Office
Oct. 16..................................Midterm point
Oct. 30.................................Final date for withdrawal with nonpenalty grades
Nov. 18-26..............................Early registration period for spring semester (exact dates published in the Schedule of Courses)
Nov. 25-29..............................Thanksgiving recess
Dec. 4.................................Final date for all degree requirements to be met and reported to the Graduate School, including: oral defense, comprehensive exam, incomplete grades, bound thesis*
All departmental requirements must have been met*
Study day
Dec. 10.................................Last day of classes
Dec. 12-18..............................Final examinations
Dec. 19.................................Fall semester ends

These dates may be subject to change.
* Graduate School deadlines to insure graduation that semester.
Spring Semester 1999
Jan. 11-15..............................Spring semester registration
Jan. 18..............................Martin Luther King, Jr. Day, holiday
Jan. 19..............................Classes begin
Feb. 10..............................Final date for filing Application for Degree card in Graduate School Office
March 12..............................Midterm point
March 22-28..........................Spring recess
March 29..............................Classes resume
April 2..............................Final date for withdrawal with nonpenalty grades
April 17-23............................Early registration period for fall semester
(exact dates published in the Schedule of Courses)
May 9..................................Final date for all degree requirements to be met and reported to the Graduate School, including: oral defense, comprehensive exam, incomplete grades, bound thesis*
All departmental requirements must have been met*
May 10..............................Last day of classes
May 11..............................Study day
May 12-18............................Final examinations
May 19..............................Spring semester ends
May 22..............................Commencement

Summer Semester 1999
May 26..............................Memorial Day, holiday
May 27-June 6........................Presession and workshops
June 3-6..............................Summer Session registration
June 7..............................Classes begin, first four-week term
June 16..............................Final date for filing Application for Degree card in Graduate School Office
July 5..............................Independence Day holiday
July 24..............................Final date for all degree requirements to be met and reported to the Graduate School, including: oral defense, comprehensive exam, incomplete grades, bound thesis*
All departmental requirements must have been met*
July 30..............................Summer Session ends

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

1996-97 University
and Academic Officers
Eugene M. Hughes, President of the University
Bobby R. Patton, Vice President for Academic Affairs
Elizabeth H. King, Vice President for University Development
Roger D. Lowe, Vice President for Administration and Finance
James J. Rhatigan, Vice President for Student Affairs and Dean of Students
Frederick Sudermann, Vice President for Research and Governmental and International Relations
Michael Vincent, Acting Dean of the Graduate School
Gerald H. Graham, Dean of the W. Frank Barton School of Business
Randolph A. Ellsworth, Interim Dean of the College of Education
William J. Wilhelm, Dean of the College of Engineering
Walter J. Myers, Dean of the College of Fine Arts
M. Diane Roberts, Dean of the College of Health Professions
David C. Glenn-Lewin, Dean of Fairmount College of Liberal Arts and Sciences
Jacqueline J. Snyder, Dean of Academic Outreach
Jasper G. Schad, Dean of Libraries
James W. Kelley, Dean of University College
Bill Belknap, Director of Intercollegiate Athletics
Anthony R. Ross, Associate to the President

Board of Regents
State of Kansas
William Docking, Arkansas City
Tom Hammond, Wichita
Kenneth Havner, Hays
John Hiebert, MD, Lawrence
Murray Lull, Smith Center
Phyllis Nolan, Louisburg
Sylvia Robinson, Kansas City
Robert V. Talkington, Iola
Sidney Warner, Cimarron
Stephen M. Jordan, Executive Director, Topeka

Graduate Council
Michael Vincent, Acting Dean of the Graduate School
Harold Popp, College of Fine Arts
Kurt Lancaster, Natural Sciences and Mathematics
Kenneth Burk, Communicative Disorders and Sciences, and Health and Physical Education
Samuel Yeager, Social Sciences
Marlene Schommer, Curriculum and Instruction, and Administration, Counseling, Educational, and School Psychology
Don Christensen, W. Frank Barton School of Business
Philip Hersch, Master of Business Administration
Pamala Larsen, College of Health Professions
Deborah Soles, Humanities
M. Edwin Sawan, College of Engineering

Wichita State University Profile
Wichita State University is distinguished from other state-supported schools in Kansas by its urban setting. Wichita State's location in the largest city in Kansas enhances the traditional classroom experience by providing students greater opportunities in resources, contacts with business and government leaders, employment, and internships.

The Carnegie Foundation classifies Wichita State University as a Doctoral II university, one of 236 institutions nationwide recognized for commitment to graduate education through the doctorate. The Graduate School is a member of the Council of Graduate Schools, the Midwestern Association of Graduate Schools, and an affiliate of the National Association of Graduate Students.

With an enrollment of some 14,000, Wichita State prides itself on specialized attention to each student. Although the University's students come from almost every state in the Union and 90 foreign countries, more than 87 percent are from Kansas representing every county in the state. About 3,000 students, or more than one student in five at WSU, is a graduate student enrolled one of our 54 master's and ten doctoral programs.

Because of its urban setting, Wichita State University has two student bodies—traditional and nontraditional. The average age is 29, about one-third are married and 69 percent work full- or part-time. Although the nontraditional students are in the majority, there are 7,000 traditional students, ages 18 to 23, who devote themselves full-time to school and campus activities.

Wichita State University offers more than 60 undergraduate degree programs in more than 150 areas of study in six undergraduate colleges: W. Frank Barton School of Business, College of Education, College of Engineering, College of Fine Arts, College of Health Professions, and Fairmount College of Liberal Arts and Sciences. The Graduate School offers an extensive program including 54 master's degrees which offer study in more than 100 areas; specialist in education degrees; and doctoral degrees in applied mathematics, chemistry, communicative disorders and sciences; human factors psychology and community/clinical psychology; educational administration; and aerospace, electrical, industrial, and mechanical engineering. A listing of the graduate programs and degrees offered at Wichita State University is located on the inside front cover of the Bulletin.

Committed to fulfilling the needs of each student, WSU offers the traditional fall and spring semesters; it has the largest number of evening and summer course offerings in the Kansas Board of Regents' system. The Summer Session features a flexible time format with a two-week pre-session and two four-week sessions held concurrently with the regular eight-week session.

Although WSU's first commitment is to excellence in instruction, it has an equally strong commitment to excellence in research and public service as integral parts of its educational mission.

An important resource to the Wichita area business community, Wichita State supports research and development through programs such as the Center for Technology Assistance. The corporate community utilizes programs offered by the University's Center for Management Development for continuing professional development. The Center for Entrepreneurship encourages development of small businesses, while the Hugo Wall School of Urban and Public Affairs supports local and state government activities.

The 330-acre campus is modern and accessible and at the same time retains the flavor of the University's 100-year heritage. More than 60 pieces of sculpture by internationally known artists adorn the campus. Persanners Deseaux, a colorful mural created by the great Spanish artist Joan Miro, is displayed on the wall of the Edwin A. Ulrich Museum of Art.

Since 1980, Wichita State has more than doubled its instructional space, adding major buildings for art, engineering, health sciences, biological sciences, physi-
Jabara Hall, completed in 1992, houses the departments of computer science, mathematics, physics, and psychology, as well as the Computing Center and its mainframe system. Elliott Hall, completed in 1993, houses the Elliott School of Communication.

More than 150 social and special interest clubs provide opportunities for students to meet and work with others who share their interests. Eight national sororities and 12 national fraternities are active on campus.

WSU is a Division I institution and fields teams in tennis, cross-country, basketball, track, golf, crew, soccer, and bowling, men's baseball and women's volleyball and softball.

**Mission Statement**

In 1991, the Kansas Board of Regents approved the following mission statement for Wichita State University:

Wichita State University is committed to providing comprehensive educational opportunities in an urban setting. Through teaching, scholarship, and public service, the University seeks to equip both students and the larger community with the educational and cultural tools they need to thrive in a complex world, and to achieve both individual responsibility in their own lives and effective citizenship in the local, national, and global community.

High quality teaching and learning are fundamental goals in all undergraduate, graduate, and continuing education programs. Building on a strong tradition in the arts and sciences, the University offers programs in business, education, engineering, fine arts, and health professions, as well as in the liberal arts and sciences. Degree programs range from the associate to the doctoral level and encompass 75 fields of study; nondegree programs are designed to meet the specialized educational and training needs of individuals and organizations in south central Kansas.

Scholarship, including research, creative activity, and artistic performance, is designed to advance the University's goals of providing high quality instruction, making original contributions to knowledge and human understanding, and serving as an agent of community service. This activity is a basic expectation of all faculty members at Wichita State University.

Public and community service activities seek to foster the cultural, economic, and social development of a diverse metropolitan community and of the state of Kansas. The University's service constituency includes artistic and cultural agencies, business and industry, and community educational, governmental, health, and labor organizations.

Wichita State University pursues its mission utilizing the human diversity of Wichita, the state's largest metropolitan community, and its many cultural, economic, and social resources. The University faculty and professional staff are committed to the highest ideals of teaching, scholarship, and public service, as the University strives to be a comprehensive, metropolitan university of national stature.

**History**

Wichita State University began as Fairmount College, a Congregational institution, in 1895. The college also continued the college preparatory program of Fairmount Institute which began in 1892. In 1926, by a vote of the citizens of Wichita, the college became the Municipal University of Wichita, the first municipal university west of the Mississippi.

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


The City of Wichita

Wichita, the largest city in Kansas and part of a metropolitan area of 500,000, offers the cultural and economic advantages of a big city, but maintains the friendly atmosphere of a smaller town. Home of Boeing, Cessna, Learjet, and Raytheon, 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 Atlon 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, 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 Syntex Logic, UNISYS, Vericon Chemicals, Cargill, IFR, NationsBank, Southwest Bell, Electrotech, and Microtech are located in the Wichita area. Also Taco Tico and Koch Industries 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 Vincent, acting dean
Margaret Wood, assistant to the dean

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

Academic graduate programs at Wichita State include master's, specialist, and doctoral programs. Doctoral degrees are awarded in applied mathematics; chemistry; communicative disorders and sciences (logopedics); educational administration; human factors psychology; community-clinical psychology; and in aerospace, electrical, industrial, and mechanical engineering.

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

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

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

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

General University Policies

Human Relations

Notice of nondiscrimination. Applicants for admission and employment, students, parents, and employees are hereby notified that Wichita State University does not discriminate on the basis of race, religion, color, national origin, sex, age, or disability in admission or access to, or treatment or employment in its programs and activities. The following person has been designated to handle inquiries regarding inquiries concerning Wichita State University's compliance with the regulations implementing Title IX, or Section 504: Director, Office of Affirmative Action, 1845 Fairmount, Wichita, Kansas 67260-0145, telephone (316) 978-3371. Any person also may contact the Assistant Secretary for Civil Rights, U.S. Department of Education, regarding the institution's compliance with these regulations.

Student Responsibility

Students at Wichita State University have the following responsibilities:

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

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

Academic Honesty

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

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

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

Open Records

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

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

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

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

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

Accident or Injury

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

Courses

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

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

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

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

Graduate School Policies

Admission to Graduate Study

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

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

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

Two admission statuses, degree and nondegree, are available in the Graduate School to accommodate qualified students desiring to pursue graduate degrees as well as those simply desiring to earn graduate credit for personal and professional reasons. To be considered for degree or nondegree graduate status, students must submit a completed Application for Admission and appropriate transcripts (as described below) to:

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

Records required for admission evaluation should reach the Graduate School at
least three weeks before registration for the term when admission is desired. Materials received after this date will be processed as the time of staff and faculty permits, but the Graduate School cannot guarantee that final action can be taken in time to allow enrollments for graduate credit. International applicants applying from their home country have earlier deadlines: April 30 for Fall and August 31 for Spring.

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

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

The Graduate School does not deal with teacher certification matters as these are handled by the College of Education Teacher Certification Service Office, 151 Corbin Education Center, (316) 978-3304.

Graduation Requirements

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

1. Formal admission to the appropriate degree program.
2. An approved Plan of Study on file in the Graduate School office.
3. Satisfactory completion of prerequisites indicated when admitted.
4. Satisfactory completion of tool or language requirements.
5. An Application for Degree submitted by the set deadline.
6. Removal of all incomplete grades by the deadline specified.
7. Completion of terminal program requirements such as thesis, dissertation, comprehensive examination, etc.
8. Submission of the bound thesis/dissertation or a bindery receipt by the deadline specified.
9. A cumulative graduate grade point average of at least 3.000 for all WSU courses on the Plan of Study (no grades below C) and for all graduate work taken at Wichita State University.
10. Enrollment in the semester of graduation unless all degree requirements are met prior to the first day of classes of the semester of graduation.

Graduate Degree 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.) is particularly true for the PhD programs. Individual department sections of the Bulletin should be consulted about such requirements.

American and Permanent Resident Applicants

Beginning July 1, 1997, a $25 one-time nonrefundable application fee is required at the time the application for degree-bound admission is received. Checks and money orders in U.S. dollars should be made payable to WSU Graduate School.

International Applicants

A one-time $40 nonrefundable application fee (subject to change) is required of international students. Checks and money orders in U.S. dollars should be made payable to WSU Graduate School.

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 as a full-time student in academic courses for a minimum of one year or have earned a bachelor's degree (or higher) from a U.S. university within two years of their proposed semester of admission. Some departments require higher TOEFL scores.

All academic credentials must be official and translated into English.

International applicants 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. Students admitted on probation or placed on academic probation following admission are not eligible for assistantship awards.

International students must enroll as a full-time student (at least nine hours of graduate credit course work) each semester. Enrollment during the first semester must be in the program to which the student is admitted unless written permission to gain admission and enroll in a different program is obtained from the original department.

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

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

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

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

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

Category A
Students should apply for admission in this category if they meet the following requirements:
1. A bachelor's degree from a regionally accredited institution.
2. A grade point average of at least 2.750 based upon the last 60 hours of course work (or nearest semester or term break to this), including any post-bachelor's graduate work.

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

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

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

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

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

Graduate Credit for Seniors
(Senior Rule)
Seniors at Wichita State or other bachelor's-degree-granting institutions may qualify to take work for graduate credit under the Senior Rule. This opportunity applies to students who have an overall grade point average of 3.000 or above in their major field and in upper-division courses and who are within 12 months 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 advisor, the department chairperson, or graduate coordinator for the department in which the work is to be taken, the undergraduate dean of the student's college and the dean of the Graduate School before any courses can be taken for graduate credit. In addition, students from other institutions must be admitted as undergraduates (possibly as guest students) through the University admissions office.

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

Former WSU Graduate Students
Students who have completed graduate course work at Wichita State University but who do not enroll for more than 12 months are placed in an inactive status on the registrar's computer data base. To enroll again, such students need to write or call the Graduate School office and ask to have their records reactivated. Such notification needs to be done at least one month in advance of any planned enrollment. Because of changes in program requirements, periods of nonenrollment may result in the need to complete an application for readmission to the program. Degree-seeking graduate students are expected to make progress toward

the dean's representative at the home institution certifying the student's status there. Such admission is valid for only one semester. If enrollment is desired beyond one semester, the student must obtain regular admission.
their degree in a timely manner (six year time limit for master's and specialist degrees; six to nine years for doctoral degrees). Some departments take action to dismiss students who absent themselves for periods of a year or more.

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

**Senior Citizen Enrollment**

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

**Independent/Directed Study Courses**

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

1. Consent of the instructor must be obtained before enrollment.
2. The content of the study should not be the same as that covered in a regular course (exceptions to this requirement must have the approval of the graduate dean before enrollment).
3. Although scheduled on an arranged basis, there must be a sufficient number of contact hours between the student and supervising instructor during the duration of the independent study to ensure consistency with the amount of graduate credit earned in regular course offerings.
4. No more than six hours of independent study course work (excluding dissertation, thesis, and other independent study activities that are terminal requirements for a degree) can be used in a degree program.

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

**Cooperative Education Program**

Cooperative education is an academic program for undergraduate and graduate students who wish to combine classroom studies with academically related employment by being placed in paid work experiences 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 an approved course, numbered 781 and 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) 978-3688.

**Advisors**

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

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

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

An advisor 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 advisor may chair an Advisory Committee which will also be involved in the advising activities above. It also is possible for the advisor to be named as Chairperson of the Supervisory or Dissertation Committee.

**Enrollment, Drops, and Adds**

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

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

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

Fees are charged for late enrollments. 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) 978-3095, 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 cred-
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 full-time graduate enrollment. Load (total credit hours) does not include audit enrollments.

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 advisor'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 advisors 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 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
1. 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.
2. 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.
3. Graduate students must be enrolled in the semester of graduation unless all degree requirements are met and reported to the Graduate School prior to the
first day of classes of the semester of graduation.

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

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

Students must meet the program requirements in effect at the time the Plan of Study is officially approved. The process of filing an acceptable Plan of Study is not completed until the student and advisor 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 advisor and signed by the candidate, the advisor (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. (a) 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, (b) the credit is fully acceptable to that institution in satisfaction of its advanced degree requirement, and (c) the credit is applicable in terms of content to the student's program of study.

2. Master's and specialist degree programs requiring fewer than 40 hours may include no more than one-third of the total hours or 12 hours whichever is greater, of graduate work completed at another accredited graduate school (exclusive of hours in a previous master's degree). Departments may require lower limits on transfer credit and therefore students should consult individual program descriptions. Doctoral, Master of Fine Arts (MFA), Master of Business Administration (MBA), and other more lengthy programs have special transfer credit allowances, as indicated in their program descriptions.

3. Doctoral programs, with the permission of the student's department, may include a maximum of one-third of the course work hours required, exclusive of acceptable hours in a master's degree.

4. Students assume responsibility for initiating the request for transfer of graduate credit on a Plan of Study. An official transcript containing the requested transfer work must be on file in the Graduate School. If such work is shown on the transcripts provided in support of the original admission to the Graduate School, no new record need be provided. Approval by the major department is necessary to ensure that the course work has been accepted as an integral part of the candidate's program.

5. Courses considered for transfer must have been completed at an accredited graduate school and must carry a minimum grade value of 3.00 on a 4.00 point scale. Grades lower than B including B- will not be accepted.

6. Graduate credit earned through correspondence courses cannot be used to meet degree requirements.

7. Transfer credit that is accepted must have been in courses started six years or less before the semester in which the degree work is completed.

Extension, Workshop, and Correspondence Credit

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

1. The work is approved by the major department.

2. The work is approved by the dean of the Graduate School.

3. The work is an integral part of a program planned by the candidate and the advisor and listed on an approved Plan of Study.

Graduate credit cannot be earned under a credit by examination program, and 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.

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

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

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

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

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

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

Thesis Preparation
Three copies of the thesis/dissertation must be bound on white 8.5 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 Guide to the Preparation of Theses and Dissertations, 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 advisor 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 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 1997-98, are subject to change by the action of the Kansas Board of Regents or the state legislature.

<table>
<thead>
<tr>
<th></th>
<th>Each semester</th>
<th>Summer Session</th>
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<tbody>
<tr>
<td>Non-Resident</td>
<td>Resident</td>
<td>Non-Resident</td>
</tr>
<tr>
<td>Graduate tuition</td>
<td>$92.80</td>
<td>$312.25</td>
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<tr>
<td>Per credit hour</td>
<td>$19.80</td>
<td>$19.80</td>
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<tr>
<td>Graduate student fee</td>
<td>$92.80</td>
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<tr>
<td>Per credit hour</td>
<td>$19.80</td>
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<tr>
<td>Registration fee— all students</td>
<td>$15.00</td>
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<tr>
<td>Per semester</td>
<td>$15.00</td>
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<td>$15.00</td>
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</tbody>
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The student fee, required of all students enrolled on the Wichita State campus, supports the Educational Opportunity Fund, parking, student union, athletics, Heskett Center, student health services, forensics, Student Government Association, University Forum Board, student publications, and other student activities.

**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 credits and do not add credits will be charged the proportional percentage based on the week they drop the credits. The percentages are published in the Schedule of Courses.

Students who drop and add credits will not be required to pay additional tuition/fees if the following conditions are met:

(a) The drop and add occurs in one transaction.

(b) There is an equal number of credits added as credits being dropped.

(c) The credits being added are taken during the same period of the semester as the credits being dropped. Credit hours from workshops and other irregular courses cannot be offset against regular semester courses or vice versa.

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**

During the first week of classes, 100% refunds will be granted for all changes in registration. Students will not need a waiver form for any changes in their enrollment. Refunds will be made automatically at the Controller’s fee payment window.

Beginning with the second week, a waiver form will be required with student requests made to college offices for review by the dean or other designated person(s). The waiver petitioning procedure is as follows:

1. Student requests a petition form from their dean’s office and provides the information requested.
2. Student presents the petition to the dean’s office for consideration.
3. Student is notified of the action taken on the petition by the dean’s office.
4. Student submits enrollment schedule change or withdrawal form to the Controller’s office.

**Graduate Assistantships, Fellowships, Scholarships, and Loans**

**Assistantships**

Each year Wichita State awards a number of assistantships for advanced study. Grants are made in most departments offering advanced degrees. Graduate assistantships provide for cash stipends up to approximately $8,500. A graduate teaching assistantship may qualify the recipient for up to a 100% 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 supporting evidence. Students admitted on probation or placed on academic probation following admission are not eligible for assistantship awards. Senior Rule students are not normally considered for assistantship awards. Recipients of graduate assistantships may not work more than a total of twenty hours per week and may not hold other remunerative employment without the written approval of the department chairperson and Dean of the Graduate School.

**Fellowships**

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

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

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

*Fellowships and Scholarships* 

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

*Dora Wallace Hodgson Outstanding Graduate Student Awards.* Established in 1995 through a donation to the WSU Endowment Association from the Dora Wallace Hodgson estate, awards are given annually for the following categories: Outstanding Doctoral Dissertation, Outstanding Master’s Thesis, Outstanding Doctoral Student, Outstanding Master’s Student, and Outstanding First Year Graduate Student. Students nominated for any of the Dora Wallace Hodgson Awards must meet general eligibility requirements including: good standing in a degree-bound program, nomination by a faculty member, approval by their graduate coordinator or department chair and the dean of their college. Inquiries about these awards and additional eligibility requirements should be made to the Dean of the Graduate School, 107 Jardine Hall, Wichita State University, 1845 Fairmount, Wichita, Kansas 67260-004.

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

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

*The Hugo Wall Fellowships.* Established in 1973, these are awarded to outstanding students with an urban affairs or public administration background seeking the Master of Public Administration degree. The fellowships honor the contribution made to public administration by the late Professor Hugo Wall. Applications must be filed with the Graduate Coordinator, Public Administration Program, 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 Uleberg Scholarship is available to students in counseling and school psychology; the Herbert Hannan Scholarship is available to students in educational administration; and the Grand Army of the Republic Scholarship and the Sam and Rosemary Serr Scholarship are available to students in communicative disorders and sciences.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Disability Services
The Office of Disability Services 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:

Office of Disability Services
Wichita State University
1845 Fairmount
Wichita, Kansas 67260-0132
(316) 978-3309

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 braille notes. Some auxiliary aids are available for students to use. Textbooks also can be recorded on tape when requested.

Disability Services encourages students to be as independent as possible on cam-
pus and to use these services which help maximize learning.

Housing and Residence Life
On-campus housing is available for more than 1,000 students in Fairmount Towers, Brennan Hall, and Wheatshocker Apartments. Housing options include any honors floor, graduate floor, quiet floors, single sex and coed floors, and apartment units. University housing is highly recommended for all students.

Admission to Wichita State does not mean automatic room reservation. Each student admitted will receive information concerning housing from the Office of Admissions and the proper forms must be filled in and returned to Housing and Residence Life to reserve a room. Students are encouraged to apply early since space is limited.

Send requests for information to:
Director of Housing and Residence Life
Wichita State University
1845 Fairmount
Wichita, Kansas 67260-0141

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

Office of International Programs
International Programs, 303 Grace Wilkie Hall, serves the special needs of approximately 1,400 international students from more than 90 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 new international 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 other activities that promote interaction between American and international 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 Health Services
Student Health Services in 209 Ahlberg Hall provides ambulatory health care for students with health concerns, medical problems, illnesses, and injuries. All services provided by Student Health are confidential.

Clinic services and health education are provided by a staff of registered nurses, nurse practitioners and 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 dermatology, gynecology, internal medicine; ear, nose, and throat; and family practice are available.

Some services include: immunizations, tuberculosis skin testing, confidential and anonymous HIV testing and counseling, women's and men's health care, course-required physical examinations, nutrition and diet counseling, and health screenings.

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

Student Involvement Programs
The Office of Student Involvement Programs, located in Room 105, Grace Wilkie Hall (phone [316] 978-3022), 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 involvement resource brochures, sponsorship of recognition programs (i.e., Student Organization Presidents Reception, Advisors Appreciation Breakfast), workshops and conferences on topics related to leadership and student involvement, a student organization handbook, and an ongoing community service program. Additionally, personnel are available to provide specialized training and consultation to students and student organizations upon request. Many of these programs and services are delivered through the Leadership Council, which is made up of student volunteers with an interest in leadership and a commitment to helping their peers.

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

University Child Development Center
The University Child Development Center, located in a facility which opened in January 1991, is a licensed school and accredited child care center for children of WSU students, faculty, and staff, and community. Degree/certified teachers and student assistants supervise developmentally appropriate activities which include art, language, music, science, and literature. The school is open from 7 a.m. to 6 p.m. Monday through Friday for children six weeks to six years old. Each child may be enrolled for a minimum of a half day at least two days per week. The program permits children to attend a preschool program while their parents are in class and/or at work. Child care scholarships are available through the Office of Student Financial Planning and Assistance for student parents who demonstrate financial need.

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.

The center maintains a comprehensive database of economic indicators including 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 second quarterly, Quarterly Business Review, summarizes business events as reported in Wichita newspapers. A monthly, Kansas Economic Indicators, also is published.

Center for Women's Studies
The Center for Women's Studies coordinates scholarly and curricular activities related to the study of gender and cul-
tecture. 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, especially in the Master of Arts in Liberal Studies program. In addition, the center serves as an informational resource regarding women's issues and gender studies for University students and faculty, as well as for the greater Wichita community.

Hugo Wall School of Urban and Public Affairs

The Hugo Wall School of Urban and Public Affairs was created in 1993 to enhance the urban mission of Wichita State University as articulated by the Board of Regents.

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

The school's research and community service programs include the Kansas Public Finance Center and the Institute for Research on Communities and Crime. In addition, the faculty and staff of the school are engaged in a wide range of research on state and local government issues, including tax equity, domestic violence, and juvenile offenders.

Kansas Public Finance Center

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

Institute for Research in Communities and Crime

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

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

Institute for Rehabilitation Research and Service

The Institute for Rehabilitation Research and Service (IRRS) was established in 1995 to promote a spirit of interdisciplinary cooperation among WSU faculty with rehabilitation-oriented interests. It is committed to improve the quality of life of persons with disabilities through basic and applied research, and service delivery program enhancement in concert with Wichita rehabilitation agencies.

The IRRS, in cooperation with the Cerebral Palsy Research Foundation of Kansas (CPR), manages the Rehabilitation Engineering Research Center (RERC). In existence for more than 20 years, the RERC utilizes state and federal funds to improve the educational and vocational opportunities for persons with disabilities. The RERC has at its disposal significant faculty expertise and facilities to carry out its mission.

National Institute for Aviation Research

The National Institute for Aviation Research at WSU has proven itself to be a valuable resource to the worldwide aviation industry. As a Kansas Technology Enterprise Corporation designated Center of Excellence, it emphasizes the transfer of developed and developing technology into industry use. Industry, government, and entrepreneurial research projects are constantly in progress. In addition, the institute is a valuable resource to the campus, providing a site and facilities for both faculty and student research in support of the College of Engineering and Fairmount College of Liberal Arts and Sciences.

Wichita State offers a variety of research facilities and disciplines through the institute. Prominent areas of research include aircraft crashworthiness and occupant protection systems, aerodynamics research and testing, advanced materials and composites process development, airframe structural design and testing, CAD/CAM and CATIA design, human factors/ergonomics and perception, information systems research, advanced aircraft propulsion systems, cryogenics/superconductivity, and icing systems design and research. NIAR is involved in several NASA and FAA projects as well as being the administrative center for the Aircraft Design and Manufacturing Research Center, a consortium of Kansas universities, state government and major aviation industry companies.

The NIAR Aerodynamic Laboratories include four wind tunnels and a water tunnel for flow visualization. The most famous wind tunnel facility at NIAR is the Walter H. Beech Memorial Wind Tunnel. It is a 160 mph tunnel with a 7-by-10 foot test section; it has the latest in state-of-the-art capabilities. Both traditional and nontraditional aerodynamic studies, such as architectural structures, Olympic bicyclists, and wind turbine blade research have been subjects. The Beech tunnel is one of very few of its size in the U.S. that is made available for student research projects as well as industry projects.

Research in many areas of aviation are continuously in progress at NIAR. The Computational Mechanics Laboratory works with computer models of aircraft structures, crashworthiness design, and aircraft seat design.
NIAR's crashworthiness research is recognized internationally. The Advanced Airframe Design and Analysis Laboratory works with computer models of aircraft structures, crashworthiness design, and aircraft seat design. Additionally, the fully equipped Structures Laboratory can test both materials and hardware designs. NIAR's Crash Dynamics Laboratory does real-world FAA aircraft seat certification testing for industry in a fully equipped 60-foot-high-bay lab facility, which includes one of the two aviation seating decelerator crash sleds in the U.S.

NIAR also has an extensive CAD/CAM Laboratory that runs training workshops in both CADAM and CATIA software, and a Composites Research Laboratory where composite materials productivity research and product development projects are undertaken for individuals and industry. Other NIAR laboratories' subjects are widely varied and ongoing.

The Center for Technology Application is another part of the institute, and provides support for manufacturers in the application of technologies that include computer integrated manufacturing (CIM), computer aided design (CAD), and quality. The CTA also operates the Wichita Field Office of the Mid-American Manufacturing Technology Center (MAMTC), a state and federally supported technology transfer program intended to assist small and medium size manufacturers in becoming and remaining competitive.

Research Administration

The Office of Research Administration assists the faculty in developing research, training, and service proposals for external funding. The office collects, maintains, and provides information regarding the programs, interests, and needs of government agencies, private foundations, and businesses; facilitates communication between the faculty and prospective sponsors; coordinates the preparation and submission of project proposals; provides general administration support for grants and contracts received; and monitors compliance with federal, state, Regents', and University regulations and policies.

Small Business Development Center

The Small Business Development Center (SBDC) 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.

Social Science Research Laboratory

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

The lab offers several services:

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

Seminars and workshops are offered for those interested in entrepreneurship. The most popular workshop, "Entrepreneurship: Your Future in Business," has received international recognition.

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

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

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

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

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

Many of the University's special facilities are described on the following pages.

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

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

The university's libraries offer a variety of services, including convenient hours as well as dial-in access to the online catalog and a number of the library's periodical indexes. Reference librarians are available to help students and faculty locate information and use the computerized systems. These librarians also perform literature searches in numerous remote computerized databases. When materials are not owned, interlibrary loan services will locate and borrow materials from other institutions.

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

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

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

The CAC has several dining areas to provide a variety of atmospheres and menus as well as a catering department to meet special needs. The University Bookstore, on the first floor of the CAC, stocks all required textbooks, many types of computer software and hardware, art supplies, general reading material, Hallmark® cards, Shocker souvenirs, and gifts. The CAC has a Recreation Center on the lower level for leisure use that includes pinball, video games, bowling, billiards, snacks, locker rental, disc jukebox, an engraving shop, laminating services, and a barber/beauty shop. The Recreation Center also is the home of the nationally ranked WSU varsity bowling teams. Additionally, the CAC has a theater and a variety of rooms that may be scheduled for meetings, special events, and conferences.

The reservations office schedules the use of all facilities in the CAC as well as most University facilities for out-of-classroom use.

Through the Student Activities Council, students are provided an opportunity to learn and develop leadership skills while planning a variety of programs for the campus. The CAC is also home for the Student Government Association, Student Ombudsman, Ecumenical Christian Ministries, and University Information Center.

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

Computing Center
The University Computing and Telecommunications Center serves the students, faculty, and staff of the University by providing contemporary computing and telecommunications facilities for instruction, laboratory research, sponsored programs, administrative data processing, and public service. These services include...
systems analysis and design, custom programming, interactive time-sharing, modem pooling, networking, access to a national and international (Internet) network, 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 and Classroom building was completed. This new building provides state-of-the-art facilities for computing at Wichita State 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 lab (for both mainframe and microcomputing), the print room, dispatch window, user services, and the Academic Support areas. The hours for the computer labs are: Monday-Thursday from 7 a.m.-midnight, Friday from 9 a.m.-6 p.m., Saturday from 10 a.m.-8 p.m., and Sunday from 1-8 p.m. The second floor contains the administrative offices, microcomputer repair and microcomputer networking and software offices, as well as a faculty and staff microcomputer classroom. The third floor is devoted entirely to housing the actual computer systems and technical support offices.

The central computing facilities consist of one IBM ES9121 Model 440 mainframe computer, and a DEC VAX/4000 Model 500. The IBM mainframe has 256 million characters of main memory and more than 180 billion bytes of auxiliary disk storage. The DEC VAX system provides 23 Vups of computing power, with 192 million characters of main memory, 15 GB of disk storage and a 7 cartridge tape magazine with 18 GB capacity.

The campus network supports Ethernet, SNA, and asynchronous communications with more than 3,700 microcomputers providing interactive computing for campus classrooms, laboratories, and offices. Students can access the computing resources by using any of the campus computing labs located throughout the campus (as well as the ones located on the first floor of the computing center complex) designated for student use. Students also may access the campus network by using a telephone modem and dialing the campus network. 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.

Electrical Engineering
Computer Facilities
The Department of Electrical Engineering in the College of Engineering has several computer laboratories. The main computer laboratory consists of 40 IBM PC-compatible Pentium and 80486-based microcomputers (some with CD-ROM drives), 15 SUN workstations, and 3 student laser printers and a color ink-jet printer, all networked over ethernet with Novell Netware.

A second laboratory, the Embedded Systems Laboratory, contains ten PC-compatible computers, two Novell Netware test servers, and several UNIX machines. This laboratory contains a full array of software development tools and libraries for MS-DOS, Microsoft Windows, IBM OS/2, and Linux as tools for biomedical microprocessor and microcontroller system research and development. In addition, the Embedded Systems Laboratory is a registered Novell Professional Developer site and possesses a full array of Novell software development kits to support student research in client-server, parallel, and distributed processing in a networked environment. The two student-access Novell file servers aid in this research.

A third laboratory, the Digital Speech Processing Laboratory, contains seven IBM PC-compatible computers. Using the laboratory's multimedia audio-visual capture and replay peripherals, students can conduct research into speech recognition and processing as well as video processing.

Each electrical engineering student is provided with a personal network login ID which allows access to student software and printers as well as disk storage space. Students also are provided with Internet electronic mail (EMail) access, so they can correspond electronically with faculty, other students, and other Internet users world-wide.

Computer usage is integrated into the curriculum at all levels of course work. Students utilize the computers for programming assignments, digital circuit simulation, analog simulation, as well as other numerical analysis. Software available to general students includes C++, BASIC, and FORTRAN, compilers for high-level programming; Microsoft Assembler for assembler programming; DOS PsPice and Windows B2SPICE for analog simulation; Windows B2Logic, Vitis, DL compilers, and LogicAid for digital simulation; Windows WordPerfect and QuattroPro for report writing and data presentation; Windows MathCAD for numerical analysis; PC-DSI for discrete-signal analysis; as well as various other specialized simulation, analysis, and mathematical modelling software.

Heskett Center
The University's multipurpose, dance, physical education, and recreation complex 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, comabatives room, 25-meter indoor swimming pool with separate diving well, eight handball-racquetball courts, and a 200-meter indoor jogging track which surrounds five basketball courts. The outdoor area contains a six-court lighted tennis complex and four large lighted play fields.

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

KMUW Radio Station
KMUW Radio broadcasts at 89.1 FM. The 100,000-watt station is one of more than 540 member stations of the National Public Radio (NPR) network. KMUW is also affiliated with Public Radio International (PRI) and Kansas Public Radio (KPR). 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 in radio broadcast and production and other related areas.

Learning Resource Center
Wichita State offers a variety of services to students through the programs of the Learning Resource Center (LRC). Courses are offered to help students improve their...
reading comprehension and speed, critical thinking skills, vocabulary, study strategies, and standardized test-taking 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, the Learning Resource Center offers free workshops and media programs to WSU students, including study skills workshops; videotapes for study skills, for algebra review, and for the National Teachers' Exam; and computer preparation programs for the Graduate Record Exam and the Pre-Professional Skills Tests.

The LRC may be contacted for information about other no-cost programs offered for special student populations, such as on-call study skills advisors, vocabulary preparation workshops, and conversation groups for students who need to increase their English speaking skills.

Marcus Center for Continuing Education

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

Media Resources Center

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

Facilities and resources include an interactive television (ITV) classroom, instructional design consulting and production, a multimedia lab, complete photographic darkroom laboratories, a computerized graphic design studio, a professional television production studio, satellite conference downlinks, compressed video and desktop videoconferencing facilities, and the campus cable TV network.

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.

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, furnishing programming for WSU's cable television station, and enable the University to participate in national satellite conferences. Receiving antennas are located to the southeast of the Media Resources Center.

The MRC also offers two-way compressed video services for instructional and administrative purposes to more than 30 sites in Kansas, including all six Regents' institutions. Out-of-state video-conferences also are possible with sufficient notice.

Desktop video conferencing facilities are newly available as part of the Regents' TeleNet 2 program.

Speech-Language-Hearing Clinic

Wichita State University Speech-Language-Hearing Clinic, 104 Hubbard Hall, provides diagnosis and treatment of speech, language, and hearing problems, including hearing aid fittings. Services are available on a fee-for-service basis to people in Wichita and the surrounding communities and to University students, staff, and faculty. The clinic is open 8 a.m.–5 p.m. Monday through Friday for scheduled appointments (phone [316] 978-3289). 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 10,545-seat Henry Levitt Arena which is used for intercollegiate basketball games, volleyball matches, and major entertainment events; Cessna Stadium; 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; and the Sheldon Coleman Tennis Complex with eight lighted courts, home to WSU's men's and women's intercollegiate tennis program.

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

WSU's nationally ranked bowling teams are at based in the Campus Activities Center's Recreation Center.

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

Edwin A. Ulrich Museum of Art

The Edwin A. Ulrich Museum of Art is recognized among university museums for its outdoor sculpture collection and for the quality of its exhibition program. The museum is named in honor of the late Edwin A. Ulrich, a businessman who contributed 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, David Salle, Sandy Skoglund, Jesus Moroles, Faith Ringgold, and Elizabeth Murray, 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 Wichita State University Endowment Association and managed by the professional staff of the museum, now numbers more than 7,300 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. Sole exhibitions by Frederick Waugh, Gordon Parks, and Ernest Trova, and themed exhibitions such as Twentieth Century American sculpture have traveled to museums both in this country and abroad.
A major aspect of the collection is the 60-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 19th and 20th century sculptures by artists such as Auguste Rodin, Henry Moore, Louise Nevelson, George Rickey, Lynn Chadwick, and Luis Jimenez, among others. The centerpiece of this outdoor collection is the mural, Personnages Oiseaux, by the Spanish artist Joan Miro, located on the face of the museum building. Consisting of nearly one million pieces of Venetian glass and marble, the mural depicts whimsical bird characters that inhabit the imagination of the artist.

Wichita Radio Reading Service
Operating on a subcarrier frequency of KMUW, the Wichita Radio Reading Service (WRRS) programs readings of printed material to more than 2,000 print-disabled individuals. More than 100 volunteers supply the readings, with additional programming from the In-Touch Network, National Public Radio, and Public Radio International. WRRS also provides training and professional experience for WSU students.

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 broadcasting, 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

Endowed Chair of Management; dean, Barton School of Business. 

Professors: Dharma deSilva, Cynthia Lengnick-Hall 

Associate Professors: John A. Belt, Nancy A. Bereman (associate dean, Barton School of Business), Manoj Gupta (Chairperson), Mark Lengnick-Hall 

Assistant Professors: Larry Inks, Timothy Pett, Martha Sanders, James A. Wolff

Marketing and Entrepreneurship 

Associate Professors: Phillips W. Goodell, Donald W. Hackett (director, Center for Entrepreneurship), Dean E. Headley, Frederic B. Kraft, Charles L. Martin, Robert H. Ross (Chairperson) 

Assistant Professors: Vincenizia Claycomb, Sandra Honig-Hafel, Stephen Porter

The mission of the W. Frank Barton School of Business is to add value to students and to advance the practice of business through: 

• offering undergraduate and graduate programs, 
• conducting basic, applied, and instructional research, 
• performing service that facilitates economic and personal development, and 
• capitalizing on our metropolitan location.

The vision of the W. Frank Barton School of Business is to be recognized as the best source of high quality business education, prospective employers, scholarly research, and business development services in the community, state, and region.

Consistent with the University's role as the Regents' urban institution, the Barton School aggressively pursues regional and national prominence for its academic and professional programs.

This mission is influenced by the location of the school 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 are 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.

Within this context, the faculty of the school have adopted the following educational goals of the Barton School which are listed below under the headings of Students, Faculty, Programs. For each grouping, a preamble states the basic values of the Barton School faculty.

Students: Students are the reason for the Barton School's existence. It is the faculty's responsibility to create programs and a learning environment that ensure the ultimate success of students. We, the faculty, want our students to evaluate positively their Barton School experiences, both while enrolled in courses and afterwards.

Goals: To ensure that students completing Barton School programs possess skills that make them competitive with students from the best business programs in the region. To increase quality and quantity of students.

Faculty: Faculty are the means by which the University creates a learning environment. The quality of the faculty and the opportunities provided to faculty for continuous improvement are of paramount importance to the success of the Barton School.

Goal: To have faculty who are widely recognized for their commitment to students and scholarship.

Programs: The programs offered by the Barton School link it to its multiple constituencies. The rich diversity of these programs reflects the University's unique metropolitan mission.

Goal: To increase the recognition of the Barton School through programs that are relevant, competitive, and up-to-date.

The school is a member of the American Assembly of Collegiate Schools of Business; its undergraduate and graduate programs are accredited by this organization.

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

Master of Professional Accountancy 

The Master of Professional Accountancy program at Wichita State University is designed to prepare qualified candidates for careers as professional accountants in public practice, industry, government, and nonprofit organizations. The program is based on strong preparation in general education courses with special emphases on communication skills, mathematics, and economics, and includes a
Probationary Admission—All Students
Students who do not meet the minimum GMAT and/or grade point requirements may be admitted to probationary status by the director on the basis of sufficient evidence that they can satisfactorily complete the MPA program requirements and have the potential for a successful career in professional accounting.

Degree Requirements—

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

Preprofessional Curriculum

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

1. The candidate must complete the general education requirements for Wichita State University, plus additional nonbusiness courses for 62 semester hours. The following courses are specifically required by the School of Accountancy and may be counted within this 62 hours:
   - Courses
     - Econ. 201Q and 202Q, Principles of Economics I and II
     - Upper-division economics course
     - Eng. 211, Composition: Business
     - Professional, and Technical Writing
     - Phil. 144Q, Moral Issues

2. The candidate must complete a minimum of 25 hours of the following Barton School of Business core requirements:
   - Courses
     - Acct. 510, Financial Accounting IV
     - Acct. 560, Accounting Information Systems I
     - Acct. 640, Auditing I
     - Acct. 890, Professional Seminar
     - Accounting electives (800 level)
     - B. Law 435 and 436, Law of Associations I and II
     - DS 871, Multivariate Statistical Methods or approved equivalent
     - Mgmt. 862, Organizational Behavior or approved equivalent
     - Mgmt. 885, Administrative Policy
     - Remaining Barton School of Business core requirements

   Other electives

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 core knowledge.

Degree Requirements—

Students Possessing a Bachelor's Degree at Time of Admission

Total degree requirements for students granted admission after completion of a bachelor's degree will vary and depend on the combination of previous coursework and experience. Admitted students are expected to complete their 62 preprofessional curriculum courses within 18 months. Students are required to maintain a minimum overall grade point average of 2.750.

Courses

<table>
<thead>
<tr>
<th>Hrs.</th>
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<tbody>
<tr>
<td>Preprofessional Accounting Core</td>
</tr>
<tr>
<td>Acct. 310 and 410, Financial Accounting II and III</td>
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<tr>
<td>Acct. 320, Managerial Accounting II</td>
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<tr>
<td>Acct. 430, Taxation I</td>
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<tr>
<td>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.</td>
</tr>
<tr>
<td>Professional Curriculum</td>
</tr>
<tr>
<td>Candidates in the professional curriculum who have completed the minimum preprofessional curriculum outlined above, must complete 56 credit hours in the following courses while maintaining an overall grade point average of 3.000 or better.</td>
</tr>
<tr>
<td>Courses</td>
</tr>
<tr>
<td>Hrs.</td>
</tr>
<tr>
<td>Professional Accounting Core</td>
</tr>
<tr>
<td>Acct. 510, Financial Accounting IV</td>
</tr>
<tr>
<td>Acct. 560, Accounting Information Systems I</td>
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<tr>
<td>Mgmt. 885, Administrative Policy</td>
</tr>
<tr>
<td>Remaining Barton School of Business core requirements</td>
</tr>
<tr>
<td>Other electives</td>
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</tbody>
</table>

* See list of courses under Preprofessional Curriculum. Core courses taken after admission to the MPA program must be graduate-level equivalent courses. ** Electives must be selected to conform with AACSB standards for master's in accounting programs. See the graduate coordinator of the School of Accountancy for assistance in making selections.

Students may be admitted to the MPA professional program on a trial basis and may be counted within this 62 hour period. Students who have completed the minimum 90 semester hours and have the potential for a successful career in professional accounting may be admitted by the School of Accountancy to learn the fundamentals of the professional accounting profession. The MPA program requires the completion of 30 graduate-level credit 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 core knowledge.
Methods or approved equivalent* ..........3
Mgmt. 862, Organizational
Behavior or approved equivalent* ..........3
Other graduate electives selected
with consent of MPA advisor ..........9
* These two areas may be waived and the graduate
electives increased accordingly if the student has had
an approved equivalent course at the upper-division
level.

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

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

Most of the courses that can be taken
for graduate credit and almost all of those
on the 800 level are offered in the evening.

Admission Requirements
Admission to the MBA program is granted
to students who show high promise of
success in postgraduate business study
and who hold bachelor's degrees from
regionally accredited institutions.

Previous academic training in business
is not required for admission to the MBA
program. Students may have back-
grounds 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 per-
sonal motivation, and the ability to develop
skills necessary to assume positions of
leadership.

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

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

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

Degree Requirements
Advanced Standing: Students with strong
backgrounds in mathematics and busi-
ness administration may be granted
advanced standing in the MBA program
through equivalent credit for background
fundamental courses for which a mini-
mum grade of C was received in an
undergraduate or graduate program.

Most students entitled to such credit
hold bachelor's degrees in business ad-
ministration from accredited institutions. Students
may be granted equivalent credit for
any or all of the background funda-
mental courses, depending on the depth
of their undergraduate or previous gradu-
ate 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 Stand-
ing: Students with bachelor's degrees in
nonbusiness fields usually will not have
backgrounds warranting the granting of
advanced standing through equivalency
credit. There are some exceptions. Some
students, for example, may have had
enough work in economics or statistics to
be granted credit for these courses. Deter-
imination regarding equivalency credit
will be made following admission to the
program.

MBA Course Requirements
*Prerequisites
Math. 144, Business Calculus ..........3
Econ. 231, Introductory Business
Statistics ..........4
**Background Fundamental Courses
Acct. 800, Financial Accounting ..........3
DS 850, Production and Operations ..........3
Management ..........3

upon the specific course content of the
undergraduate degree program. As a
minimum, the candidate's program must
include 30 graduate-level credit hours
beyond the bachelor's degree, including
15 semester hours of accounting courses
numbered 800 or above and a total of 20
semester hours in courses numbered 800
or above**.

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

Courses
Acct. 210, 310, 410, 510, Financial
Accounting I, II, III, IV* .................12
Acct. 220 and 320, Managerial
Accounting I and II ** .................6
Acct. 260, Introduction to
Information Processing Systems ..........3
Acct. 430, Taxation I .......................3
Acct. 560, Accounting Information
Systems I ..........3
Acct. 564, Auditing I ..........4
B. Law 435 and 436, Law of
Associations I and II ..........6
Econ. 231, Introductory Business
Statistics ..........4
Eng. 210, Composition: Business,
Professional, and Technical Writing ..........3
Eng. 685Q, Advanced Composition ..........3
Math. 111, College Algebra ..........3
Math. 144, Business Calculus ..........3
Phil. 144Q, Moral Issues ..........3

* Bachelor's degree holders may substitute Acct. 800
for Acct. 210 and 310 if they earn a grade of B or bet-
ter in Acct. 800.
** Bachelor's degree holders may substitute Acct. 801
for Acct. 220 if they earn a grade of B or better in
Acct. 801.

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

Courses
DS 850, Introduction to Production
Management ..........3
DS 874, Management Information
Systems ..........3
Econ. 800, Analysis of Economic Theory ..........3
Fin. 840, Finance ..........3
Mgmt. 860, Concepts of Administration ..........3
Mgmt. 885, Advanced Strategic
Management ..........3
Mkt. 800, Marketing ..........3

The following graduate-level course
work must be completed:

Acct. 890, Professional Seminar ..........1
Accounting electives (800 level) ..........15
DS 871, Multivariate Statistical
Executive Master of Business Administration

The Executive Master of Business Administration degree program is developed exclusively for high-potential professionals. The program focuses on the needs of professionals as well as the demands of the globally competitive business community. The EMBA program curriculum includes insights into human behavior, proven analytical tools, strategic operational and financial management, innovative marketing concepts, and the latest in competitive technology. The program is administered through Barton School of Business faculty in the accounting; economics; finance, real estate, and decision sciences; management; and marketing and entrepreneurship departments.

The EMBA program is completed in twenty-two months and requires completion of fourteen classes (36 credit hours). All classes meet on Saturdays.

**Admission Requirements**

Admission to the EMBA is granted to students who hold mid- or upper-level professional positions in businesses and non-profit organizations. All students must hold a bachelor's degree from a regionally accredited institution. Previous academic training in business is not required for admission to the EMBA program.

Although various criteria are considered in granting admission, special attention is given to the applicant's work experience, potential for advancement in their organization, and score on the Graduate Management Admissions Test (GMAT). All applicants are required to submit application materials including letters of recommendation and personal essays, and are required to complete a personal interview with Barton School faculty and/or administrative staff.

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

**Degree Requirements**

All students must complete 36 hours of course work. Students will progress through the program as a group. Of the required 36 hours of course work, 5 of those hours are electives. EMBA participants, as a group, will choose elective classes to be taken.

**EMBA Course Requirements**

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>EMBA 880</td>
<td>Statistical Analysis and Quantitative Methods for Decision Making</td>
<td>3</td>
</tr>
<tr>
<td>EMBA 801</td>
<td>Human Behavior and the Management of Organizations</td>
<td>3</td>
</tr>
<tr>
<td>EMBA 802</td>
<td>Marketing for Executive Management</td>
<td>3</td>
</tr>
<tr>
<td>EMBA 803</td>
<td>Economic Analysis for Managers</td>
<td>3</td>
</tr>
<tr>
<td>EMBA 804</td>
<td>Global Business and Competitiveness</td>
<td>2</td>
</tr>
</tbody>
</table>

**Policies**

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

2. All candidates must complete 9 hours of 800 level courses including: Acct. 801, Econ. 804, Fin. 850, Mgmt. 803 or 804, Mkt. 803, Mgmt. 862, Mgmt. 885, Mkt. 801 and six hours of electives. The additional three hours of electives may be at either the 800 level or the 600 level.

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

**Degree Requirements**

All students must complete 36 hours of course work. Students will progress through the program as a group. Of the required 36 hours of course work, 5 of those hours are electives. EMBA participants, as a group, will choose elective classes to be taken.

**EMBA Course Requirements**

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<th>Course Code</th>
<th>Course Title</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMBA 800</td>
<td>Statistical Analysis and Quantitative Methods for Decision Making</td>
<td>3</td>
</tr>
<tr>
<td>EMBA 801</td>
<td>Human Behavior and the Management of Organizations</td>
<td>3</td>
</tr>
<tr>
<td>EMBA 802</td>
<td>Marketing for Executive Management</td>
<td>3</td>
</tr>
<tr>
<td>EMBA 803</td>
<td>Economic Analysis for Managers</td>
<td>3</td>
</tr>
<tr>
<td>EMBA 804</td>
<td>Global Business and Competitiveness</td>
<td>2</td>
</tr>
</tbody>
</table>

**Master of Science in Business**

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

**Admission Requirements**

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

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

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

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

**Degree Requirements**

Students admitted to the MS in Business program must complete the same set of prerequisites and background fundamentals as were previously listed for the MBA program. As in the MBA program, students may be granted equivalent credit for any or all of the background fundamental courses, depending on the depth of their undergraduate or previous graduate preparation.
for the degree must be approved by the
student's advisor. (Courses identified as
background fundamentals may not be
included in the 31-33 hours required for
the degree.)

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

Additional requirements under each
option area are as follows:

Option A: Option A requires the com-
pletion of a minimum of 31 credit hours
of work, including at least 21 hours in
800-level courses. In addition to the two
required courses specified earlier, can-
didates 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. Can-
didates also must present an oral defense
of their thesis conducted according to the
requirements of Wichita State Universi-
ty's Graduate School.

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

Of the 15 hours of specialization, three
credit hours must be taken as a special
project in the student's area of specializa-
tion. 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 stu-
dent's entire degree program.

Master of Arts in Economics
The Department of Economics presents a
curriculum leading to the Master of Arts
(MA) degree. Courses of study concen-
trate on either economic analysis or busi-
ness economics. Both seek to provide stu-
dents with analytical skills useful in deci-
dion-making and a broader under-
standing of the overall economic envi-
ronment. The economic analysis subspecialty
is particularly suitable for students who
wish to continue their studies in eco-
nomics at the doctoral level. Business
economics is geared to those who seek
careers in the private or public sector, and
desire to augment their analytic and
quantative skills. This track includes
courses designed to analyze economic
data, plus electives to provide exposure
to graduate studies in other functional
areas of business.

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

Admission Requirements
Admission to the MA program in econ-
omics requires an undergraduate degree
from a regionally accredited university.
Students without proper undergraduate
economics background must make up the
deficiency by taking undergraduate theo-
ry courses designated by the graduate co-
ordinator before they are allowed to
take graduate-level courses. Students
lacking calculus must make up this defi-
cency during the first semester of gradu-
ate work.

Admission to the program is based in
large part, but not exclusively, on the stu-
dent's grade point average. For admis-
sion 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.

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 econ-
omics or courses approved by the gradu-
ate 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</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>Econ. 731, Inter Mediate Business Statistics</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 801, Macroeconomic Analysis</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 802, Microeconomic Analysis</td>
<td>3</td>
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</tbody>
</table>

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 committe.
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 com-
plete 33 semester hours and pass a writ-
ten comprehensive examination covering
economic theory and statistics.

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

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>Econ. 804, Managerial Economics</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 803, Analysis of Economic Conditions and Forecasting</td>
<td>3</td>
</tr>
<tr>
<td>Econometrics</td>
<td>3</td>
</tr>
<tr>
<td>800-level business courses</td>
<td>9</td>
</tr>
</tbody>
</table>

Independent Research. Students elect-
ing the independent research option are
required to complete 30 graduate semi-
ter hours and three additional hours of
independent research. Independent
research is taken under the direction of
a graduate faculty member of the econ-
omics department. The final product is a
written paper summarizing the research
submitted to the department. The re-
search paper must be read and
approved by two faculty members in
addition to the faculty advisor.

Comprehensive Examination. Students
electing to take the comprehensive exam-
ination option are required both to com-
plete 33 graduate semester hours and
pass a written comprehensive examina-
tion.

Accounting
School of Accountancy

Courses for Graduate/Undergraduate Credit

510. Financial Accounting IV. (3). A continu-
ation of Acct. 410. Includes an examina-
tion of accounting concepts and tech-
niques related to partnerships, con-
solidated statements, and
governmental and not-for-profit ac-
counting. Pre-requisites: Acct. 260 and 410. Math. 109 or
111; junior standing.

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.
selected problem areas in

Financial Accounting V. (3). A continuation of quantitative methods

Taxation U. (3). A study of the federal tax system

Managerial Accounting

Theoretical Foundations of Accounting.

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. Prerequisite: Acct. 400 or equivalent.

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. 310 (or equivalent), or permission of the School of Accountancy.

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. 310 (or equivalent), or permission of the School of Accountancy.

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.

Managerial Accounting IV. (3). Advanced study of theoretical concepts underlying cost accounting, emphasizing the nature of business cost structures, 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.

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.

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.

Auditing II. (3). An advanced study of auditing emphasizing EDP auditing statistical sampling and ethics. Prerequisites: graduate standing and Acct. 510 and 640 (or equivalent), or permission of the School of Accountancy.

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.

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

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

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

Thesis Research. (1-3).

Aviation Management

Department of Marketing and Entrepreneurship

Courses for Graduate/Undergraduate Credit

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

Workshop in Business Law. (1-4). Prerequisite: junior standing.

Courses for Graduate Students Only

Legal Environment of Business. (3). An introduction to the legal environment within which the business system operates. Studies 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 role of public law from a managerial perspective, including the ethical and social responsibility aspects of business behavior.

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

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

Decision Sciences

Department of Finance, Real Estate, and Decision Sciences

Courses for Graduate/Undergraduate Credit

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.

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.

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.

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

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

Courses for Graduate Students Only

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.

Intermediate Production Management. (3). Theory of productive systems, decision
Economics

Department of Economics

Courses for Graduate/Undergraduate Credit

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

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

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

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

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


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

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.

653. Public Finance. (3). An analysis of fiscal institutions and the decision making in the public sector of the American economy, budget planning and execution, taxation, debt, and fiscal policy. Prerequisites: Econ. 201Q, 202Q, or 800, and junior standing.

660. Labor Economics. (3). An introduction to labor economics surveying both theoretical and empirical research in this field. Includes labor markets, wage determination, and human capital theory. Prerequisites: Econ. 201Q, 202Q, or 800, 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. 201Q, 202Q, or 800, and junior standing.

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

663. Economic Insecurity. (3). Cross-listed as Econ. 463. Personal economic insecurity, such as unemployment, old age, health care, disability, and erratic economic fluctuations. Includes costs and benefits of government action to aid in meeting such insecurities. Prerequisites: Econ. 201Q, 202Q, or 800, or instructor's consent; junior standing.

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

672. Introduction to International Economics and Business. (3). Cross-listed as Mgmt. 561. A survey of the economic foundations of international trade and investment. Studies international business operations and the international economic environment (the international capitalist economy), then explores the operations of the multinational firm within that environment. Prerequisites: Econ. 201Q, 202Q, or 800, and junior standing.

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

680. Economics of Energy and Natural Resources. (3). A study of the business and economic aspects of energy and natural resources problems. Includes energy demand and supply, the price of energy, energy industry characteristics and government regulations, conservation, environmental problems, and public policies. Uses statistical data extensively to evaluate the past and present energy and natural resources situations and the trends for the future. 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. Prerequisites: Econ. 201Q, 202Q, or 800, and junior standing.
688. Urban Economics. (3). A survey of the economic structure and problems of urban areas on both the microeconomic and macroeconomic levels. Stresses the application of regional economic analysis in the study of urban areas as economic regions. Prerequisites: Econ. 201Q, 202Q, or Econ. 800, and junior standing.

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

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


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

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

760. Local Government Finance. (3). Cross-listed as Pol. S. 760 and P. Adm. 760. An analysis of state and local government expenditure and revenue systems, with an introduction to state and local financial administration. Prerequisites: Econ. 201Q and a course in statistics or instructor's consent.

Courses for Graduate Students Only

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

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

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

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

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


817. Money and Capital Markets. (3). Theoretical 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. 823. Analysis of the markets for speculative securities such as futures, options and commodities. Evaluates underlying theories explaining speculative markets in which such securities are traded. Discusses trading strategies such as hedging and arbitrage. Prerequisite: Fin. 840 or equivalent.

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

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

870. Seminar in International Trade. (3). Cross-listed as Fin. 820. A seminar in theoretical concepts and contemporary issues in international economics and finance. Includes foreign exchange markets, the Eurodollar market, Arab oil dollars in the international monetary system, transference of inflation between countries, developments in the common markets, etc. Prerequisites: Econ. 201 and 202.

885. Seminar in Environmental Quality Control. (3). Examination of actual problems, projects and current 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 Entrepreneurship

Courses for Graduate/Undergraduate Credit

560. Consulting with Small Enterprise. (3). Gives hands-on experience consulting with an existing small business. Students work with the owner in teams under the guidance of the instructor to identify the problem, gather information relevant to the problem, propose solutions to the problem, and help the owner implement 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. 301, Mkt. 340, Mgmt 360, senior standing. Preferred Entre 465 also be taken.

561. New Product Marketing. (3). A course in evaluating, developing, and commercializing new products within both smaller and larger firms. Explores the role of the product/brand manager, a person who often acts as an internal entrepreneur. Prerequisite: Mkt. 300.

568. Selling and Sales Force Management. (3). A course in selling and sales force management. Includes bank balances, compensation and payment systems, cash management systems, corporate liquidity, receivables and payables management, inventories, and international short-term finance. For entrepreneurship majors. Prerequisite: Fin. 340 and junior standing.

566. Feasibility Analysis. (3). Advanced course in feasibility research for startups, new product development, or expansion of existing business organizations. Gives special attention to feasibility research including sources of seed money and on-going financing, private placement or stock, initial public offerings, business valuation, and financial planning. Also includes environmental analysis, insurable and investment risk management, site location analysis, planning exit strategies, and business negotiation. Students develop an advanced business plan and work on special projects. Prerequisites: Entre. 351 and 465.

590. Special Topics in Entrepreneurship. (3). Advanced course with in-depth discussion of emerging topics within the field of entre-
prenture. Topics rotate, allowing the student to repeat the class one time. Prerequisites: Enct. 668, 665, senior standing.

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

Courses for Graduate Students Only

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

868. New Venture Feasibility Seminar. (3). Focuses on directing students in the appropriate methods of selecting financial sources and in raising seed capital through the preparation of a comprehensive feasibility study. Covers (1) sources of capital, such as venture capitalists, investment banks, and creative forms of financing; (2) marketing opportunity analyses; (3) project identification; (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 Enct. 668.

869. Entrepreneurship and Innovation Within Organizations. (3). Addresses trends, current status, and the characteristics in the area of innovation and entrepreneurship within organizations. Examines principles applicable to any organization, large or small, private or public, by those people who wish to create change and innovate within the existing structure. Covers (1) foundations of entrepreneurship; (2) barriers to change; (3) entrepreneurial characteristics of individuals; (4) creative thinking and focused ideation methods; (5) "entrepreneurship"—the need for it, definition, methods, favorable environment, and rewards; (6) examples of entrepreneurship; (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 Bauer 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


612. Capital Budgeting. (3). A study of the planning and control of capital expenditures. Explores the use of various decision rules for making accept/reject decisions on projects. Includes the study of project cash flows and analysis, mutually exclusive projects, and the choice of the discount rate. Prerequisite: Fin. 340 and junior standing.


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

622. Futures and Options Markets. (3). Presents an overview of the futures and options markets. Discusses basic theoretical concepts as well as the practical issues of hedging and speculating in these markets. Prerequisites: Fin. 340 and junior standing.

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

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

631. Money and Capital Markets. (3). A study of domestic and international financial markets, instruments, and institutions and the determinants of the general level and structure of interest rates and security prices. Also covers management of interest rates and portfolio risk using a variety of techniques. Prerequisites: Fin. 340 and junior standing.

632. 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. 340 and junior standing.

660. Cases in Finance. (3). An exploration of the problems and operations for which the financial officer is responsible, emphasizing controversial aspects of financial analysis. This is the capstone course in the finance major and should be taken at the end of a finance program. Prerequisites: Fin. 340, 440, six hours of accounting, or departmental consent, and junior standing.

680. Seminar in Selected Topics. (1-6). Repeatable with departmental consent. Prerequisites: Fin. 340 and junior standing.


Courses for Graduate Students Only


821. Risk Management with Options and Futures. (3). Cross-listed as Econ. 841. A seminar in theoreti cal concepts and contemporary selected issues of international economics and finance. Includes foreign exchange markets, the eurodollar markets, Arab oil dollars in the international monetary system, transference of inflation between countries, developments in the common markets. Prerequisite: Fin. 625 or Econ. 674 or instructor's consent.

822. Risk Management with Options and Futures. (3). Cross-listed as Econ. 841. Discusses the use of futures and options contracts in managing some of the risks associated with business and investment. Also discusses theoretical issues to provide a basis for understanding the practical uses of these securities. Prerequisite: Fin. 840 or equivalent.

830. Financial Institutions and Markets. (3). Analyzes the management and operations of banks in the financial services industry. Studies the competitive money and capital markets in which they operate. Emphasizes risk management in the financial institution using a variety of techniques. Prerequisite: Fin. 840 or equivalent.

840. Principles of Finance. (3). An intensive analytical introduction to finance from the management viewpoint, including the theory
of financial management, the financial institutional structure, and an analysis of a variety of practical problems of business finance. Prerequisite: Acct. 800 or equivalent.

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


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

691. Directed Studies. (1-6). Prerequisite: Fin. 840 and departmental consent.

693. Special Project in Finance. (1-4). A special project including original case research supervised by instructors or field research. Prerequisite: approval of the MS committee. Open only to MS in business degree candidates. Prerequisite: Fin. 840.


Human Resource Management
Department of Management

Courses for Graduate/Undergraduate Credit

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

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

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

669. Training and Development. (3). Analyzes the training and development function as applied in private and public sector organizations. Considers the role of training and development in today's business environment, needs assessment, learning objectives, learning theory, instructional methods and techniques, and evaluation of training effectiveness. Prerequisite: HRM 466 or instructor's consent.

690. Seminar in Selected Topics. (1-5). Repeatable with departmental consent. Prerequisite: HRM 466 or instructor's consent.

750. Workshop in Human Resources. (1-4).

Courses for Graduate Students Only

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

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

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

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


International Business
Department of Management

Courses for Graduate/Undergraduate Credit

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

601. International Marketing. (3). Cross-listed as Mkt. 601. Problems and procedures of marketing in foreign countries. Includes the effects of foreign cultures and marketing systems on the design of marketing programs. Prerequisites: Mkt. 360 and 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. Studies international trade, theory, and policy (the international economy), then examines the operations of the multinational firm within that environment. Prerequisites: Econ. 202Q and junior standing.

560. Designing Effective Organizations. (3). Studies how work and workers can be structured to best accomplish the goals of an organization. Explores the interplay of design, technology, strategy, and environment, and discusses frameworks that promote growth, market responsiveness, innovation, and global competitiveness. Emphasizes skills necessary for managing change for maximum effectiveness of individuals, work groups, and the organization as a whole. Prerequisites: Mgmt. 360 or concurrent enrollment and junior standing.

661. Coaching, Developing, and Mentoring. (3). Managers and leaders of all kinds are judged not on what they do but upon how well their subordinates perform. Course develops positive, supportive management skills for helping individuals and groups achieve their potential. Covers the importance of identifying and hiring superior performers, orienting them to the group, coaching and developing subordinates to their fullest, maintaining motivation at high levels, and merging individuals into a cohesive group. Prerequisites: Mgmt. 360 or concurrent enrollment and junior standing.

662. Managing Workplace Diversity. (3). Modern organizations face the challenge of managing employees with diverse backgrounds and talents to provide products and services to diverse customers. Course examines workforce diversity from the perspective of maximizing its benefits to group and organizational effectiveness, including developing skills to facilitate the constructive resolution of conflict, encouraging cooperation and teamwork, and enhancing identification with the work unit. Prerequisites: Mgmt. 360 or concurrent enrollment and junior standing.

663. Building Effective Work Teams. (3). Significant changes in the business environment have motivated widespread support for the use of teams to accomplish work-related tasks. Course promotes an understanding of the organizational context of a team culture through an analysis of how teams form and group processes that enhance goal accomplishment. Emphasizes skills necessary to manage the organization's culture, improve group performance, and increase collaboration among team members. Prerequisites: Mgmt. 360 or concurrent enrollment and junior standing.

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

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

Courses for Graduate Students Only

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

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

830. Socio-Legal Environment of Business. (3). An examination of the economic, political, social, and legal environment in which business operates. Considers the 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. Deals with 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, 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. Applies concepts such as motivation, personality, interpersonal relations, upward management, conflict management, and leadership to organizational settings, emphasizing analysis and action-planning. Prerequisite: Mgmt. 860 or departmental consent.

865. Communication. (3). Cross-listed as Comm. 865. An analysis of communication models emphasizing their applications to communication problems in organizations. Explores social-psychological processes underlying persuasion in interpersonal relations and through the mass media. Critically analyzes communication systems and techniques within formal organizations. Prerequisite: Mgmt. 860 or departmental consent.

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

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

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

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

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

891. Directed Studies. (1-5). Prerequisite: 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 business degree candidates.


Marketing

Department of Marketing and Entrepreneurship

Courses for Graduate/Undergraduate Credit

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

604. Distribution Management. (3). A study of all areas involved with the distribution of a firm's products or services. Focuses on such issues as the development of a firm's marketing channels and its relationships with wholesalers and retailers as well as the management of the firm's storage facilities, inventory control, procedures, and shipping facilities. Prerequisites: Mkt. 200 and junior standing.

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

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

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

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

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

803. Marketing Management. (3). Develops an understanding of the difference between a sales/marketing department and a marketing orientation. Emphasizes the integral role of a marketing orientation throughout the modern organization. Prerequisite: Mkt. 800 or equivalent.

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 probes the organization of the marketing department and its relation to the total organization. Prerequisite: Mkt. 800 or departmental consent.

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

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

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

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

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

891. Directed Studies. (1-5). Prerequisite: 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 business 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. Prerequisites: 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 business degree candidates.

College of Education

Offices: 104 Corbin Education Center
Randolph Ellsworth, interim dean
Marcus T. Ballenger, associate dean of students and certification
Dennis J. Kear, associate dean for teacher preparation

Departments
Administration, Counseling, Educational and School Psychology, (316) 978-3326—Orpha K. Duell, chairperson
Communicative Disorders and Sciences, (316) 978-3240—Wesley Faires, chairperson
Curriculum and Instruction, (316) 978-3322—Dennis J. Kear, associate dean for teacher preparation and chairperson
Health and Physical Education, (316) 978-3340—Susan Kovar, chairperson

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

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

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

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

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

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

Thesis students must pass an oral examination over their research.

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

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

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

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

Master of Education Requirements
The Master of Education (MEd) in counseling and in educational psychology may be earned under a thesis or nonthesis option. The nonthesis option in coun-
Admission Requirements—Counseling Education and Administration

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-bachelor's 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 graduate course work in educational 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 recommen-

dation for school counselor certification. Only people who have been admitted to and have completed the MEd counseling program at the 43 credit hour nonthesis level or at the 51 credit hour thesis level, hold a Kansas teaching certificate and have two years teaching experience may be recommended for certification as a school counselor.

Admission Requirements—Educational Psychology

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

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

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 obtained a combined verbal and quantitative score on the GRE of 1,000 and a B average over the last 60 credit hours of undergraduate course work.

Admission Requirements—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 grade degree transcripts, undergraduate grade point average for the last 60 credit hours; Graduate Record Examination scores (verbal and quantitative), names, addresses, and phone numbers of three people to provide letters of reference; and a statement of professional goals and research interests. Undergraduate grade point average (GPA) and Graduate Record Examination (GRE) scores will be evaluated using the following index:

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

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 stu-
District Educational Administration Endorsement Requirements

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

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

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

Certification Programs

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

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 advisors 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.

694. Cooperative Education. (1-6). Provides students with training in basic helping skills for paraprofessional counseling. Includes training and periodic seminars. May be repeated for a maximum of six hours credit. Prerequisite: departmental consent.

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

704. Introduction to Educational Statistics. (3). An introduction to statistics, including measures of central tendency, measures of variability, correlation, chi square, median test, t test, correlated t test, and one 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 challenges of contemporary development. Focuses on these theories which helped shape the way we currently view human development as well as significant new perspectives which may shape the way we view it in the future. Prerequisites: CESP 334, Psy 334 or equivalent, and CESP 701 or equivalent, or instructor's consent.

729A, B, C, and D. Applications in Development: (A) Infants/Toddlers—prenatal to three; (B) Early Childhood—three through eight; (C) Late Childhood/Early Adolescence—nine through fourteen; (D) Adolescence—fifteen to young adulthood. (1). An in-depth study of the physical, cognitive, emotional, and social development of the child in family and social environments. Focuses on the integration of a conceptual framework with the basic elements of an appropriate environment to facilitate healthy development. Prerequisite: CESP 323. Students who have a previous age-specific graduate course in growth and development may request instructor's consent to take 729A, B, C, or D as an update.

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 prescribed areas during a semester. Repeatable with advisor's consent. Prerequisite: Instructor's consent.

Courses for Graduate Students Only

800. Principles and Applications of Educational Psychology. (3). A critical examination of the major topic areas traditionally defined as educational psychology. After examination of basic paradigms and strategies of the discipline, students apply them to such areas as instructional practices and design, classroom management, and discipline. Prerequisites: CESP 334, 433, 701.

802. Introduction to Interaction Process. (1). S/U grade only. A laboratory approach to an examination of the counselor's role in the counseling process. Helps the prospective counselor increase personal understanding of self as a variable in the counseling process. Prerequisites: counseling majors and instructor's consent. May be taken concurrently with CESP 808. May not be taken concurrently with CESP 825.

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

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

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

808. School Psychology Professional Issues. (3). Examines roles and functions of school psychologists within the context of historical foundations of the profession. Uses lecture, discussion, and observation 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 services in the school setting. Prerequisites: CESP 701, 704, 802, 803, 804.


815. Career Development. (3). For master's level students interested in assisting students and adults in career development and related concerns. Covers (1) career development of individuals across lifespan, (2) sources and organization of information, (3) assessment designs and career intervention techniques, and (4) career decision-making/planning processes. Includes hands-on experience with a variety of assessment methods and intervention techniques and theory-based career decision-making strategies for career interventions. Prerequisites: CESP 701, 704, 802, 803, 804.

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

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

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

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

823. Experimental Design in Educational Research. (3). A consideration of sampling theory, design for testing hypotheses about populations from samples, testing correlation coefficients, means and differences between means, multifactorial 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 729, 821, 822, and PSY 845.

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.


837. Family Issues in Counseling. (3). Covers the family issues of child abuse, substance abuse, and loss; how these factors influence the growth and development of children, adolescents, and adults; and how to make interventions appropriate to the work setting. Prerequisite: graduate standing.

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.

853. Law, Ethics, and Multicultural Issues for School Psychologists. (3). For school psychologists and practicing school psychologists. Covers issues of legislation, litigation, professional ethics, and cultural diversity that impact the practice of school psychology. Prerequisite: admission to the school psychology program or instructor's consent.

855. Individual Intelligence Assessment. (3). Use of individual tests for appraisal of intelligence, aptitude, 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 50 hours of 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, or concurrent enrollment.

858. Diagnostic Testing. (3). Use of individual tests, rating procedures, and behavioral techniques for the appraisal of perceptual development, cognitive development, classroom behavior, and academic skills. Considers assessment theory and research relevant to these areas in a lecture discussion format which includes some case simulation and practice activities. Prerequisites: CESP 822, 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. Prerequisites: 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 or 810 and instructor's consent.

867. Practicum in Group Guidance and Counseling Methods. (2). 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, 855, 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 relations in creating macro- and micro-learning experience designs for individuals or groups experiencing dysfunctional situations. Stresses individual and organizational effectiveness assessment skills.

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

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

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

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, 855, post-master's standing or last six hours of master's program, and instructor's consent.

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

948. Practicum in Marriage and Family Counseling. (3). Prerequisite: CESP 800, graduate-student status, or departmental consent.

977. Internship in School Psychology. (2). Supervised experience as a school psychologist in a school or agency setting. Requires at least 500 hours of applied experience. Repeatable for a maximum of four hours. Prerequisites: CESP 946 and departmental consent.

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

Educational Administration and Supervision

Courses for Graduate/Undergraduate Credit

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

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

752. 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.

785. 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 applied theoretician, problem finder, problem solver, legal/financial expert, instructional supervisor, and human resource developer. Familiarizes students with the skills, understandings and career commitments essential to success in school administration. Not applicable to EAS graduate degree program requirements. Prerequisite: admission to Graduate School.

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.

805. Seminar: Professional Self-Assessment and Inquiry. (3). Participants engage in self-assessment and readiness for becoming a school administrator. Includes discussing and learning issues and techniques for measurement in the cognitive, affective, and psychomotor domains. Also reviews the basics of educational research, the nature of research methodologies, and methods for the preparation of research reports.

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

895. Practicum: School Opening. (1). Participants engage in preparing to open a school for the fall semester with a principal/mentor; participate in an inquiry project in their local school, and read and critique current research literature and articles on how to assist in their school. Prerequisite: admission to the MEd in educational administration or instructor's consent.

838. Seminar: Introduction to Educational Leadership and School Finance. (3). Discusses educational planning concepts to the school setting and educational administration models. Includes (a) an examination of educational foundations and the major theories of administration and application to specific problems, and (b) an overview of administration of the school district, especially problems involving the community and staff. Examines theoretical concepts related to financial planning and building resources. Review knowledge necessary to plan and organize work groups, projects, and the resources necessary to carry out day-to-day functional activities of school. Prerequisite: admission to the MEd in educational administration or instructor's consent.

815. Practicum: Introduction to Educational Leadership and School Finance. (3). Spend time in schools identifying how major theories of administration apply to specific problems in the school and how the school interacts with the district and the community. Apply financial planning concepts to the school setting and manage the day-to-day financial and other resources allocation to schools. Prerequisite:
admission to the MEd in educational administration or instructor's consent.

823. Seminar: Interpersonal Relations and Supervision. (3). Examine the theoretical concepts related to clinically oriented supervisory models and explicit teaching approaches. Study formative evaluation concepts focusing on performance issues related to actual teaching situations and the teacher's guided analysis of these issues. Review the responsibility of the supervisor for planning and organizing staff development activities. Examine processes involved in the development of interpersonal skills. Engage in simulated exercises to acquire interpersonal skills desirable for group collaboration and communication. Prerequisite: admission to the MEd in educational administration or instructor's consent.

825. Practicum: Interpersonal Relations and Supervision. (3). Apply the concepts of clinical supervisory models and specific teaching approaches, emphasizing formative evaluation strategies which focus on performance issues generated from actual teaching situations and the teacher's guided analysis of these issues. Cover preparation of the supervisor's role in planning and organizing staff development activities. Apply concepts of formative evaluation and staff development using interpersonal and group process skills. Observe, analyze, and reflect upon supervisory techniques and interpersonal skills in the school setting. Prerequisite: admission to the MEd in educational administration or instructor's consent.

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

830. Practicum: School Closing. (1). Engage in closing the school year with a principal/mentor. Prerequisite: admission to the MEd in educational administration or instructor's consent.

831. Seminar: Human Development and Managing the Learning Environment. (3). Examine developmentally appropriate practices in the classroom for student learning and behavior management. Includes discussion of developmental psychology sufficient to interpret human developmental patterns and their behavioral implications. Prerequisite: admission to the MEd in educational administration or instructor's consent.

832. Practicum: School Opening. 2. (1). For a second time, prepare to open a school for the fall semester with a principal/mentor, and participate in an inquiry project in the local school. Read and critique current research literature and analyze how that research can assist in the school. Prerequisite: admission to the MEd in educational administration or instructor's consent.

833. Seminar: School Law and Personnel Management. (3). Examine concepts related to staffing issues, including selection and recruitment, certification, orientation, staff development, evaluation, transfer and dismissal, and retirement. Cover general concepts of law, interpretations of statutes and court decisions affecting education, and the legal responsibilities of school personnel and professional jurisdictions. Prerequisite: admission to the MEd in educational administration or instructor's consent.

835. Practicum: School Law and Personnel Management. (3). Apply the concepts related to the selection, recruitment, certification, orientation, staff development, evaluation, transfer, dismissal, and retirement. Apply general legal concepts and statutes to various situations and personal liability. Prerequisite: admission to the MEd in educational administration or instructor's consent.


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

843. Seminar: Curriculum and Learning Theory. (3). Examine theoretical concepts related to curriculum philosophies and developmental processes. Examine recent programs and proposals as well as curriculum development at the building and school system levels. Review techniques of program evaluation and major learning theories and principles. Prerequisite: admission to the MEd in educational administration or instructor's consent.

845. Practicum: Curriculum and Learning Theory. (3). Apply the concepts of curriculum theories and development, emphasizing skills necessary to propose, implement, and evaluate various building programs. Address applications of prevailing major learning theories and principles as they relate to academic and behavioral aspects of the classroom. Prerequisite: admission to the MEd in educational administration or instructor's consent.

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. (3). Designed for students in advanced study. Emphasizes development of research proposals and studies. Prerequisite: completion of master's degree or advisor's consent.

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

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


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

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

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

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

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

909. Planning in Educational Administration. (2). Seeking out, analyzing, and making appropriate use of information in effective school planning. Examines systems analysis, management information systems in school settings, and strategies for long- and short-range planning.


955. 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 become directly involved. The project may fulfill a community need, a departmental concern, or a needed investigation or
inquiry. Acceptable projects are developmental or must include an appropriate research design. A useful, well-documented report of the project is required, with the plan, format, and style approved by the student's committee. Prerequisite: completion of master's degree.

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

969. Technologies for Academic Writing in Educational Administration. (3). Allows practicing administrators to gain knowledge of the doctoral program process through the use of various software packages used to collect and analyze data in Educational Administration and Supervision. Also introduces techniques for academic writing at the doctoral level. Students must own a Macintosh computer (preferably a Powerbook) and be reasonably familiar with the Macintosh operating system, Microsoft Excel, EndNote Plus, and Microsoft Word. Prerequisite: admission to the EdD program in EAS.

970. Advanced Administrative Theory Seminar. (5). Examines the relationship between theory and research in educational administration. Participants consider various theoretical frameworks for empirical studies, program designs, and organizational implementation efforts, and take initial steps toward an integration of those frameworks. Class activities require the application of the constructs and propositions considered to an 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. (5). Focuses on approaches to identifying, clarifying, and solving various problems in elementary and secondary education. Decision-making and problem-solving models are reviewed, critiqued, and applied. Prerequisite: admission to EdD program; EAS 970 and 981, concurrent enrollment in EAS 982.

972. Administrative Leadership Seminar. (5). Designed to facilitate in-depth investigations of research relevant to leadership theory and practice. Activities include clarifying and developing personal leadership skills, identifying, fostering, and supporting the leadership skills of others; and conducting observations of leaders in action. Prerequisite: admission to EdD program; EAS 970 and 971, concurrent enrollment in EAS 982.

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.

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

985. Field-Based Research II. (3). Follows EAS 983 and continues field-based research activities and development of dissertation proposals. Prerequisites: admission to EdD program, EAS 984.

986. Field-Based Research III. (3). Follows EAS 984 and 985 and culminates this field-based sequence. Prerequisites: admission to EdD program; EAS 986 and 987.

987. 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 is individually designed by an EAS faculty member with the student and his/her school district supervisor. Addresses the needs of the student and of the district. Thrust is to assist the student to extend basic skills relevant to a particular administrative assignment. The student must register for three hours of credit in EAS 991 to meet recertification requirements. SU grading only. Prerequisites: completion of master's degree and departmental consent.

992. Superintendency/Internship. (6). Two-semester course designed primarily for individuals who are completing course work to obtain certification as a district-level administrator. 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. Student must file an application for this terminal course.

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 advancement 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 course work.
degree and completion of at least one year of that graduate work with a grade point average of 3.50 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 with an emphasis either in audiology (42 hour program) or in speech-language pathology (40 hour program), and with either a thesis option or a non-thesis option. The non-thesis option also requires the successful completion of the minimum credit hours required for that emphasis. Written comprehensive examinations also must be taken, and are normally taken during the last semester in the program. Students may not take these examinations during any semester in which they are on academic probation.

All degree program students must complete two tool subjects, each for 3 credit hours and with a minimum C letter grade. Students will be allowed to test out of these courses. One course is in statistics, and the second is research methods. All students must enroll in a clinical practicum course each semester of enrollment. No more than four credit hours in clinical practice may count toward the minimum credit hour requirements for the MA. Clinical competence also must be demonstrated before the completion of the graduate program by meeting the ASHA clock hour practicum requirement for certification in the area of emphasis. 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 $1,000,000–53,000,000. 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, 65 of which must be taken at Wichita State University. Students normally take the qualifying examination in the semester in which they complete the Plan of Study requirements, exclusive of dissertation hours. A minimum of nine hours of Advanced Practicum will be included in the Plan of Study. Enrollment in CDS 895 or 899 is required for each semester in which the student is working with a faculty member on thesis research. The non-thesis option also requires the successful completion of the minimum credit hours required for that emphasis. Written comprehensive examinations also must be taken, and are normally taken during the last semester in the program. Students may not take these examinations during any semester in which they are on academic probation.

General

Courses for Graduate/Undergraduate Credit


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

740. Selected Topics in Communicative Disorders and Sciences. (1-4). Individual or group study in specialized areas of communicative disorders and sciences. Repeatable.

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

Courses for Graduate Students Only

800. Research Methods. (3). A survey of the different research methods utilized in the fields of communication sciences and communication pathology. Students acquire the fundamental 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.

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

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

355. 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.

890. Independent Study in Speech and Language Pathology or Audiology. (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 students culminating in a manuscript appropriate for publication.

994. 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 or equivalent and competency in statistics.

995. Research Preseminar. (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 and valuable knowledge and insights regarding how real world research is performed. Prerequisite: doctoral student standing.

Communication Sciences

Courses for Graduate/Undergraduate Credit

501. Speech and Hearing Science. (3). Examination of elements in the chain of events that lead to human communication. Studies speech production and perception at physiological and acoustical levels, emphasizing 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.

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.

904. Speech Physiology. (3). A critical review of pertinent research concerning the physiological bases of speech. Emphasizes understanding the instrumental techniques utilized in such studies. Prerequisite: CDS 801.

Speech-Language Pathology

Courses for Graduate/Undergraduate Credit

510. Language III: Introduction to Evaluation. (4). Provides the principles underlying basic diagnostic procedures for all ages, emphasizing the principles and procedures for evaluating language disorders in children, including observations, case histories, interviewing, and administering and interpreting formal and informal assessment instruments. Requires observation of evaluation procedures in the speech-language-hearing clinic and a laboratory experience. Prerequisites: CDS 414, 416, 419.

516. Language IV: Introduction to Intervention. (3). Discussion of current language intervention strategies and programs for infants, toddlers, and preschoolers, and school-age children, birth to 8 years. Examination of the development of individual and family plans. Discussion of the multidimensional nature of language and culturally different language patterns. Requirements of clinical intervention and a laboratory experience. Prerequisites: CDS 416 and 510.

635. Clinical Methods in Speech and Language. (1). Techniques and methods for development of clinical skills in a supervised practicum setting. Children with language and speech sound disorders provide the primary focus. Development of a philosophy of the clinical process will include clinical procedures for therapy, writing behavioral objectives and progress reports, and conducting parent conferences. Prerequisites: junior or senior standing, 20 clock hours of observation, CDS 414 and 416, prior or concurrent enrollment in CDS 510.

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

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

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

712. Fluency Disorders. (3). A review of current theories on the etiology and development of the disorder. Considers behavioral and structural approaches to diagnosis and treatment of fluency disorders, including procedures for parent teaching and counseling, and multicultural concerns. Provides opportunities for observation, one focus on the innovative intervention methods. Prerequisites: senior standing and CDS 300, 510.


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

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

780. Communication Disorders in Educational Settings. (3). Organization, administration, and professional relationships among school, speech and language management programs on the local and national level. Emphasizes procedures and materials for surveying, scheduling, writing IEP's, therapeutic management, record keeping, and utilization of various instructional media. Should be taken prior to student teaching, CDS 761 and 782. Prerequisite: prior or concurrent enrollment in CDS 510.

781. Speech and Language Practicum in the Public Schools. (2). Half-time participation in a public school speech and language management program under the supervision of a certified clinician and a University supervisor. Prerequisites: graduate standing, CDS 761 and 780, departmental consent one semester prior to enrollment, and medical clearance.

782. Speech and Language Practicum Seminar for Public Schools. (1). Discussion and evaluation of student teaching experiences in public schools, use of clinical and theoretical knowledge in the classroom, development of clinical and research teaching skills, counseling on the elementary and secondary school levels. Prerequisite: to be taken concurrently with CDS 781.

Courses for Graduate Students Only

810. Neurology of Speech and Language II: Motor Speech Disorders. (3). Studies speech disorders resulting from upper and lower motor neuron lesions in the central nervous system and emphasizes 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 aphasology. Prerequisite: CDS 605.

815. Interviewing and Parent Counseling. (3). Provides 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. Focuses on information supportive of developing effectiveness in these roles. Considers multicultural concerns.

818. Communication Disorders in Medical Settings. (3). Provides the principles underlying a transdisciplinary teaming approach, emphasizing differential diagnosis and treat-
ment 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.

830. Advanced Methods in Speech and Language Evaluation. (1). Clinical methods for evaluation and diagnosis of children and adults presenting with speech and language disorders. Prerequisites: CDS 510 or equivalent, concurrent enrollment in CDS 831, and instructor's consent.

831. Evaluation Processes. (1). Provides the student with information regarding speech and language evaluation processes and procedures. Prerequisites: CDS 510, concurrent enrollment in CDS 830, and instructor's consent.

832. Beginning Graduate Methods. (1). Lecture and class discussions covering various types of communication disorders and management techniques/methods. Relates theories and methods to students' clinical and practicum assignments. Designed for students with 20 or more practicum clock hours. Prerequisites: CDS 635, 636, or equivalent, instructor's consent, concurrent enrollment in 836.

833. Advanced Methods in Hospital/Adult Care. (1). Class discussions cover various topics pertaining to hospital and adult care practicum experiences. Relates theory and methods to student's practicum assignments. Prerequisites: prior enrollment in CDS 818, concurrent enrollment in CDS 836, instructor's consent.

834. Advanced Methods for Phonological Disorders. (1). Procedures for evaluation and remediation of children's highly unintelligible utterances. Discussion of clients' individual needs. Prerequisites: prior or concurrent registration in CDS 714, concurrent enrollment in CDS 836, instructor's consent.

856: Graduate Practicum in Communicative Disorders. (1-2). Repeatable. Supervised application of diagnostic and/or clinical management techniques with individuals presenting communicative disorders. Prerequisites: CDS 635 or equivalent, instructor's consent, medical clearance, concurrent enrollment in a practicum methods course.

837. Advanced Methods in Language. (1). Lecture and class discussions cover various topics of language disorders. Relates theories and methods to students' clinical and practicum assignments. Prerequisites: CDS 635 or 832 or equivalent, CDS 516, concurrent enrollment in 836, instructor's consent.


839. Advanced Methods in Accent Modification. (1). Lecture and discussion of techniques for foreign accent and dialect modification. Relates techniques to students' practicum experience in CDS 570. Attendance in CDS 570 required. Prerequisites: CDS 635 or 832 or equivalent, concurrent enrollment in CDS 836.

Audiology

Courses for Graduate/Undergraduate Credit

550. Senior Seminar in Audiology. (2). An exploration of theories, principles, practices, and pitfalls of audiology emphasizing creating dynamic models for research, interpretation, clinical interaction, and professional management. Examines the current educational, professional, and ethical issues in clinical audiology and hearing science. Prerequisite: CDS 450 or senior standing.

685. Methods in Auditory Assessment-SLP. (1). Methods in audiological evaluation for speech and language pathology students. Discusses procedures for diagnostic evaluation of a broad range of auditory disorders in infants, children, and adults in weekly class meetings, along with procedures for hearing screening, hearing aid evaluation and fitting, counseling, and others as appropriate. Prerequisites: CDS 250 and 350 or equivalents.

686. Practicum in Auditory Assessment-SLP. (1). Speech and language pathology students engage in practicum experiences in audiology setting and are assigned as arranged. Prerequisites: CDS 250 and 350 or equivalents and concurrent enrollment in CDS 685.

751. Clinical Audiology I. (3). 3R; I1. 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; I1. Diagnostic and rehabilitative procedures in the audiology clinic. Techniques and procedures for the administration and interpretation of special auditory tests including tests for pseudohypoacusis, predictive acoustic reflexes, tests for central auditory pathology, and calibration. Prerequisite CDS 751.


783. Methods in Aural Rehabilitation. (1). Discusses topics pertaining to the provision of aural rehabilitation services for children and adults. Includes current practices in aural rehabilitation for children, adults, and the elderly; procedures and materials for those services; and current therapy by student clinicians enrolled in practicum. Repeatable. Prerequisite: CDS 764 or equivalent.

786. Practicum in Aural Rehabilitation. (1). Provides methods for the habilitation/rehabilitation of hearing-impaired children and adults. Prerequisites: CDS 764, concurrent enrollment in CDS 785, and instructor's consent.

COURSES FOR GRADUATE STUDENTS ONLY

826. Anatomy and Physiology of the Auditory System. (2). Examine in detail anatomy and function of the auditory system in light of current research knowledge. Studies the normal system as a basis for understanding the pathological system. Prerequisites: CDS 250, 501.

827. Introduction to Psychoacoustics. (2). 2R; D. Basic principles underlying the perceptual hearing experience, psychoacoustic and medical dependencies between sound stimuli and subjective auditory experience as related to communication behavior. Prerequisite: CDS 826.

851. Medical Audiology. (2). Many hearing disorders require evaluation/treatment by both audiological and medical professionals. Reviews the audiological and physiological/medical aspects of the more common of these conditions found in children and adults. Prerequisites: CDS 250, 826, or instructor's consent.

854. Community and Industrial Audiology. (2). Reviews 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 (ECochg), auditory brain stem response (ABR), and the later occurring cortical evoked potentials (MLF, LAEP, and P300). Prerequisites: CDS 605, 826, 851.

859. Electrocochleography. (1). Techniques and procedures for clinical evaluation of the functional status of the peripheral (inner ear) and central nervous system portions of the vestibular balance system. Prerequisite: CDS 858.

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.


range of auditory disorders in infants, children, and adults in weekly class meetings, along with procedures for hearing aid evaluation and fitting, counseling, and others as appropriate. Prerequisite: audiology faculty's consent.

886. Advanced Practicum in Auditory Assessment-Aud. (1). Practicum experiences encompassing diagnostic evaluations covering a full range of auditory disorders and types of evaluations in infants, children, and adults, including standard audiologic batteries, masking, site-of-lesion testing, electrophysiologic measurements, hearing aid fitting and dispensing, patient follow-up, and counseling. Prerequisites: audiology faculty's consent.

Curriculum and Instruction
Graduate Faculty
Professors: Robert D. Alley, Marcus T. Balenger (associate dean), Jodi A. Carroll, Bryant F. Fillion, Dennis J. Kear (associate dean for teacher preparation and chairperson), John H. Wilson
Associate Professors: Louis Goldman, Michael A. James, Tonya Huber
Assistant Professors: Alan A. Aagaard, Peggy J. Anderson, Frances Clark, Gerry Coffman, Diana Rogers-Adkinson, Twyla G. Sherman, Candace B. Wells, Catherine G. Yeots

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

Admission Requirements
In addition to the Graduate School admission requirements, students seeking the MEd in curriculum and instruction must meet both of the following criteria:

(1) Potential to do graduate work, by meeting one or more of the following:
   (a) graduate from the WSU teacher education program with a minimum GPA of 2.750 in the last 60 credit hours;
   (b) graduate from an NCATE accredited program with a 3.000 or better GPA in the last 60 credit hours;
   (c) take the Graduate Record Exam and score a minimum of 917 on any two of the subtests, or take the Miller Analogies Test and score a minimum of 40; or
   (d) provide alternative evidence that documents academic aptitude.

(2) Provide evidence of involvement in curriculum development or teaching.

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

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

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

Master of Education Requirements
The Master of Education (MEd) in curriculum and instruction is a 36-credit hour program. Students must complete either a thesis option or a portfolio option. Students complete 17 credit hours of required courses in curriculum and instruction, research and research problems. They also complete 12 hours in a self-selected area of specialization, 3 hours in a course related to their particular thesis or portfolio project and 4 hours in thesis or portfolio work.

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

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

518. Instructional Strategies: Kindergarten. (3). Students examine the content and methods of instruction in kindergarten and observe and teach in a variety of settings. Students examine all aspects of the kindergarten program and are introduced to a wide variety of materials available and in use. Prerequisite: acceptance into teacher education, CT328, CESP 433

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

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

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

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

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

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

705. Introduction to the Reading and Writing Process. (3). Examine all aspects of current theories and pertinent research on reading and writing. Stresses applying this information to the actual teaching of children.

706. Reflective Inquiry Into Learning, Teaching, and Schools. (3). Fosters the cognitive, critical, and narrative elements of teachers' reflective thinking about the relationships among learning, teaching, and schools. Explores various psychological, historical, philosophical, developmental, and social/multicultural frameworks as the tools that drive the teachers' investigations. Prerequisite: graduate standing.

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

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

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

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

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

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

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

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

723. Analysis and Management of Behavior. (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 320 or 702, senior standing.

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

734. Literature-Based Reading Programs. (3). An introduction to the history of reading and the evolution of reading instruction in the United States. Emphasizes the development of reading instruction and the role of the reading teacher in a contemporary educational setting. Prerequisite: CI 706.

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

740. Introduction to Early Childhood Special Education. (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.

770. Introduction to PC Computing. (1). Provides an introduction to using the Apple IIe computer in the classroom. Students learn about Apple IIe hardware, care of hardware and software, network sharing, and software appropriate for Apple IIe, word processing, and the Apple IIe and LOGO. Graded S/U.

772M, 772M. Introduction to Macintosh Computing. (2). Provides basic Macintosh skills appropriate for classroom use. Covers mouse skills, keyboarding, managing files, managing floppy and hard disks, and simple word and data processing. Teachers with little or no experience on a Macintosh should enroll in this workshop before taking Instructional Applications workshops or courses. Graded S/U.

771. Technology in the Classroom. (2). Introduces classroom teachers to new technologies and their usage in the classroom. Uses field trips, and speakers to expose teachers to leaders in specific technology. Includes telecommunications, multimedia applications, integrated media, and new hardware and operating systems. Prerequisite: CI 770M or CI 770P or instructor's consent.

777A. Instructional Applications: Apple IIe. (1). An introduction to using the Apple IIe computer in the classroom. Students learn about Apple IIe hardware, care of hardware and software, networking in an Apple IIe lab, software appropriate for Apple IIe, word processing, and printing on the Apple IIe, and LOGO. Graded S/U.

777M. Macintosh in the Classroom. (3). A comprehensive introduction to a wide range of instructional applications of the Macintosh computer and related technology. Covers teacher management tools such as gradebooks, database management, and test construction software; development of instructional materials in print, on screen, and with hypermedia; appropriate application of CD-ROM and laserdisc technology; and types and evaluation of educational software. Prerequisite: CI 770M or department consent.

777P. PCs in the Classroom. (2). A comprehensive introduction to a wide range of instructional applications of the PC computer and related technology. Covers teacher management tools such as gradebooks, database management, and test construction software; development of instructional materials in print, on screen, and with hypermedia; appropriate application of CD-ROM and laserdisc technology; and types and evaluation of educational software. Prerequisite: CI 770P or department consent.

775. Instructional Applications: Desktop Publishing. (2). Learn how to use student and teacher-produced desktop publishing in the classroom. Introduces desktop publishing programs for elementary, middle, and secondary levels. Students should have basic working knowledge of the Macintosh computer and some experience with word processing. Prerequisite: CI 770 or instructor's consent.
Situational and applicable in an educational setting.

524 Examines theories, development processes, evaluation procedures, and current practices in curriculum. Emphasizes 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 MED in Curriculum and Instruction program, CESP 601.

844. Curriculum Models and Practices. (3) Studies the development, evaluation, and current practices in curriculum. Emphasizes 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 MED in Curriculum and Instruction program, CESP 601.

847A. Practicum: Early Childhood Special Education. (3-6) Provides opportunities for student-to-student clinical competencies with children with handicaps and their parents under the supervision of trained professionals in the field. Prerequisite: CI 782.

847E. Practicum: Learning Disabilities. (3-6) Provides opportunities for students in a class for learning disabled children/adolescents receiving special education for the student to develop clinical competencies with young children with handicaps and their parents under the supervision of trained professionals in the field. Prerequisites: CI 786 and 888.

847H. Practicum in Center-Based/Home-Based Early Childhood Handicapped (ECH). (3) Provides opportunities for the student to develop clinical competencies with handicapped young children and their parents under the supervision of trained professionals in the field and while working in the center and the homes of the client. Prerequisites: CI 740, 847R, 891; CDS 815 or CI 760, and departmental consent.

Courses for Graduate Students Only

802. Seminar on Current Issues in Special Education. (3) Analyze and critique research, integrate understandings, evaluate current issues in light of historical events, and draw conclusions relating theory to practice. Prerequisite: 560 or 770P in CI 782 or instructor’s consent.

803. 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 707.

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.

835. Instructional Models and Practices. (3) For teachers (1) to explore the theories behind the development of, and the syntheses 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. Prerequisites: admission to MED in Curriculum and Instruction program, CESP 601.

850. Special Projects in Desktop Publishing. (1) Use desktop publishing to produce materials appropriate for the classroom. Objectives and evaluation will be determined on a contract basis. Prerequisite: CI 770 or instructor’s consent. Corequisite: CT 699.

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

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

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

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

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

802. Seminar on Current Issues in Special Education. (3) Analyze and critique research, integrate understandings, evaluate current issues in light of historical events, and draw conclusions relating theory to practice. Prerequisite: CI 770 or instructor’s consent.

803. 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 707.

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.

835. Instructional Models and Practices. (3) For teachers (1) to explore the theories behind the development of, and the syntheses 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. Prerequisites: admission to MED in Curriculum and Instruction program, CESP 601.

850. Special Projects in Desktop Publishing. (1) Use desktop publishing to produce materials appropriate for the classroom. Objectives and evaluation will be determined on a contract basis. Prerequisite: CI 770 or instructor’s consent. Corequisite: CT 699.
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 psychoeducational assessment devices, curriculum strategies, behavior management, and prescriptive remediation for academic deficits. Prerequisites: CI 707 and 888.

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

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

853. Improvement of Instruction in Language Arts. (3). Students examine recent developments in the teaching of language arts in elementary and/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.

859A-M. Seminars in Curriculum and Instruction. (1-3). 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 of each seminar. A maximum of two hours can be applied to the MEd in Curriculum and Instruction. Prerequisites: admission to MEd in Curriculum and Instruction and program, CI 806, CESP 801.

861. Seminar in Special Education Research. (3). Development and presentation of research proposal. Prerequisite: admission to MEd in Curriculum and Instruction, CI 806, CESP 801.

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

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

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. (2-2). Students complete their research proposal that was accepted by their thesis committee. Also required is the completion and oral defense of the student's thesis. Students work closely with their advisor and committee. Students need 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 differentially 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 725.

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

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

894. Advanced Topics in Early Childhood Handicapped. (1-4). Students participate in topical seminars in early intervention offered periodically to facilitate opportunities for the in-depth study of critical issues or topical research in this rapidly developing field. Prerequisites: CI 760, 761, 876, 8478, 887, and 892 or instructor's consent. Repeatable for credit.

Health and Physical Education
Graduate Faculty
Professor: Susan K. Kovar (chairperson)
Associate Professors: Lori K. Miller, Nancy B. Stubbs
Assistant Professors: Judy P. Chandler, Richard E. Laptad, Matthew D. Vukovich

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

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

Master of Education Requirements
The Master of Education (MEd) in physical education may be earned under a 33 credit hour thesis option or a 36 credit hour nonthesis option. The exercise science/wellness program offers a 34 hour thesis option and a 36 hour nonthesis option. The thesis option requires an oral examination on the research; the nonthesis option requires a written comprehensive examination. The MEd program in sports administration requires 36 hours of course work (thesis or nonthesis), a 6 hour internship and a final oral examination.

Courses for Graduate/Undergraduate Credit
500. Health Education K-12. (3). Provides 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 to pres-
elected local health agencies. Additional projects required for graduate students. Prerequisites: Block I of teacher education program.

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: Block I of teacher education program.

520. Sport Tournament and Event Management. (3). A detailed account of the structural designs, mathematical calculations, scheduling principles, procedures, and thought processes involved in the organizing and conducting of sport tournaments and events.

525. Sport Facility Management. (3). Focuses on various aspects of facility management, such as mission development, funding and budget, site selection/planning/design, floor surfaces, risk management, equipment purchase and maintenance, and personnel management.

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

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

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

732. Introduction to ECG's. (3). Develops a foundation in electrocardiography. Includes ECG leads, rate, and rhythm, ECG complexes and intervals, conduction disturbances, arrhythmias, ECG identification of myocardial infraction location, and drug effects on an ECG. Prerequisites: PE 550 and senior standing, full standing in the Graduate School, or instructor's consent.

Courses for Graduate Students Only

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

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

810. Adapted Physical Education. (3). Philosophy, principles, and methods of adapting physical education and recreational activities to the needs of the handicapped and the exceptional individual. Provides laboratory experiences. Prerequisite: PE 328 or departmental consent.

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

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

815. Fitness Assessment/Exercise Recommendations. (3). Introduces techniques appropriate for screening, health appraisal, and fitness assessment as required for prescribing exercise programs for individuals without disease or with controlled disease. Requires out of class laboratory experiences. Prerequisite: PE 350 or equivalent and graduate standing.

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

825. Physical Education in Elementary Schools. (3). New concepts, recent trends, methodology, programming, and supervision. 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, respi-
tory dynamics, cardiovascular function, and regulation during rest, steady state and exhaustive physical activity. Emphasizes immediate and long term adaptation to exercise and training. Prerequisite: PE 530.

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

847. Internship. (6). 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 the Profession. (3). Examination of research methodology as related to topics in health, PE, recreation, sports studies, and exercise science/wellness. Includes review and critical evaluation of the literature, research design and statistical processes, methodology, data collection techniques, computer-based analysis of data and thesis/report writing. Students design and complete a mini-research project.

875. Thesis Research. (1-2). Development of a research problem and proposal with the direction of a graduate faculty member. Repeatable but total credit hours counted toward degree requirements must not exceed two. Prerequisites: admission to graduate school in good standing, PE 860, and departmental consent.

876. Thesis. (1-2). Repeatable but total credit hours counted toward degree requirements must not exceed two. Students must be enrolled in this course during the semester in which all requirements for the thesis are met. Prerequisites: PE 875 and consent of the student's committee chair.

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

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

The following abbreviations are used in the course descriptions: R stands for lecture and L for laboratory. For example, 4R, 3L means four hours of lecture and two hours of lab.
College of Engineering

Departments
Aerospace, (316) 978-3110—Walter J. Horn, chairperson; Bert L. Smith, master's graduate coordinator; Klaus Hoffmann, doctoral graduate coordinator

Electrical, (316) 978-3415—Everett L. Johnson, chairperson; M. Ed Sawan, graduate coordinator

Industrial and Manufacturing, (316) 978-3425—Abu Masud, chairperson; Jeffrey E. Fernandez, graduate coordinator

Mechanical, (316) 978-3402—Richard T. Johnson, chairperson; Mahesh S. Greywall, graduate coordinator

The College of Engineering offers graduate programs leading to a Master of Science (MS) and a Doctor of Philosophy (PhD) in aerospace engineering, electrical engineering, industrial engineering, and mechanical engineering. Areas of specialization can be found in the individual departmental sections. 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.

Master of Science Admissions Requirements
To be admitted to the MS program, students must have completed the equivalent of an undergraduate degree in an engineering or related field. Students with deficiency in certain areas may be required to take additional courses. For admission with full standing, a minimum grade point average (GPA) of 3.00 on a 4.00 scale is required for the last two years of undergraduate work. Students with a GPA less than 3.0 may be considered for probationary admission. Scores for the General Test of the Graduate Record Examination (GRE) are recommended for all students applying from non-U.S. institutions. The GRE scores will help in the admission decisions for those students with marginal grades.

Degree Requirements
The MS degree requires the completion of a Plan of Study approved by the student's advisor and the department graduate coordinator, which must be filed within the first 12 credit hours of graduate course work. Three options are available:

1. The thesis option requires a minimum of 24 hours of course work plus a minimum of 6 hours of thesis.
2. The directed project option requires a minimum of 30 hours of course work plus a minimum of 3 hours of directed project.
3. The course work option requires a minimum of 33 hours of course work.

At least 60 percent of the hours in the Plan of Study must be 700-level or above. Additional details of the MS degree may be obtained from the department graduate coordinator.

Examination
Before the MS degree is granted, candidates in the thesis option must pass an oral examination over the thesis. Candidates in the directed project option must give an oral presentation and submit a written report on their directed project. Candidates in the course work option must pass a written exit exam. Details of the exit exam can be obtained from the department graduate coordinator.

Doctor of Philosophy
PhD programs are offered by the four departments of engineering at WSU. Typical fields of specialization can be found in the individual departmental sections. These fields will be used in determining testing areas for the comprehensive examination in the major and minor fields.

Admission Requirements
Admission to any PhD program in engineering requires that the student has completed (or nearly completed) a master's degree in engineering or physical science. Scores for the General Test of the Graduate Record Examination (GRE) must be submitted. Some students may find it necessary to take prerequisite courses to be able to meet the course breadth requirements. The student is recommended to the graduate dean for admission by the department chairperson in consultation with the graduate coordinator of the department where the graduate student will be housed.

Plan of Study and Advisory Committee
Within the first 12 hours of PhD 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. The committee will be composed of a minimum of five graduate faculty, with at least four having full membership including the chairperson who also must have authorization to chair doctoral committees. A majority of the advisory committee members must be from the major department and at least one member must be outside the student's major department. The chairperson of the advisory committee should be the student's dissertation advisor. 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 15 hours in the student's major field and 18 hours outside the major area. The 18 hours must include a minimum of six hours in a minor area (defined by the advisory committee) and a minimum of six hours of mathematics/statistics. A Plan of Study normally contains about 60 hours of course work, including courses from the master's degree, and should have a minimum of 60 percent of the hours (24 dissertation hours included) beyond the master's work at the 800-900 level or equivalent.

Foreign Language or Research Tools Requirement (FLORT): The Plan of Study must include either (1) proof of translating ability in one foreign language in which a significant amount of printed material in the student's field exists, or (2) six hours of course work (not necessarily at the graduate level) in advanced computing skills, statistics, or experimental methods related to the dissertation research.
Comprehensive Examination

After the PhD Plan of Study has been approved, and after sufficient course work has been completed, the student must take the comprehensive examination given by the advisory committee. The comprehensive examination will cover the major and minor fields and any course that the advisory committee deems necessary. The student's advisory committee is responsible for ensuring that the student takes the comprehensive examination at the appropriate time. No part of the comprehensive examination may be attempted more than twice. Upon passing the comprehensive examination, a student is known as an Aspirant for the PhD.

Time Limits and Residency Requirement

From the time the student is admitted to the program, no more than six years may elapse until requirements for the degree have been completed. However, the student may petition the advisory committee for a leave of absence to pursue full-time professional activities related to his/her doctoral program and long-range professional goals. At least two semesters shall be spent in residency on the WSU campus involved in full-time academic pursuits. This may include up to half-time teaching and research. Well-designed plans for obtaining dissertation research experience under the supervision of the student's advisor 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.

Aerospace Engineering

Graduate Faculty

Distinguished Professors: Ramesh Agarwal, William H. Wentz, Jr.

Professors: Walter J. Horn (chairperson), Bert L. Smith

Associate Professors: Klaus A. Hoffmann (doctoral graduate coordinator), Steven J. Hooper, L. Scott Miller, M. Gawad Nagati, Michael Papadakis, Kamran Rokhaz (master's graduate coordinator)

Assistant Professors: Roy Y. Myose, John S. Tomblin

The Department of Aerospace Engineering offers programs leading to Master of Science (MS) and Doctor of Philosophy (PhD) degrees. Faculty research provides valuable educational opportunities for graduate students. Current research topics include theoretical and experimental aerodynamics, computational fluid dynamics, composite materials and structures, damage and failure mechanics, impact dynamics and flight dynamics and control.

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 and a crash dynamics 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 Boeing, Cessna, Learjet, and Raytheon.

Graduate course work is scheduled so that engineers employed in local industry may pursue graduate degrees.

Master of Science

Courses of study leading to the MS degree are available with specialization in any of the following five fields: (1) experimental aerodynamics; (2) computational fluid dynamics; (3) solid mechanics and structures; (4) flight dynamics and control; and (5) multidisciplinary analysis and design. Details of the MS program can be found under the College of Engineering heading.

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 advisor.

Courses for Graduate/Undergraduate Credit


508. Systems Dynamics. (3). Lump parameter modeling; classical, numerical, transform and state model methods of solution; introduction to systems with feedback; analogies of various physical systems. Prerequisites: AE 373 and Math 555.


527. Numerical Methods in Engineering. (3). Error analysis. Includes polynomial approxi-
Classical, numerical and energy solutions. Prerequisite: AE 777.


812. Aerodynamics of Viscous Fluids. (3). Viscous fluids flow theory and boundary layers. Prerequisite: AE 424 or 420 or ME 521.

814. Advanced Flight Dynamics II. (3). Sensitivity analyses of flight parameters; control surface sizing; handling qualities; pilot in-the-loop analysis; trajectory optimization. Prerequisite: AE 714.

815. Space Dynamics II. (3). Missile and interplanetary trajectories, orbital perturbations, attitude control methods and atmospheric reentry. Prerequisite: AE 715 or equivalent.

817. Transonic Aerodynamics. (3). Experimental and analytical difficulties in flow and flight near Mach one. Basic equations and solution methods: linearized potential equation; shock occurrence criteria on wings; Transonic Area Rule; nozzle throat design; detached shock wave computations; computational methods. Prerequisites: AE 424, 420 or equivalent; and AE 711 or 716.


822. Finite Element Analysis of Structures. (3). Formulation of the finite element equations by variational methods; the use of isoparametric and higher order elements for analyzing two- and three-dimensional problems in solid mechanics; introduction to solutions of nonlinear problems. Prerequisites: AE 722 and 731.

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. MS Directed Project. (1-3). A project conducted under the supervision of an academic advisor for the directed project option. Requires a written report and an oral presentation on the project. Graded S/U only. Prerequisite: consent of academic advisor.

890. Independent Study. (1-3). Arranged individual independent study in specialized areas of aerospace engineering under the supervision of a faculty member. Repeatable for credit. Prerequisite: consent of supervising faculty member.

911. Airfoil Design. (3). Historical development of airfoils, underlying theories and experiments; modern airfoil design philosophies 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.


919. Advanced Computational Fluid Dynamics. (3). A study of structured grid generation schemes, transformation of the governing equations of fluid motion, numerical algorithms for the solution of Euler equations, parabolized Navier-Stokes equations, and Navier-Stokes equations. Explore the fundamentals of unstructured grids and finite volume schemes. Prerequisite: AE 719 or ME 858.

936. Theory of Plasticity. (3). Includes criteria of yielding, including plastic stress-strain relationships and stress and deformation in thick-walled shells, rotating disks and cylinders, bending and torsion of prismatic bars for ideally plastic and strain hardening materials. Includes two-dimensional 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.

dom Variables. Studies in Sampling, Multiplexing, AM and FM analog systems, and additive white Gaussian noise channel. Additional topics such as PSK and FSK digital communication systems covered as time permits. Prerequisites: EE 383 and either Stat. 471 or EE 254.

588. Advanced Electric Motors. (3). Advanced electric motor applications and theory. Includes single-phase motors, adjustable speed AC drive applications, and stepper motors. Prerequisites: EE 489 and 492.

594. Microprocessor Based System Design. (3). Development of microprocessor based systems presented. Interfacing the address bus, data bus, and control bus to the processor chip studied. Memory systems and I/O devices interfaced to the appropriate busses. Vendor-supplied, special-purpose chips, such as interrupt controllers, programmable I/O devices, and DMA controllers, integrated into systems designed in class. Prerequisites: EE 238 and 294, or 394.

595. Electrical Design Project II. (2). 3L. May not be counted toward a graduate electrical major. A continuation of EE 585. Prerequisite: EE 385 or departmental consent.

598. Electric Power Systems Analysis. (3). Analysis of electric utility power systems. Topics include analysis and modeling of power transmission lines and transformers, power flow analysis and software, and an introduction to symmetrical components. Prerequisite: EE 282.

639. Microcontrollers. (3). A review of microprocessor architectures and assembly language programming. A detailed study of microcontroller architectures, assembly languages and peripheral devices for applications in embedded and real-time control systems. Prerequisite: EE 238.


688. Power Electronics. (4). 3R; 3L. Deals with the applications of solid-state electronics for the control and conversion of electric power. Gives an overview of the role of the thyristor in power electronics application and establishes the theory, characteristics and protection of the thyristor. Presents controlled rectification, static frequency conversion by means of the DC link-converter and the cyclo converter, emphasizing frequency, and voltage control and harmonic reduction techniques. Also presents requirements of forced commutation methods as applied to DC-DC control and firing circuit requirement and methods. Introduces applications of power electronics to control AC and DC motors using new methods such as microprocessor. Prerequisite: EE 492.

691. Integrated Electronics. (3). A study of BJTs and MOS analog and digital integrated circuits. Includes BJT, BiMOS, and MOS fabrication, application specific custom VLSI arrays, device performance and characteristics and integrated circuit design and applications. Prerequisites: EE 294 and 493.

698. Principles of Power Distribution. (3). The distribution system is a vital contributor to the overall power system function of providing quality electrical service. Provides an overall view of the engineering fundamentals of distribution system. Discusses distribution system planning and automation, primary and secondary distribution networks. Presents voltage regulation, protection, and reliability. Prerequisite: EE 488.

726. Digital Communications I. (3). Presents the theoretical and practical aspects of digital and data communication systems. Includes the modeling and analysis of information sources as discrete processes; basic source and channel coding; multiplexing; framing; digital systems and data communication system characteristics. Prerequisites: EE 386 and 754.

738. Embedded Systems Programming. (3). A quantitative performance evaluation of communication networks and systems. Includes fundamental digital communications system review; packet communications queuing theory; OSI, TCP/IP, and X.25 standards for network protocols, and high-level data link layer; network layer flow and congestion control; streaming and random access; Local area networks (LAN); integrated services digital networks (ISDN); and Broadband Networks. Prerequisites: Stat. 471 and EE 636 or departmental consent.

733. Embedded Systems Programming. (3). A study of the requirements and design of embedded software systems. Application of the C programming language in the implementation of embedded systems emphasizing real-time operating systems, interfacing to assembly and high-level languages, control of external devices, task control and interrupt processing. Prerequisite: EE 639.

744. Introduction to VHDL. (3). An introduction to VHDL hardware description language. Includes different types of modeling techniques using state-of-the-art CAD tools. Covers extensively behavioral modeling, structural modeling, and data flow modeling. Design assignments include design and simulation of both combinational and sequential circuits using VHDL.

754. Probabilistic Methods in Systems. (3). A course in random processes designed to prepare the student for work in communications controls, computer systems information theory, and signal processing. Covers basic concepts and useful analytical tools for engineering problems involving discrete and continuous-time random processes. Discusses applications to system analysis and identification, analog and digital signal processing, data compression and modulation, and related disciplines. Prerequisites: EE 284 and 383 and Stat. 471 or EE 254 or departmental consent.

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

781. Analog Filters. (3). A detailed study of analog filter design methods. Includes both passive and active filters. Discusses analog filter approximations; covers sensitivity and noise analyses. Prerequisite: EE 493.


790. Independent Study in Electrical Engineering. (1-3). Arranged individual, independent study in specialized content areas in electrical engineering under the supervision of a faculty member. Repeatable for credit. Prerequisite: departmental consent.


797. Computer Application to Power System Analysis. (4). Describes the use of power system computer models and efficient computational techniques in the development of a new generation of computer programs representing the steady and dynamic states of electric power systems and methods currently employed in the electric utility industry. Emphasizes algorithms suitable for computer solution of power system and problems such as power flows and system voltages during normal and emergency conditions and transient behavior of the system resulting from fault conditions and switching operations. Prerequisites: EE 229 and 598.

798. Advanced Electric Power Systems Analysis. (3). Advanced topics in analysis and opera-
Courses for Graduate Students Only

826. Digital Communication Systems II. (3). Presents in-depth theoretical and practical digital communication systems and channels, including the modeling and analysis of all digital communications receiver with intermediate frequency (IF) sampling and A/D converter, synchronization techniques, trellis-coded modulation (TCM); Multiple Access; fading multipath channel; radio frequency interference (RFI) channel; and jamming channel. Applies to digital satellite communications system; and digital cellular code division multiple access (CDMA) system. Prerequisite: EE 726.

836. Network Systems Programming I. (3). Introduction to programming in a network environment. The study of application programming interfaces (API) for the development of systems for the management and control of a local area network (LAN). Communication protocols used in such systems will be investigated and used for the development of client/server and parallel/distributed applications. Prerequisite: EE 738.

842. Modern Filters. (3). Concerned with estimating a signal of interest or the state of a system in the presence of additive noise, making use of the statistical characteristics of both the signal and the noise. Course includes Wiener filters, Kalman filters, linear prediction, and algorithms for linear prediction parameter estimation. Prerequisite: EE 738.


845. Adaptive Filters. (3). Concerned with estimating a signal of interest or the state of a system in the presence of additive noise, but without making use of prior statistical characteristics of the signal nor the noise. Concerned with the design, analysis, and application of recursive filtering algorithms that operate in an environment of unknown statistics. Content includes least mean-square (LMS) filters, recursive least-square (RLS) filters, and recursive least-squares lattice (LSL) filters. All are adaptive and self-designing. Includes concepts of convergence, tracking ability, and robustness. Prerequisite: EE 754.

846. Spectrum Estimation. (3). Concerned with estimating the frequency spectrum, primarily power but also energy, of a signal of interest. Reviews historical methods, but concentrate on modern methods that are model based, achieve high resolution even for short data lengths. Content includes maximum entropy, maximum likelihood, autoregressive, moving average, and autoregressive moving average spectrum estimation methods. Applications also included. Prerequisite: EE 754.

854. Stochastic Control Systems. (3). Reviews the pertinent aspects of deterministic system models; stochastic processes and linear dynamic system models emphasizing linear systems driven by white Gaussian noises; linear estimation and optimal filtering; design and performance analysis of Kalman filters. Prerequisites: EE 684 and 754.

876. MS Thesis. (1-6). Graded S/U only. Repeatable for credit toward the MS thesis option up to six hours. Prerequisite: prior consent of MS thesis advisor.

877. Special Topics in Electrical Engineering. (3). Non- or special courses are presented under this listing on sufficient demand. Repeatable for credit. Prerequisite: departmental consent.

878. MS Directed Project. (1-3). A project conducted under the supervision of an academic advisor for the directed project option. Requires a written report and oral presentation on the project. Graded S/U only. Prerequisite: consent of academic advisor.

882. Speech Digital Signal Processing. (3). An introductory study in speech signal generation and analysis, speech recognition, including 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 speech 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 782or departmental consent.

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 586 and 754.

893. State-Variable Techniques in Systems II. (3). A continuation of the study of state-space concepts in the areas of nonlinear systems and optimal and suboptimal control systems with wide classes of performance measures. Prerequisite: EE 792 or departmental consent.

894. Advanced Computer Architecture II. (3). Vector processors, memory-hierarchy design, input and output. Prerequisite: EE 844.

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 792or in 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.


898. Speech Recognition. (3). Reviews topics of speech digital signal processing and analysis as necessary for a study of speech recognition such as speech signal production and perception, acoustic-phonetic characterization of speech signals; representing speech signals in time and frequency; and linear prediction of speech signals. Studies topics such as vector quantization, pattern comparison and template matching methods, dynamic time alignment or warping, statistical methods such as hidden Markovian models, linear prediction or phonetics as two methods of segmenting speech signals, language or context-dependent models, and small vs. large vocabulary models. Prerequisite: EE 882 or departmental consent.

898. Spread-Spectrum Communication Systems. (2). 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 spread-spectrum communication systems, (b) slow and fast frequency-hopping spread-spectrum systems, (c) time hopping spread-spectrum systems, (d) chirp systems, (e) hybrid spread-spectrum systems, and (f) full-time early-late and tau dithered code tracking loops. Analyzes initial synchronization of the receiver spreading codes and the performance of spread spectrum in the presence of interferers. Also presents examples of spread spectrum systems. Prerequisites: EE 786 and 754. EE 886 desirable.

900. Advanced Independent Study. (1-3). Arranged individual, independent study in
specialized content areas in engineering under the supervision of a faculty advisor. 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. Prerequisite: EE 893.

Industrial and Manufacturing Engineering

Graduate Faculty

Professors: Jeffrey Fernandez (graduate coordinator), John H. Leslie, Jr., Don Malzahn, Abu Masud (chairperson)
Associate Professor: Sterling B. Lewallen
Assistant Professors: Seyed H. Cheraghli, Mark Kaiser, Krishna Krishnan, Vishwanathan Madhavan, Mark McMullin, Venkat N. Rajan, Carol Slaes, Janet Twomey

The Industrial and Manufacturing 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 four areas of emphasis—industrial ergonomics/human factors, manufacturing systems engineering, operations research and engineering management—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 and Manufacturing Engineering Department offers graduate programs leading to Master of Science (MS) and Doctor of Philosophy (PhD) degrees with specialization in industrial ergonomics/human factors, manufacturing systems engineering, operations research and engineering management. The department is equipped with modern laboratories in human factors engineering, metrology, manufacturing processes, 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 and Manufacturing Engineering are given below:

Industrial ergonomics/human factors. The primary teaching and research emphases in this area are in industrial ergonomics, man-machine systems, carpal-tunnel syndrome and other industrial hygiene issues, and ergonomics and human factors issues in aviation/space systems. An area of continued research involvement is rehabilitation engineering, especially dealing with people with severe physiological disabilities.

Manufacturing systems engineering. The teaching and research emphases in this area are in computer integrated manufacturing systems, planning/design/control of manufacturing systems, CAD/CAM, and applications of robotics, vision systems and artificial intelligence in manufacturing.

Operations research. The teaching and research emphases in this area are in deterministic and stochastic optimization, multi-criteria decision making, expert systems and artificial neural networks, modeling and analysis of system reliability, total quality management, and modeling/simulation of manufacturing and service systems.

Engineering management. The emphasis in this area is in decision analysis and decision making, quality engineering and decision support systems.

Master of Science

Courses of study leading to the MS degree are available with specialization in any of the four areas described earlier. The Plan of Study must include: (1) core courses (6 hours depending on area: IE 549, IE 550 or IE 553) or their equivalents, (2) at least 12 hours of courses from the student's selected area of emphasis and (3) no more than 6 hours of approved non-IE graduate courses. Details of the MS program can be found under the College of Engineering heading.

Doctor of Philosophy

Courses of study leading to the Doctor of Philosophy (PhD) degree are available with specialization in any of the four areas described earlier. Details of the PhD program can be found under the College of Engineering heading.

Industrial Engineering

Courses for Graduate/Undergraduate Credit

524. Engineering Probability and Statistics II. (3). A study of hypothesis testing, regression analysis, analysis of variance, correlation analysis and nonparametric statistics emphasizing applications to engineering. Prerequisite: IE 254 or Stat 471.

549. Industrial Ergonomics. (3). A systematic approach to the optimization of the human-task-environment system. Includes work space design, manual materials handling, cumulative trauma disorders, and environmental factors. Emphasis on job design, materials handling. Prerequisites: IE 452 and 524 or departmental consent.


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

554. Statistical Quality Control. (3). A study of the measurement and control of product quality using statistical methods. Includes acceptance sampling, statistical process control and total quality management. Prerequisite: IE 524.

556. Information Systems. (3). A study of the design, implementation and economic analysis of computer-based information systems. Prerequisites: IE 255 and EE 229 or AE 227.


563. Facilities Planning and Design. (3). Quantitative and qualitative approaches to problems in facilities planning and design, emphasizing activity relationships, space requirements, materials handling, and storage, plant layout and facilities location. Prerequisites: IE 550 and MfgE 258. Corequisites: IE 452.

565. Systems Simulation. (3). The design of simulation models and techniques for use in designing and evaluating discrete systems, including manufacturing systems too complex to be solved analytically. Emphasizes general purpose computer simulation languages. Prerequisites: IE 550 or equivalent and EE 229 or AE 227. Corequisite: IE 524.

590. Industrial Engineering Design I. (3). A design project utilizing industrial engineering principles, performed under faculty supervision, for solving practical problems. May not be counted toward a graduate industrial engineering major. May not get credit in both IE 590 and MfgE 590. Prerequisites: must be within one year of graduation and departmental consent.

644. Engineering Management. (3). An introduction to the design and control of technolog-

7.32. Advanced Production and Inventory Control. (3). A study of the elements of production and inventory control systems, their design and integration. Prerequisite: IE 553.

7.35. Applied Forecasting Methods. (3). A study of the forecasting methods, including smoothing techniques, time series analysis and Box-Jenkins models. Prerequisite: IE 524.

8.42. 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 555 and 524.

8.44. Sequencing and Scheduling. (3). Deterministic/stochastic sequencing problems with static/dynamic models. Problems involving different measures of effectiveness, solution techniques (optimizing, heuristic), Industrial scheduling problems. Prerequisite: IE 731 or instructor's consent.

8.57. 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.


8.87. Foundations of Neural Networks. (3). For students from a variety of disciplines. Introduces the theory and practical applications of artificial neural networks. Covers several network paradigms, emphasizing the use of neural networks as a solution tool for industrial problems which require pattern recognition, predictive and interpretive models, pattern classification, optimization, and clustering. Presents examples and discusses them from a variety of areas including quality control, process monitoring and control, robotics control, simulation metamodeling, economic analysis models, diagnostic models, combinatorial optimization, and machine vision.

8.87. MS Directed Project. (1-3). A project conducted under the supervision of an academic advisor for the directed project option. Requires a written report and an oral presentation on the project. Graded S/U only. Prerequisite: consent of academic advisor.

8.88. Topics in Industrial Engineering. (3). New or special courses are presented under this listing on sufficient demand. Repeatable for credit when subject matter warrants.

8.89. Independent Study in Industrial Engineering. (3). Analysis, research and solution of a selected problem. Prerequisite: instructor's consent.

8.90. Multiple Criteria Decision Making. (3). An extensive treatment of techniques for decision making where the multiple criteria nature of the problem must be recognized explicitly. Prerequisite: IE 550.

8.94. 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 259 or AE 227 or departmental consent.

960. Advanced Selected Topics. (1-3). New or special courses on advanced topics presented under this listing on sufficient demand. Prerequisite: Instructor's consent.

970. Machine Vision Applications. (3). A study of machine vision techniques, such as thresholding, edge detection, boundary following, object identification and measurements using machine vision. Emphasizes the application of machine vision techniques in automated inspection and object recognition. Prerequisites: EE 239 or knowledge of a programming language, IE 670, or instructor's consent.


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

Manufacturing Engineering

Courses for Graduate/Undergraduate Credit

502. Metrology. (3). Covers new methods of manufacturing metrology and digital measurement techniques. Introduces devices such as Coordinate Measuring Machines and non-contact optical measurement devices. Includes a laboratory to familiarize the students with these devices. Prerequisites: IE 254 and MfgE 258.

584. Manufacturing Tools and Processes. (3). Introduces the concepts of concurrent engineering, tool design, fixture design, jig design, presswork tools design, and mold design. Also includes the fundamental soft gauge design and measuring, fabrication processes, assembly, tooling and processes. Prerequisite: MfgE 258.


575. Computer Aided Manufacturing. (3). An introductory course in Computer Aided Manufacturing. Examines the basic principles of CAM, such as computer aided design, NC programming, CAD/CAM integration, and principles of group technology and part family formation. Prerequisites: MfgE 258 and IE 259 or equivalent.

590. Manufacturing Engineering Design I. (3). First of two capstone design project courses utilizing manufacturing engineering principles, performed under faculty supervision, for solving practical problems. May not be counted toward a graduate industrial engineering major. May not get credit in both IE 560 and MfgE 590. Prerequisites: must be within one year of graduation and departmental consent.

622. Computer Aided Design. (3). Intended as an introduction to 3-D computer graphics. Discuss concepts of CAD/CAM/CIM, design theory and automation, knowledge-based CAD systems and the use of AI tools in CAD. Describes the design interchange standards and the interface between CAD/CAM. Prerequisites: IE 222, EE 259 or equivalent, and Math. 555.

645. Manufacturing Systems Engineering. (3). A study of the design, planning, implementation, and control of manufacturing systems. Discusses types of manufacturing systems, material requirement planning, capacity planning, facilities planning, scheduling, and an introduction to computer aided process planning. Prerequisite: MfgE 588.

654. Non-traditional Machining Processes. (3). A study of the role and economics of non-traditional processes: use of laser and electron beams in inspection and measurement; heat treatment: material removal; material joining; and coating. Also covers the fundamentals of electro-discharge machining, electro-chemical machining, chemical milling, and water-jet machining. Prerequisite: MfgE 558.

658. Forming Processes. (3). Introduction to the fundamentals of deformation and the physical and mathematical modeling of forging, rolling, extrusion, drawing, swaging, coining, sheet-metal working, spinning. Also covers the fundamentals of tool and die design. Prerequisite: AE 333.

690. Manufacturing Engineering Design II. (3). Continuation of the project initiated in MfgE 590 and in industry-based design project. May not be counted toward a graduate industrial engineering major. May not get credit in both IE 690 and MfgE 690. Prerequisites: MfgE 590 and departmental consent.

Mechanical Engineering

Graduate Faculty

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

Associate Professors: Beluriah Bahr, Jharra Chaudhuri, Hamid M. Lankaranji, Julie A. Mathis, George E. Talia

Assistant Professors: David N. Koert, T.S. Ravigururajan, James E. Steck

The Department of Mechanical Engineering offers courses of study leading to the Master of Science (MS) and Doctor of Philosophy (PhD) degrees. Departmental faculty have developed research activities in several areas of specialization, including engineering materials properties and failure modes; controls, robotics, and automation; multibody and impact dynamics; mechanical engineering design and manufacturing; thermodynamics and transport processes; combustion; and heating, ventilating, and air-conditioning (HVAC) and energy conservation.

The majority of departmental faculty members are associates of Wichita State's National Institute for Aviation Research (NIAR). This association makes facilities of the NIAR available for research activities of these faculty and their graduate students. These facilities include scanning and transmission electron microscopes (SEM) located in the materials laboratory, the crash dynamics laboratory, the shock and vibration laboratory, the propulsion laboratory, the computer integrated manufacturing laboratory and the mechatronics 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

Courses of study leading to the MS degree are available with specialization in any of the departmental faculty research areas described earlier. Details of the MS program can be found under the College of Engineering heading.

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 advisor 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 advisor, the graduate coordi-
nator and the chairperson of the department. Courses required for the BS degree normally are not permitted for use toward the graduate degree in mechanical engineering.

502. Thermodynamics II. (3).* Continuation of Thermodynamics I, emphasizing cycle analysis, thermodynamic property relationships and psychrometrics, with an introduction to combustion processes and chemical thermodynamics. Prerequisites: ME 398 with grade of C or better.

503. Mechanical Engineering Systems Laboratory. (3). 2R, 3L. Selected experiments illustrate the methodology of experimental work as applied to mechanical and thermal systems. Experiments include the measurement of performance of typical systems and evaluation of physical properties and parameters of systems. Group design and construction of an experiment is an important part of the course. Team and individual efforts are stressed as are written and oral communication skills. Prerequisites: ME 402, 521. Corequisite: ME 522.


522. Heat Transfer. (3). Temperature fields and heat transfer by conduction, convection and radiation. Study of transient and multidimensional conduction, free and forced convection and combined heat transfer. Discusses various analytical methods, analogies, numerical methods and approximate solutions. Prerequisite: ME 521.

523. Fluid and Heat Flow Laboratory. (1-3). Laboratory course designed to illustrate and reinforce the concepts in ME 521 and ME 522. Prerequisite: ME 523; corequisite: ME 522.

541. Mechanical Engineering Design II. (3).* Applications of engineering design principles to the creative design of mechanical equipment. Problem definition, conceptual design, feasibility studies, design calculations to obtain creative solutions of current real engineering problems. Introduction to human factors, economics and reliability theory. Group and individual design projects. Prerequisite: ME 439.

544. Design of HVAC Systems. (3). Analysis and design of heating, ventilating and air-conditioning systems based on psychrometrics, thermodynamics and heat transfer fundamentals. Focuses on design procedures for space heating and cooling loads in buildings. Prerequisites: ME 521 and 522 or equivalent.

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

602. Engineering for the Environment. (3). Engineering for the environment, air, water, and noise pollution, and handling of hazardous wastes. Covers briefly the major pollutants, their major sources, their effects, and their attainment levels set by the U.S. Environmental Protection Agency. Emphasizes engineering systems for pollution control. Prerequisites: ME 398, AE 223, IE 255, EE 282, or departmental consent.

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 521 and Math 555.

631. Heat Exchanger Design. (3). Covers analytical models for forced convection through tubes and over surfaces, experimental correlations for the Nusselt number and pressure drop, design of single and multiple pass shell and tube heat exchangers, compact baffled, direct contact, plat, and fluidized bed heat exchangers, radiators, recuperators, and regenerators. Prerequisites: ME 521 and 522 or equivalent.

641. Thermal Systems Design. (3). Modeling, simulation, and optimization used as tools in design of thermal systems. Engineering design principles, characteristics of thermal equipment, and environmental considerations. Studies open-ended problems, including work on design projects in small groups. Prerequisites: ME 502 and 521.

650. Selected 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.

653. Internal Combustion Engines (3). A broad coverage of the basics of internal combustion engines with emphasis on spark ignition and diesel engines. Definition of engine types and configurations and important variables used to evaluate performance and efficiency. Fundamentals learned in thermodynamics, chemistry, and mechanical design are used to understand engine design, performance and control. Applications discussed are focused primarily on automotive use and involve power output, fuel consumption, and exhaust emissions. Prerequisite: ME 398.


662. Mechanical Engineering Practice. (3). 1R; 6L.* An exercise in the practice of mechanical engineering; students engage in a comprehensive design project requiring the integration of knowledge gained in prerequisite engineering science and design courses. Team effort and both oral and written presentations are a part of the experience. Open only to mechanical engineering students in their last semester of study. Prerequisite: last semester of study.

664. Introduction to Fatigue and Fracture. (3). Deals with the primary analytical methods used to quantity fatigue damage. These are the stress life approach, strain life approach and the fracture mechanics approach. Prerequisites: ME 250 and AE 333.

665. Selection of Materials for Design and Manufacturing. (3). Focuses on the selection of engineering materials to meet product and manufacturing requirements. Solution to various product and manufacturing problems by appropriate selection of materials is illustrated through the use of numerous examples and case studies. Prerequisites: ME 250, AE 333.

666. Materials in Manufacturing Processes. (3). Deals with fundamental principles of materials and their applications to manufacturing processes. Prerequisites: ME 250.

667. Mechanical Properties of Materials I. (3). Major focus on deformation mechanisms and on crystal defects that significantly affect mechanical properties. Also covers plasticity theories and critical stress criteria for yield, fracture toughness, and other applications. Some review of basic mechanics of materials and elasticity as needed. Prerequisite: ME 250 or departmental consent.


678. Studies in Mechanical Engineering. (1-3).* Arranged individual, independent study in a limited number of specific topics 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.

719. Basic Combustion Theory. (3). Introduction to the fundamental principles of combustion processes. Examines the chemistry and physics of combustion phenomena, i.e., detonation and flames, explosion and ignition processes. Prerequisites: Chem. 111Q and ME 502.

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 only to mechanical engineering students. Prerequisites: ME 399, Math 537 and Math. 555.


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 and simulation, along with introdu-
### 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: ME 521 or departmental consent.

#### 802. Turbulence. (3). An overview of the theory, practical significance and computation of turbulent fluid flow. Prerequisites: ME 521 and 701.

#### 821. Advanced Computer-Aided Analysis of Mechanical Systems. (3). Computational methods in modeling and analysis of spatial multi-body mechanical systems. Includes Euler parameters, automatic generation of governing equations of kinematics and dynamics; numerical techniques and computational methods; computer-oriented projects on ground vehicles with suspension and steering mechanisms, crashworthiness and biodynamics. Prerequisite: ME 729 or instructor's consent.

#### 832. Failure Analysis Applications in Mechanical Design. (3). Application of engineering fundamental to the study of mechanical failure brought about by the stresses, strains and energy transfers in mechanical elements that result from the forces, deflections and energy inputs applied. Emphasizes recognition, identification, prediction and prevention of failure modes that are prevalent in machine-element design. Prerequisite: ME 439 or departmental consent.

#### 847. Applied Automation and Control Systems. (3). New or special topics are presented on sufficient demand. Repeatable for credit when subject material warrants. Prerequisite: departmental consent.

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

#### 851. Principles and Applications of Conduction Heat Transfer. (3). Theory and measurement, Fourier's equation, steady and unsteady state with and without heat sources and sinks and numerical methods. Prerequisites: ME 522, 757 or departmental consent.

#### 852. Principles and Applications of Convective Heat Transfer. (3). Free and forced convection in laminar and turbulent flow. Includes analysis and synthesis of heat transfer equipment. Prerequisite: ME 522 or departmental consent.


#### 854. Two-Phase Flow Heat Transfer. (3). Thermodynamic and mechanical aspects of interfacial phenomena, boiling and condensation near immersed surfaces, pool boiling, internal flow convective boiling and condensation. Prerequisites: ME 522, Math. 522 or departmental consent.

#### 856. Advanced Thermodynamics. (3). Statistical thermodynamics, Boltzmann Bose-Einstein and Fermi Dirac statistics, calculation of thermodynamic properties, phase diagrams, kinetic theory, introduction to irreversible thermodynamics. Prerequisite: ME 502 or departmental consent.


#### 861. Similarity in Engineering. (2). Critical analysis of models and analogies as aids to
864. Physical Metallurgy. (3). Covers a range of basic concepts in physical metallurgy essential for further studies in materials engineering. Topics include structure and diffraction, dislocations, defects and thermal processes, solid solution and hardening, diffusion, and phase diagrams and transformations. Prerequisites: ME 250 and 398, AE 333 or departmental consent.

866. Advanced Fracture Mechanics. (3). Covers the fracture mechanics of elastic-brittle, ductile, time dependent and heterogeneous materials at an advanced level. The material is suitable for graduate study only in metallurgy and materials, mechanical engineering and aerospace engineering where a combined materials-fraction mechanics approach is stressed. Prerequisites: ME 250, AE 333 or departmental consent.

867. Mechanical Properties of Materials II. (3). After a brief review of pertinent concepts of the macro-mechanical behavior of deformable bodies, course focuses on deformation mechanisms and on crystal defects that significantly affect mechanical properties and strengthening mechanisms. This includes point, line and planar crystalline defects, dislocation dynamics, various hardening and strengthening mechanisms. Concludes with discussion of physical properties and testing methods to measure these properties. Prerequisite: ME 667 or departmental consent.

876. Thesis. (1-4). Graded S/U only. Repeatable for credit toward the MS thesis option up to six hours. Prerequisite: consent of MS thesis advisor.

878. MS Directed Project. (1-3). A project conducted under the supervision of an academic advisor for the directed project option. Requires a written report and an oral presentation on the project. Graded S/U only. Prerequisite: consent of academic advisor.

890. Independent Study in Mechanical Engineering. (1-3). Arranged individual, independent study in specialized content areas. Prerequisite: instructor's consent.

901. Advanced X-Ray Diffraction Theory. (3). First part concentrates on the fundamental X-ray diffraction theories including dynamical theory of X-ray and anomalous absorption, with which a serious student in this field must be thoroughly familiar. Second part emphasizes the general theory of X-ray diffraction in a concise and elegant form using Fourier transforms. The general theory is then applied to various atomic structures, ideal crystals, imperfect crystals and amorphous bodies. Prerequisites: ME 767, Math. 757.

958. Computational Fluid Dynamics and Heat Transfer II. (3). Vector form of the Navier-Stokes and the energy equation. Generalized transformation of the flow equations to the computational domain. Numerical methods for incompressible flow equations, boundary layer type equations, paradoxical Navier-Stokes equations and the Navier-Stokes equations. Prerequisite: ME 858 or equivalent.

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


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, dean
Nicholas E. Smith, associate dean
Ron Christ, coordinator for graduate studies in art
Tom Fowler, coordinator for graduate studies in music

School of Art and Design, (316) 978-3551—Donald R. Byrum, chair
Art Education, (316) 978-3555—Mary Sue Foster, director
Art History, (316) 978-3555—Patrick Smith, director
Graphic Design, (316) 978-3555—Kirsten Johnson, director
Studio Arts, (316) 978-3555—Jill Eggers, director

School of Music, (316) 978-3500—J. William Thomson, acting chair
Music Education Studies, (316) 978-3103—Larry Blocher, director
Musicology-Composition Studies, (316) 978-3532—Dean Roush, director
Keyboard Studies, (316) 978-3103—Paul E. Reed, director
Strings/Orchestra Studies, (316) 978-3103—Jay C. Decker, director
Voice/Choral Studies, (316) 978-3103—Dorothy Crum, director
Winds/Percussion/Band Studies, (316) 978-3103—Victor A. Markovich, director

School of Performing Arts, (316) 978-3368—Leroy Clark, chair
Dance, (316) 978-3645—Thomas Hagood, director
Theatre, (316) 978-3368—Leroy Clark, director

Fine Arts

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

Course for Graduate/Undergraduate Credit

590. Special Topics in the Fine Arts. (1-4). For group instruction. May be repeated for credit. Includes interdisciplinary upper division, graduate level topics with the fine arts (music, art, dance, and theatre). Prerequisite: senior undergraduate or graduate standing or instructor's consent.

School of Art and Design

Donald R. Byrum, Chair

The School of Art and Design offers programs leading to both the Master of Arts and Master of Fine Arts degrees. Students seeking the Master of Arts degree take a major in art education. Students seeking the Master of Fine Arts degree select a major in ceramics, painting, printmaking, or sculpture. The specific requirements for each major are described under the appropriate program listing, below.

Art Education

Graduate Faculty
Associate Professor: Mary Sue Foster
Assistant Professor: Cheryl Hamilton

Master of Arts in Art Education

The Master of Arts (MA) degree in art education meets the needs for advanced study in the field. The program is designed for students pursuing a career in public school art teaching, supervision, college teaching, museum education, or art research.

Admission Requirements

To be admitted without deficiencies, students must have completed a bachelor's degree program in art education and meet requirements for Kansas state certification in this field. Also required are a 2.750 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, 15 hours in one studio area, and nine hours in art education. Degree applicants are expected to schedule an interview with the director of art education prior to the first semester of enrollment. During the interview applicants are required to present for evaluation the following: (1) a professional resume reflecting training and accomplishments; (2) a brief statement outlining professional goals; (3) written examples of professional and academic work; and (4) six examples of their art work (either portfolio or slide form) with an accompanying list identifying name, title, size, and media. Up to half of the portfolio may be work produced by students of the applicant. Make up of undergraduate course deficiencies may be required before applicant is admitted to the MA program in full standing. All correspondence should be addressed to the graduate coordinator of art and design.

Degree Requirements

Two plans may be followed in meeting the requirements for the MA in art education.

Plan A. The minimum requirements through Plan A are summarized below. Of the 30 hours required, 18 must be in courses numbered 700 or above.

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<td>Art education courses, including</td>
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<td>6 hours of research problems and</td>
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<td>thesis (715 and 816)</td>
<td>18</td>
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<td>Major art areas and related fields*</td>
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<td>total</td>
<td>12</td>
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<td>total</td>
<td>30</td>
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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.

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<td>Art education courses, including</td>
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<td>9 hours of research problems and</td>
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<td>and terminal project (715, 815 and 816)</td>
<td>18</td>
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<tr>
<td>Major art areas and related fields*</td>
<td>15</td>
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<tr>
<td>total</td>
<td>33</td>
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*May include courses in studio arts and art history.

All candidates must pass a written comprehensive examination before enrolling in thesis or terminal project. This examination is scheduled the first Saturday in November, the second Saturday in April, and the first or second Saturday in July. Candidates must pass an oral defense of their thesis if following Plan A. If following Plan B, they must make a verbal and/or visual presentation of their terminal project.

Plan of Study

In order to define a program of study for the graduate degree, students must submit in triplicate the Plan of Study form leading to admission to candidacy for the degree no later than one month following the completion of 12 semester hours of graduate credit.

Transfer of Credit and Extension Work

A maximum of six semester hours of graduate work may be transferred from another regionally accredited graduate school with the approval of the major advisor and the dean of the Graduate School, preferably before the work is taken. Correspondence courses are not accepted for credit; and extension credit is accepted only if approved by the major department and the dean of the Graduate School and if the course is taught by Wichita State University graduate faculty; only six hours of work meeting these criteria will be accepted. Six hours of graduate-level courses taken as a nondegree student will be accepted if approved by the graduate coordinator, provided that...
all six hours are taken in the same department. Courses taken in more than one department before acceptance into the art education master's program may not apply toward the degree.

Courses for Graduate/Undergraduate Credit

510Q. Stimulating Creative Behavior. (3). Includes theories of creativity; strategies for problem-solving and problem-solving; identifying various external and internal blocks to creativity; testing for creativity; the relationship of creativity, cognition and visual thinking; creative challenges; and stimuli. Emphasizes methods to elicit creative behavior. Repeatable once for credit.

510Q. Aesthetic Inquiry. (3). 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 emphasizes the integration and selection of appropriate visual media for art instruction. Prerequisite: Art E 311.

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.

519. Art Workshop. (1-3). Repeatable for credit. Area to be covered is determined at the time the course is offered.

702. Metal Processes for Jewelry Construction. (3). Emphasizes fabrication techniques, design analysis and function of jewelry designed and produced by students and acknowledged craftsmen. Repeatable once for credit. Prerequisite: Art E 212, 306 or instructor's consent.

710. Creative Behavior and Visual Thinking. (3). Identification and application of theories for creative and critical thinking. Emphasizes strategies for problem solving and visual thinking and procedures to implement those strategies. Student identifies an area for individual investigation. Repeatable once for credit.

711. Seminar in Art Education: Topic to be Announced. (1-3). Supervised study and research of contemporary issues in art education. Repeatable for credit with advisor's consent. Prerequisite: instructor's consent.

712. Development of Art Understanding in the Educational Program. (3). Readings, observation and evaluative techniques in the development of concepts and materials for art understanding. Repeatable once for credit. Prerequisite: instructor's consent.

713. Fiber and Fabric Processes. (2-3). Fiber processes using traditional and experimental techniques in woven forms and other structural techniques using natural and man-made fibers. Repeatable once for credit. Prerequisite: instructor's consent.

715. Research Problems in Art Education. (3). Orientation to research methods, findings and designs related to the analysis of studies and current problems in art education. Repeatable once for credit. Prerequisite: instructor's consent.

719. Electronic Imaging. (1-3). Emphasizes Macintosh and Amiga computer processes and their application to art and art education. Students generate computer images using digitizing, scanning, and animation with a variety of software and hardware. Makes application of this new technology to problems of design, art history, and art criticism. Develops curriculum materials for art instruction employing computer graphic instruction. The graduate student prepares a research paper on a selected topic related to computer graphics and art learning.

720. Art and Early Childhood. (1-3). Emphasizes the cognitive and aesthetic domains of young children and develops the potential for creative and visually expressive behavior as a natural means of a child responding to environmental stimuli.

750. Art Workshop. (1-3). Repeatable for credit. Area to be covered is determined at the time the course is offered.

Courses for Graduate Students Only

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


818-819. Terminal Project—Art Education. (1-3, 1-3).

Art History Graduate Faculty

Professor: Mira P. Merriman
Associate Professor: Patrick Smith
Assistant Professor: Frederick Hemans

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

Courses for Graduate/Undergraduate Credit

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

521Q. Italian Renaissance. (3). General education further studies course. A study of the architecture, sculpture and painting from the 16th to the 18th century. Emphasizes early developments in Florence and Siena and late developments in Rome.

522. Italian Baroque. (3). General education further studies course. A study of Baroque painting, sculpture and architecture in Rome, Venice and Siena from 1650 to 1750 emphasizing the Carracci, Caravaggio, Bernini and Tiepolo.

523. 18th and 19th Century European Art. (3). General education further studies course. A history of European art from Watteau through post-Impressionism.


526. Art Since 1945. (3). General education further studies course. A study of the history of art in the United States from 1945 to the present, stressing the relationship between contemporary trends in criticism and artistic practice.

528. Museum Techniques I. (3). Primarily for the graduate student interested in museum work. Includes specialized research related to administrative responsibilities of a museum: collection, exhibition, recording, preservation and financial activities.

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

530. The Art of Classical Greece. (3). General education further studies course. A study of painting, sculpture and architecture in Greece during the 5th and 4th centuries B.C.

531. The Art of Hellenistic Greece. (3). General education further studies course. A study of the painting, sculpture and architecture of Greece during the Hellenistic period, 4th to 1st centuries B.C.

532. Independent Study in Art History. (1-3). Work in a specialized area of the study of art history. Directed readings and projects. Prerequisite: instructor's consent.

533. Seminar: Topics in Modern Art. (1-3). Selected readings and problems in art of the modern era. Course content varies but individual areas are not repeatable for credit.

534. History of Photography. (3). History of photography stressing techniques, media, processes, interpretations, 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 KSOBE.

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 curriculums. 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. (1-3). Work in specialized area of the study of art history. Directed readings and projects for graduate students in all disciplines. Prerequisite: instructor's consent.

Courses for Graduate Students Only
828-829. Thesis. (2; 2).
832. Independent Study. (1-3). Individually supervised work in a specialized area of the study of art history. Directed readings, research and projects. Repeatable for credit. Prerequisites: suitable preparation for graduate work in art history (e.g., BA or BFA in art history) and instructor's consent.

Graphic Design—Commercial Art

Graduate Faculty
Associate Professor: Kirsten S. Johnson
Assistant Professors: James Hellman, Shirley McCollum

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

Courses for Graduate/Undergraduate Credit
530. Seminar in Graphic Design. (3). Supervised study and research. Requires weekly consultation and reports. Repeatable for credit. Prerequisite: departmental consent.
550. Graphic Design Workshop. (1-3). Repeatable for credit. Area covered is determined at the time the course is offered.

Studio Arts

Graduate Faculty
Professors: John Boyd, Donald Byrum (chair, art/design), Richard St. John
Associate Professors: Ronald Christ (coordinator, graduate studies), Kathleen Shanahan
Assistant Professors: Barry Badgett, Jill Eggers

Master of Fine Arts
The Master of Fine Arts (MFA) degree, the terminal degree for studio arts, is offered for qualified students planning careers as professional artists, either working independently or as artist-teachers on the college or art school level. The program is designed for a concentration in ceramics, painting, printmaking, or sculpture.

Admission Requirements
Admission without deficiencies requires a grade point average of at least 2.750 based upon the last 60 hours of coursework, the other general requirements of the Graduate School, with the additional requirement of a 3.000 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 of a BFA, that includes a minimum of 12 hours of art history, 15 hours in the major field and 20 hours of related work. Applicants should present examples of work for evaluation. They should submit 15 color slides (2" x 2") in their major area. All work should be identified with name, title, size, and media. Applicants should also include a short statement of their artistic philosophy. Also list all honors, awards, scholarships, exhibitions, special recognition for work in art, or services rendered through art. Three letters of recommendation should be forwarded. No application is considered until an application to Graduate School is submitted, and the materials listed above are received. A stamped return envelope for all materials should be included.

Students holding degrees from institutions where requirements differ from those at Wichita State may be required to take undergraduate courses to make up deficiencies as determined by the major professor and the graduate art coordinator. Applicants should address all correspondence to the graduate art coordinator.

Degree Requirements
Minimum course requirements for completion of the MFA degree are summarized below. In addition, 45 of the 60 hours must be taken in courses numbered 800 or above.

<table>
<thead>
<tr>
<th>Hrs.</th>
<th>Studio courses in the major area</th>
<th>23</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Studio courses in a minor option area</strong></td>
<td>15</td>
</tr>
<tr>
<td></td>
<td><strong>Courses in graduate-level art history, art seminar, and pertinent lecture courses. Directed readings, not to exceed 6 hours, may also be used to fulfill this requirement</strong></td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Terminal project in the major area</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>60</td>
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</tbody>
</table>

* Minor option can be taken in one studio area, a variety of studio areas, or outside the student's major area.
** Final approval by student's advisor and graduate coordinator required.

The terminal project consists of an exhibition of original studio art work, accompanied by the MFA terminal project report, which is a documentation of the candidate's studio work (slides, video, photographs, CD), a written statement, and a resume.

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 accepted for transfer will be at the discretion of the departmental advisor and graduate coordinator. A maximum of 24 semester hours from prior graduate study may be considered for transfer to the MFA program. Final determination of transfer will be made after the student has successfully completed 12 semester hours at WSU and the first graduate review. A maximum of 12 semester 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.

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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
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. (1-5). Lab fee. Advanced studio problems involving forming methods, glaze formulation and firing procedures. Lecture periods involve advanced studies of ceramic materials and glaze formulation. Repeatable for credit. Prerequisites: Art S. 370 and instructor's consent.


574. Advanced Study of Kiln Methods. (3). Advanced study of kiln design and construction with research in the area of refractory materials. Requires reading assignments, notebook and laboratory work. Prerequisite: Art S. 274.

575. Study of Ceramic Materials II. (3). Lab fee. Lectures and research covering clays, glazes and refractory materials. Reading assignments concerning physical and chemical characteristics of pottery materials. Prerequisites: Art S. 275 and 370.

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

578. Independent Study in Ceramics. (1-3). Independent study. Requires reading assignments concerning physical and chemical characteristics of pottery materials. Requires notebook and outside lab work.

576. 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.

870. Special Problems in Ceramics. (1-5). Special problems in ceramic design and production. For students interested in professional ceramicist work. Prerequisite: Art S. 875.

876-879. Terminal Project—Ceramics. (1-5; 1-5).

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. 310 and 345.

549. Independent Study in Drawing. (1-3). 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. (1-3). Drawing from life. Requires sketchbooks and/or portfolio. Repeatable for credit.

845. Special Problems in Drawing. (1-3). Advanced drawing in various media emphasizing independent work and the development of personal expression. Repeatable for credit.

Painting
Courses for Graduate/Undergraduate Credit

551. Advanced Watercolor Studio. (1-3). Requires sketchbooks and/or portfolio. Prerequisites: completion of foundation program and Art S. 251.

553. Independent Study in Painting. (1-3). A professional emphasis on technical or aesthetic research in the painting area. Available only for the advanced painting student with instructor's consent. Statement of intent must be submitted for faculty approval before registration. Prerequisite: departmental consent.

554. Advanced Painting Studio. (1-3). 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

850. Special Problems in Painting. (1-5). Professional and experimental painting emphasizing the development of maturity, ideas, independent thinking and personal expression. Mediums include oil, watercolor and synthetic media. Repeatable for credit with the consent of the drawing/painting faculty.

858-859. Terminal Project—Painting. (1-5; 1-5).

Printmaking
Courses for Graduate/Undergraduate Credit

560. Advanced Printmaking Studio—Intaglio. (1-3). Intaglio, collagraph and mixed techniques. For students interested in professional printmaking. Course offers specialization in color printing or black and white. Repeatable for credit. Prerequisites: Art S. 260, 262 and 364.

561. Advanced Printmaking Studio—Lithography. (1-3). Lithography, black and white or color. For students interested in professional printmaking; course offers specialization in color printing. Repeatable for credit. Prerequisite: Art S. 364.

565. Independent Study in Printmaking. (1-3). 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). 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; 1-5). 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.

668-669. Terminal Project—Printmaking. (1-5; 1-5).

Sculpture
Courses for Graduate/Undergraduate Credit

580. Advanced Sculpture Studio. (1-3). Sculpture in any medium, emphasizing individual development and creativity. Repeatable for credit. Prerequisite: Art S. 398.

585. Independent Study in Sculpture. (1-3). A professional emphasis on technical or aesthetic research in the sculpture field. 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. (1-3). 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.
School of Music
J. William Thomson, Acting Chair
Tom Fowler, Coordinator, Graduate Studies

Graduate degree programs in the School of Music are designed to extend and broaden the professional competency of men and women desiring careers in music. Students may pursue graduate studies in history-literature, theory-composition, music education, performance, conducting, and pedagogy. While providing for advanced training in the specific skills of music, these graduate programs help to cultivate the student's capacity to think—to consider impersonally, dispassionately, and without prejudice any problem related to the art of music.

Master of Music
The Master of Music degree (MM) allows for concentration in history-literature, piano pedagogy, theory-composition, conducting, and performance. The general requirements for the degree are outlined below, while the specific course requirements for each concentration are given in the program sections (music education, musicology-composition, music performance) in which the concentrations are housed.

Admission Requirements
Admission to the MM program requires the completion of an accredited music bachelor's degree that includes a minimum of 60 semester hours in music, with at least 24 hours in basic music studies (history and theory) and 15 hours in a major specialty. Approval of the MM concentration must be acquired during the first semester of enrollment.

Degree Requirements
The MM degree requires completion of a minimum of 32 graduate semester hours, including a thesis or recital as indicated for the respective concentration. Of these hours, 60 percent must be in courses numbered 700 or above. Each Plan of Study must include 852, Introduction to Bibliography and Research; 830, Seminar in Music Theory; and six hours elected from graduate courses in music history and literature (791-792, Seminar in Music History, or elections from the graduate period courses: 893, Music of Antiquity-Renaissance, through 897, Music of the 20th Century). Advisor's approval must be obtained for all courses included in the degree Plan of Study.

Master of Music Education
The School of Music offers the Master of Music Education degree (MME). Areas of concentration and associated requirements are listed under Music Education, below.

Examinations
All degree candidates in the School of Music must pass an oral comprehensive examination. The oral comprehensive examination for thesis candidates includes a defense of the thesis.

Music Education
Graduate Faculty
Professor: Harold A. Popp
Associate Professor: Larry Blocher (director, music education)
Assistant Professors: Elaine Bernstorf, Thomas Fowler, Thomas Wine

Master of Music Education
The Master of Music Education (MME) program allows for concentration in elementary music, choral music, instrumental music (with recital option), music in special education, and voice. Conducting options may be elected (with approval) in the choral and instrumental programs.

Admission Requirements
Admission to the degree program in music education requires the completion of a Bachelor of Music Education (BME) degree, or the equivalent of a BME, from an accredited institution. Students holding bachelor's degrees in music other than the Bachelor of Music Education must satisfy public school certification requirements to qualify for full admission. Applicants without such certification are admitted on a conditional basis pending their attainment of public school teaching credentials. Approval of the MME specialization must be acquired.

Degree Requirements
MME programs range from 32 to 36 hours. The required core is 13 hours; 17 credit specialization hours must be decided in consultation with an advisor and the director of music education; five terminal options are available: recital, conducting project, thesis, research seminar, and an extra hours option. Of these hours, 12 must be in courses numbered 700 or 800. Each Plan of Study must include 852, Introduction to Bibliography and Research; 851, Psychology of Music; 871, History and Philosophy of Music Education; and 830, Seminar in Music Theory. Three hours also are required in graduate music history.

Qualified students requesting permission to present a formal graduate recital should obtain approval from the appropriate performance area before completing 12 hours of graduate enrollment. A recital is not a terminal requirement option for the MME in special education.

Courses for Graduate/Undergraduate Credit

511. Jazz Pedagogy. (2). For both music education and music performance majors interested in teaching improvisation, jazz history and large and small jazz ensembles. Includes a review of current jazz methods and materials, rehearsal techniques for jazz ensembles, how to listen to jazz, lectures by visiting jazz performers and effective jazz programming. Prerequisite completion of Mus. C. 238 or instructor's consent.

606. Music Methods for Early Childhood Education. (2). Methods and materials for teaching music in the preschool and kindergarten classroom. Includes the development of the child's musical growth through singing, listening, rhythmic and creative activities, a survey of available materials; and development of playing, singing and conducting skills.

611. Music for Special Education. (3). Open to upper-division or graduate students and intended for the potential practicing music teacher, classroom teacher or special education teacher. Includes identification of 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.

666. Marching Band Techniques. (1). A systematic approach to the marching band with regard to organization, show development, instrumentation, music adaptation, drill construction and script development. Teaches both traditional drill and corps style marching utilizing manual methods and computer generated graphics. Field observations, films, photographs and live performances by marching bands complement the class syllabus. Required for all instrumental majors.

732. Music in the Junior High School. (3). Includes administrative structures, the curriculum, adolescent development, teaching as behavior and competencies needed for successful teaching of general and choral music in grades 6-9.

737A. Advanced Woodwind Techniques. (2). Special problems and techniques in the teaching of woodwind instruments. Surveys current materials. 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. Prerequisite: Mus. E. 239 or equivalent.

740A. Advanced Percussion Techniques. (2). Special problems and techniques in the teaching of percussion instruments. Surveys current materials. Prerequisite: 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 Co-op 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. Prerequisite: satisfactory academic standing prior to the first job assignment. May be repeated for credit. Offered Cr/Ncr only.


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

Courses for Graduate Students Only


822. Advanced Techniques in Special Music Education. (3). For the special music education MME candidates only. Studies research literature and trends in special music education. Includes an evaluation of materials and techniques and special projects exploring the development of musical understanding in the 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 special music education MME candidate only. Supervised teaching in special education classrooms. A companion course to Mus. E. 822; gives the MME special education 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 accepted for the conducting option on the instrumental or choral emphasis under the MME degree. Prerequisites: instructor and departmental consent.


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

854. Research Seminar in Music Education. (3). Continued application of techniques of research. Requires the completion of a major research project. May be selected as the MME terminal requirement for specified programs. Prerequisite: Mus. C. 852.

871. History and Philosophy of Music Education. (3). A study of historical trends and contemporary philosophies relevant to music education. Prerequisite: Mus. E. 851.


876. Thesis. (2).

Music Performance
Graduate Faculty

Associate Professors: Julie Bees, Sylvia Coats, Dorothy Crum (director, voice/choral), Robert Glassman, Nancy Luttrell, Victor A. Markovich (director, winds/percussion and bands), David Perry, Paul E. Reed (director, keyboard), Robert Town, Vernon L. Yenne

Assistant Professors: Deborah E. Baxter, Catherine Consiglio, Jean Lansing, Tim McCoul, David Schepps, Andrew Trecha, Russell D. Widener

Master of Music—Performance Concentration

Admission to the Master of Music (MM) program with emphasis in music performance requires a performance background, with a Bachelor of Music (BM) degree in the performance area of specialization or the equivalent of the BM. Background deficiencies must be satisfied before admission to candidacy. All performance degree candidates must complete a satisfactory audition in their performance area of specialization. The audition should be completed as early as possible—but no later than the end of the first semester of enrollment. Permission to pursue the degree/concentration is tentative pending approval of the respective performance faculty.

A formal graduate recital, in lieu of a thesis, must be presented in partial fulfillment of the requirements for the MM degree with emphasis in performance.

In order to receive permission to schedule a degree recital, students must satisfy the expectations of the respective performance area. Permission to schedule the recital must be obtained no later than the semester before the semester in which the recital is to be performed. The student's performance repertoire and the recital program must be in accordance with the guidelines and expectations established by the respective performance area.

Students studying for the MM degree with emphasis in performance should plan to be in residence during at least one fall or spring semester, since continuous study opportunities may not exist in Summer Session.

Master of Music—Opera Performance Concentration

This degree program is designed to provide specialized training in opera performance with graduates gaining more experience and training in all phases of opera production. While the present MM
in Vocal Performance degree provides for some experience with opera performance, the opera concentration will provide more focus with more specialized course work, training, and experience, which will better prepare students who are accepted into the program to succeed in this competitive career field. The degree requires four more hours (total of 36) than the MM in Vocal Performance.

Admission Requirements
Admission to the program will be based on the results of a live audition and an interview with the director of the WSU Opera Theatre and voice faculty. When a live audition is not possible, a video tape audition will be considered. Students admitted to this program must show potential for future success and should have already had some experience with opera. Specific requirements include (1) strong operatic vocal potential; (2) good academic background with a minimum 2.75 GPA; (3) some stage experience, including a basic acting class; and (4) working knowledge in at least one of the following languages: French, German, or Italian.

Degree Requirements
The Master of Music (MM) degree with emphasis in opera performance requires the completion of a minimum of 36 graduate hours, including a graduate performance recital, one leading role in opera productions, and direction and assistance in two productions. This degree must include the following courses:

1. 12 credit hours in the MM core requirement, including 852, Introduction to Bibliography and Research (3); 830, Seminar in Music Theory (3); and 6 credit hours in selected graduate music history courses;
2. 10 credit hours of Applied Voice plus the 2 credit hours of Graduate Recital;
3. 12 credit hours of courses in the major area, including 632, Opera Literature (3); 760, Opera Styles (2); 773, Acting for Singers (3); 711K, Opera Leading Role (2); 711K, Opera Direction and Assistance (2).

Master of Music—Instrumental Conducting Concentration
The Master of Music (MM) degree, instrumental conducting concentration, is designed to accommodate a small number of students (up to four per year) who receive extensive individualized conducting preparation with the University's resident band and orchestra conductors. Candidates have rehearsal/conducting opportunities with both large and small ensembles. The program culminates in a conducting recital utilizing University students and ensembles; metropolitan or ad hoc ensembles may be substituted with faculty approval.

Admission Requirements
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, piano pedagogy concentration, requires the completion (minimum) of 32 graduate hours, including a graduate degree recital as the terminal requirement. Of these hours, 20 must be in courses numbered 700-800. The degree must include the following courses:

1. 852, Introduction to Bibliography and Research, 3 hours;
2. 830, Seminar in Music Theory, 3 hours;
3. Election of a minimum of two courses (6 hours) in graduate music history-literature from 893, Music of Antiquity through the Renaissance, through 897, Music of the 20th Century (or 791-792, Seminar in Music History); and
4. Pedagogy and literature courses as specified in the pertinent MM (piano pedagogy) curriculum guide.

Applied Music Private Study
712. Applied Music Instruction for Nonmajors, (2). Basic applied instruction for persons who are not active in a music degree program. May not be used to fulfill music degree requirements. Repeatable for credit.

731. (1). For majors only; study on secondary instruments. Basic instruction. Repeatable for credit. Graduate.

732. (2). For majors only. Repeatable for credit. Graduate.

734. (4). For performance and pedagogy majors or students preparing for master's degree recitals only. Repeatable for credit. Graduate.

Applied Music Media Designations

<table>
<thead>
<tr>
<th>Applied Music Media Designations</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
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<tr>
<td>Applied Music Media Designations</td>
<td>Bassoon</td>
<td>Piano</td>
<td>Cello</td>
<td>String Bass</td>
<td>Clarinet</td>
<td>Trombone</td>
<td>Euphonium</td>
<td>Trumpet</td>
<td>Flute</td>
<td>Tuba</td>
<td>French Horn</td>
<td>Saxophone</td>
<td>Organ</td>
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<td>Applied Music Media Designations</td>
<td>Harp</td>
<td>Voice</td>
<td>Guitar</td>
<td>Electric Bass</td>
<td>Oboe</td>
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<td>Voice</td>
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</tbody>
</table>

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, musical theatre, etc. Gives students an opportunity to explore techniques for developing their own voices and to practice singing in a supportive environment; includes information via lecture, demonstration, listening to recordings related to stylistic differences in the popular idiom. Intended for nonmusic majors; not applicable to music degree requirements. Repeatable.

General Performance
Courses for Graduate/Undergraduate Credit

580. Piano Pedagogy. (2). Primarily concerned with the art and science of teaching. Includes observations of master teachers in the University and community.


620. String Pedagogy: Violin and Viola. (2). Required for violin and viola performance majors. A study of tutorial techniques for violin and viola, including the teaching of mini-lessons for instructor and class critique. Prerequisite: violin or viola performance capability or instructor’s consent.

625. Voice Pedagogy. (2). Acquaints the voice major with vocal techniques, concepts and materials of private and class instruction.

631. Advanced Conducting and Score Reading. (2). Baton technique, score reading and musicianship. Prerequisite: Mus. P. 217 or 218 or equivalent.

635. Woodwind Pedagogy. (2). A comprehensive study of woodwind instrument techniques, concepts and materials of studio instruction for the advanced student, including the teaching of mini-lessons for instructor and class critique. Prerequisite: performance 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 mini-lessons 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 mini-lessons for instructor and class critique. Prerequisite: performance capability on percussion instruments 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: Mus. P. 217 or 218 or equivalent.


710-711-712-713-714. Ensembles. (1-1-1-1-1). (A) Orchestra; (B) Symphonic Band/Wind Ensemble; (C) Choral Ensembles; (D) A Cappella Choir; University Singers; Concert Chorale; (E) La Banda Hispanica; (F) Piano Accompaniment; (G) Opera Theater; (H) Madrigal Singers; Chamber Singers; (J) Woodwind Ensemble; (O) Saxophone Quartet; (P) Brass Chamber Ensemble; (R) Percussion Ensemble; (S) Beginning String Ensemble and String Chamber Ensemble; (T) Jazz Ensemble; (V) Guitar Ensemble; (W) International Choir. 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: Mus. P. 580 and 581.


762. Opera Styles. (2). A comprehensive study of the performance styles and practices in operatic singing, ranging from the seventeenth century to the present. Prerequisites: professor’s permission.

773. Acting for Singers. (3). A study of the external and internal techniques of acting for the singer, emphasizing characterization and development of a role; to ensure that students have the necessary understanding and skills to integrate the acting process while singing. Prerequisite: instructor’s consent.

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

Courses for Graduate Students Only

841. Special Project in Music. (1-3). Individually supervised study or research emphasizing the personal needs of the student. Repeatable for credit. Prerequisite: instructor’s consent.

842. Special Project in Music. (1-3). Individually supervised study or research emphasizing the personal needs of the student. Repeatable for credit. Prerequisite: instructor’s consent.

843. Piano Pedagogy Seminar. (2). Variable topics, such as (1) advanced techniques in class piano or private piano (college curricula); (2) class piano in early childhood; (3) class piano for leisure-age students; (4) class piano in public (or private) schools, extending the advanced preparation of piano pedagogy students as needed. Repeatable for credit. Prerequisite: Mus. P. 580.

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

873. Graduate Recital. (2). Performance of a full recital featuring the chief performing medium. Prerequisite: consent of instructors in applied area.

874. Professional In-Service Presentation Project. (2). Planning, organizing and presenting a three-hour in-service presentation (workshop) to in-service private piano teachers, perhaps in conjunction with an established community piano teacher’s league, etc. Available as a terminal requirement alternative (in lieu of performance recital) in the Master of Music (piano pedagogy emphasis). Students approved for this terminal requirement option also will be required to perform a major piano work, prepared at acceptable recital level, during semester jury examination within the final year (two semesters) of the degree program. Requires approval of piano performance area faculty. Prerequisite: departmental consent.

Musicology-Composition
Graduate Faculty
Professor: Walter A. Mays
Associate Professors: Dean Roush (director, musicology-composition), Katherine Murdock

Master of Music
Emphasis in Music History-Literature
Completion of a Master of Music (MM) degree, history-literature concentration, requires a demonstrated reading proficiency in one of three languages: German, French, or Italian. Students may demonstrate proficiency by satisfactorily completing the Graduate School Foreign Language Test designed by the Educational Testing Service or by completing a departmental language translation exam. A thesis also is required for the degree.

The general requirements for the MM degree are summarized at the beginning of the School of Music section of the Graduate Bulletin.

Emphasis in Music Theory-Composition
Admission to the Master of Music (MM) degree program, theory-composition concentration, requires a Bachelor of Music degree with a major in theory-composition or the demonstrated equivalent. Background deficiencies must be satisfied before students may enroll in graduate composition courses. Applicants also must submit representative compositions for examination by the composition faculty; approval for admission to candidacy is contingent upon the candidate's demon-
strated ability to complete a final project in composition.

Completion of the MM degree, theory-composition concentration, 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 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). Contrapuntal 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.

616. Symphonic Literature. (3). General education further studies course. An advanced course in orchestral literature covering the development of the symphonic music from Baroque to the present day. Designed primarily for music majors who have already had Mus. C. 334Q and 335Q.

623. Opera Literature. (3). General education further studies course. A comprehensive survey of Italian, German, French, Russian, English and American opera literature from the 17th century to the present. Mus. C. 113 is strongly recommended before taking the course. Should be only upper division or graduate students. Not limited to music majors.

624. Oratorio and Cantata Literature. (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.

641. Orchestration. (2). The study of instrument design, emphasizing idiomatic scoring for various instrumental combinations with an approach to the problems of full orchestra and band scores. Prerequisite: Mus. C. 227.


660. Applied Composition. (2). Individual study in musical composition emphasizing writing for both small ensembles and large groups in the 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 lieder, 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.


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

791-792. Seminar in Music History. (3-3). Develops areas of interest in music history as time permits. Makes no effort at a chronological survey. Includes ideas evoking the most interest and considered by the instructor to be of the greatest professional benefit when interest warrants.

Courses for Graduate Students Only

830. Seminar in Music Theory. (3). An analytical study of the materials used in musical composition from antiquity to the present, employing analytical approaches such as Schenker, Hindemith and serial techniques. Develops analytical perspective rather than 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.

852. Introduction to Bibliography and Research. (3). Techniques of research and development of bibliography in music and music education. Course must be elected the first available semester of enrollment in MM or MME programs.

860. Advanced Composition. (2). Original work in the large forms and a continuation and expansion of Mus. C. 659-660. Prerequisite: Mus. C. 660 or equivalent.


876. Thesis. (2).

893. Music of Antiquity Through the Renaissance. (3).

894. Music of the Baroque Era. (3).

895. Music of the 18th Century. (3).

896. Music of the 19th Century. (3).

897. Music of the 20th Century. (3).

School of Performing Arts

Leroy W. Clark, Chair

Dance

While a formal major in dance at the graduate level is not offered, the following courses are available for graduate credit.

Courses for Graduate/Undergraduate Credit

501. Modern Dance IV. (3). Continuation of Dance 401. Advanced level. Emphasizes pro-
ferential technique and performance quality. Repeatable for credit. Prerequisite: instructor's consent or by audition.

505. Choreography III. (3). Focuses on the choreographic process. Students create choreographic studies for more than one dancer utilizing elements studied in Choreography I and II and exploring different choreographic approaches. Further exploration may include environmental, chance, and collaborative choreographies and multimedia approaches. Prerequisites: Dance 403 and concurrent enrollment in appropriate-level modern dance or ballet technique class.


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

605. Choreography IV. (3). Further work on the choreographic process begun in Choreography III. Class produces a concert of the students' works at the end of the semester. Prerequisites: Dance 505 and concurrent enrollment in appropriate-level modern dance or ballet technique class.

645. Practice in Teaching Dance. (3). Actual placement in teaching situations with responsibility of teaching ballet, modern, and/or jazz in private studios, elementary, high schools, Ys or recreation centers. Prerequisite: Dance 545.

690. Special Topics in Dance. (1-6). For individual or group instruction. Repeatable for credit with departmental consent.

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

Theatre

Graduate Faculty

Professors: Leroy W. Clark (chair), Bela Kiralyfalvi
Associate Professors: Judith Babnich, J. David Blatt, Joyce Cavarozi, Betty Monroe

Master of Arts in Communication

Wichita State's Master of Arts in Communication degree program includes an emphasis in theatre/drama. See degree requirements and more information in the Elliott School of Communication listing in the Fairmont College of Liberal Arts and Sciences section of the Graduate Bulletin.

The following courses may apply for graduate credit.

Courses for Graduate/Undergraduate Credit

510. Design Project. (1). Advanced work in the problems of stage lighting design, costume design or scenic design. With the permission and supervision of the appropriate faculty member, the student designs for specific productions for either Mainstage or Experimental Theatre. Repeatable twice for credit if taken in different design areas. Prerequisite: instructor's consent.

516 & 517. Playwriting I and II. (3 & 3). General education further studies course. 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). General education further studies course. Continued development of methods established in Theatre 245Q with additional emphasis on contemporary vocal and movement techniques. Prerequisites: Theatre 243Q and sophomore standing.

544. Advanced Stagecraft. (3). R: L arr. Explores advanced construction techniques for the fabrication of stage scenery and stage properties. Such operations may include welding, vacuum forming, carpentry, and working with a variety of new materials. Students complete a research project and presentation/demonstration of research findings. Independent projects relating to materials and techniques studied are pursued in arranged labs. Prerequisite: Theatre 244.

546. Scene Painting. (3). Presented with a lecture-demonstration-studio arrangement. Explores various theatre painting materials and techniques enabling the student to develop skill as a scenic artist. Prerequisite: 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 experiences 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: Theat. 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). General education further studies course. The history of theatrical activity as a social institution and an art form from its beginnings to the 17th century. Includes representative plays, methods of staging and theatrical architecture of various periods.

624Q. Development of the Theatre II. (3). General education further studies course. History of theatrical activity as a social institution and an art form from the 17th century to the present. Includes representative plays, methods of staging and theatrical architecture of various periods.

643. Styles in Acting. (3). Training in and development of the special techniques required for period or stylized plays with special emphasis on Greek, Shakespearean, and Restoration styles. Prerequisites: Theatre 243Q, 542 and junior standing.

647. Scene Design II. (3). Continuation of Theatre 244 with more advanced work in designing settings for the stage and including studies in scenicographic techniques and exercises in model building. Student designs settings for a production having a single set, a production requiring a simultaneous setting and a production using multiple settings. Requires no laboratory work in theatre production. Prerequisites: Theatre 244 and 344.

649. Stage Lighting II and Theatre Sound. (3). Continues the study and application of the theories and techniques of Theatre 245Q, emphasizing advanced concepts of design, and provides an introduction to theatre sound production. Prerequisite: Theatre 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 characterizations of those scenes studied, integrating the elements of the actor's craft learned in the prerequisites courses. Prerequisites: Theatre 643 and junior standing.

653. History of Costume. (3). R: L arr. Historical survey and individual research of dress from ancient Egypt to the present day emphasizing social, political, economic and religious influences. Theory and practice of adapting period styles to the stage. Prerequisite: Theatre 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: Art F 145, Theat. 253.

675. Directed Study. (2-4). Cross-listed as Comm. 675. Individual study or project.
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 directing, acting, scenery, and lighting; costume design and construction; or theatre management with a professional theatre company. Prerequisite: junior standing or departmental consent. Total of internship activity applicable toward graduation is 15 credits.

Courses for Graduate Students Only

820. Investigation and Conference. (2-3). Cross-listed as Comm. 820. Directed research and experimentation for graduate students in some phase of (a) public address, (b) theatre history and production, (c) radio-television or (d) the teaching of speech. Repeatable for credit up to a total of six hours.

823. History of Dramatic Criticism. (3). A survey and analysis of major critical theories from Aristotle to the present.

824. Development of Modern Theatre Styles. (3). An examination of the major movements in the modern theatre since 1870. Emphasizes both literary and physical elements of styles.

The following abbreviations are used in the course descriptions: R stands for lecture and L for laboratory. For example, 4R, 2L means four hours of lecture.
College of Health Professions

Offices: 400 Ahlberg Hall
M. Diane Roberts, dean
Stephen C. Gladhart, assistant dean
Bonnie Holaday, assistant dean

School of Health Sciences, (316) 978-3060—Stephen C. Gladhart, assistant dean

Dental Hygiene, (316) 978-3614—Salme Laugne, chairperson

Public Health Sciences, (316) 978-3060—Kenneth Filetti, chairperson

Medical Technology, (316) 978-3146—Mary Conrad, chairperson

Physical Therapy, (316) 978-3604—Roger Scudds, chairperson

Physical Therapist Assistant, (316) 978-3604—Roger Scudds, chairperson

Physician Assistant, (316) 978-3011—Marvis Lary, chairperson

School of Nursing, (316) 978-3610—Bonnie Holaday, chairperson and assistant dean

The College of Health Professions offers graduate programs leading to a Master of Public Health, 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 elsewhere in the Graduate Bulletin.

School of Health Sciences
Stephen C. Gladhart, assistant dean

The School of Health Sciences offers graduate programs leading to the Master of Public Health and Master of Physical Therapy degrees. Specific requirements for each degree are described under the appropriate listing below.

Health Care Administration

Although there is no graduate degree in health care administration, the following courses are available for graduate credit.

Courses for Graduate/Undergraduate Credit

585. 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. (1). 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 563 and at least one other HAE course.

Course for Graduate Students Only

808. Epidemiology of Chronic Disease. (3). The study of the distribution and determinants of chronic diseases and injuries in human populations. The frequencies and types of illnesses and injuries in groups of people and the factors that influence their distribution. Prerequisites: graduate school enrollment, HAE 605 or instructor’s consent.

Health Science

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

Courses for Graduate/Undergraduate Credit

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). 2R; 2L. Study of the structure, physiology and functions of the central and peripheral nervous systems. Prerequisite: HS 700 or equivalent.

521. Independent Study. (1-6). Offers reading and conference experience to complete a course requirement or provide enrichment in a specific area. Prerequisites: upper-division or graduate standing or program chairperson’s consent.

531. Applied Principles of Nutritional Support and Therapy. (3). A study of the principles of nutritional support and diet therapy. Investigates the dietary concerns of a variety of clinical disorders including gastrointestinal disorders, diabetes mellitus, cancer, burns, obesity and weight loss, kidney and cardiovascular disease, parenteral and enteral nutrition and surgical conditions. Discusses nutritional assessment, data interpretation, case plan development, record keeping and client communications. Prerequisite: HAE 331Q or instructor’s consent.

575. Special Topics or Selected Topics. (1-4). Lecture/discussion; focuses on a discrete area content relevant to the health disciplines. In-depth study of particular topic or concept, including didactic and current research findings and technological advances relevant to the topic. Open to nonmajors. Repeatable up to six credit hours with program consent.

583. Anatomy of the Body Cavities. (3). The gross anatomy of the human body cavities presented in a four-week summer term using a regional approach. Teams of eight students dissect the thoracic, abdominal, and pelvic cavities on human cadavers, emphasizing cardiovascular, respiratory, gastrointestinal, and urogenital systems. Prerequisite: BIOL 203 or 223.

700. Gross Anatomy. (6). 3R; 2L. For students in the physical therapy program. Study of the structure of the human body including embryology; emphasizes integration of embryological and anatomical information with human functional abilities. Prerequisites: four semesters of biological sciences or program consent.

720. Neurosciences. (3) 3R; 2L. Integration of embryology, anatomical structure, physiology and functions of the central and peripheral nervous systems with human functional abilities. Prerequisite: HS 710 or program consent.

750. Workshop in Health Related Professions. (1-4). An examination of relevant topics directly and/or indirectly related to the delivery of health care service.

Courses for Graduate Students Only

800A. Seminar in Health Science. (1). Recent developments and issues affecting the financing, organization and management of health care resources in both the public and private sector of our nation’s medical care system. Prerequisite: HS 701 or program consent.

800B. Seminar in Health Education. (1). Covers current trends and directions in allied health education in both patient care and academic settings. Prerequisite: HS 701 or program consent.

802. Introduction to Public Health. (3). Introduction to the organization and activities of the public health system, its roles and problems. Introduction to administrative problem-solving as a structured process. Prerequisite: instructor’s consent.

804. Principles of Statistics in the Health Sciences. (3). An introductory graduate level course concerning the concepts of statistical reasoning, statistical principles, and their role as the scientific basis for clinical research, and public health research and practice. Prerequisite or corequisite: HS 802.

808. Principles of Epidemiology. (3). An introductory graduate level course concerning epidemiologic principles and how these form the scientific basis for public health. Prerequisite or corequisite: HS 802.

810. Practicum/Project. (3). Enhances and complements the academic experience of students...
pursuing the Master of Health Science degree. Provides an opportunity to link the student’s academic studies with actual practice in direct observation and supervised participation in the administrative/educational process in a selected health care organization. Students carry out their assigned tasks under the guidance and direction of a faculty member of the College of Health Professions. The student also may be under the direction of a field instructor/preceptor from the host agency.

812. Health Care Policy and Administration. (3). An in-depth look at policy and management issues in the health system from a public health perspective. Topics include health policy, trends in the health care system, and administrative issues. Topics are critiqued with regard to public health goals, the interests of consumers and providers, and ethics. Prerequisite or corequisite: HS 802.

814. Social and Behavioral Aspects of Public Health. (3). Examines the characteristics beliefs and behaviors of individuals and groups involved in the process of health care. Draws on the concepts and principles of the social, behavioral, and cultural aspects of health that define the interactions of providers and consumers of health care. Explores why people react to perceived symptoms the way they do, the reasons providers respond as they do to patients in different social attributes, the factors which predispose individual reactions to illness and its correlates, and the effects on health of societal agreements and expectations. Prerequisite or corequisite: HS 802.

816. Environmental Health. (3). A survey course in environmental health designed to provide an understanding of the fundamental theory and methods for the control of disease. Includes environmental law, disease systems, water supplies, plumbing, waste water treatment, food sanitation, vector control, recreation sanitation, solid waste disposal, housing sanitation, and air pollution. Prerequisite or corequisite: HS 802.

818. Fundamental Research Methods in Public Health. (3). Stress mastery of basic concepts and techniques of research methodology used in the health professions. Focuses on the acquisition of the generic tools of research design and their application to the real-world problems confronting those who deliver health care, those who facilitate and/or manage the delivery of care, those who conduct clinical and health services studies, and those who make policy affecting the delivery arrangements. Prerequisites: HS 804 and 808.

820. Advanced Research Methods in Community and Clinical Settings. (3). Study research methods for use in any of the health science disciplines. Topics include power and sample size, randomized control trials, and integrative qualitative-quantitative issues. Prerequisites: HS 814 and 818.

822. Advanced Research Methods. (3). Advanced topics in health services research: advanced descriptive analysis, advanced multivariate analysis, modeling, causal interpretations, issues in evaluation, proposal writing, special issues in research in health are settings, and problems encountered on research projects. Prerequisite: HS 818.

824. Advanced Epidemiological Methods. (3). Additional statistical techniques and their application in the analysis of public health data are presented with special emphasis on the analysis of cross-sectional, retrospective, longitudinal, and case-control data. Prerequisites: HS 804 and 808.

825. Health Care Marketing. (3). An examination of marketing principles as applied in the health care sector. Recognize, discuss, and apply marketing principles to health care environments. Prerequisite: Mk 800.

826. Health Policy. (3). Examines the forces shaping key aspects of health care policy. Analyzes the political, economic, social, clinical, and scientific factors which result in policy decisions. Particular attention is paid to the pivotal role that health services research plays in the process, including its centrality to the link between policy and the management of public health problems.


830. Issues in Health Services. (3). An in-depth look at current issues facing health professionals. Topics, presented in lecture and student presentations and discussed in small groups, include health reform, access to care, other system issues, and organizational trends and the like. Topics are critiqued with regard to public and private goals, consumer and provider interests, and ethics.

832. Quality Assurance of Health Care. (3). Covers issues of quality assurance in health care provision, including definition and measurement of quality.

834. Financing Health Care Services. (3). Provides an examination of the principles of financial analysis and management used in health care institutions which are most useful to non-financial personnel. It emphasizes understanding the application and interpretation of financial concepts to the health setting and includes consideration of financial organization, sources of operating revenues, budgeting, and cost allocation methods.

840. Practicum. (3 or 6). Academic studies are linked with actual practice through observation and participation in the administrative and educational processes of public, voluntary, and private health organizations under the direction of a preceptor from the host agency.

875. Special Topics. (3). New or special topics presented based on student interest. Prerequisite: Instructor's consent.

876. Directed Study. (1-3). Individual study of the various aspects and problems within public health. Repeatable for credit with departmental consent. Prerequisite: Instructor's consent.

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

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**Public Health Sciences**

**Graduate Faculty**

**Professor:** Michael Long

**Associate Professors:** Raymond L. Goldsteen, Diane Roberts (Dean, College of Health Professions), James H. Swan

**Assistant Professors:** Stephen C. Gladhart (Assistant Dean), Karen S. Goldsteen, Mary Lescoe-Long, Joyce B. Morris, Ruth B. Pickard

**Master of Public Health (MPH)**

MPH Kansas is a joint degree program of Wichita State University and the University of Kansas which offers an opportunity to actively involve current public health practitioners, other health professionals, and physicians specializing in preventive medicine in a manner that enhances the quality of instruction and provides a greater depth of expertise and experience. It is designed to meet the needs of working health care professionals in the state who may complete the degree on either a part-time or full-time basis through evening course work.

The program at WSU is a 36 credit-hour program. The MPH student will develop competencies in the five basic public health specialty areas, including health services administration, epidemiology, biostatistics, social/behavioral sciences, and environmental health. The student must complete 15 core course hours and the six-hour block of the thesis or non-thesis option, as well as 15 additional credit hours in one area of concentration, as follows:

- **Core courses**
  - HS 804, Principles of Statistics in the Health Sciences ............... 3
  - HS 808, Principles of Epidemiology .................. 3
  - HS 812, Health Care Policy and Administration ................. 3
  - HS 814, Social and Behavioral Aspects of Public Health ...... 3
  - HS 816, Environmental Health ......................... 3
  - Total ........................................ 15

- **Program electives** .................................. 15

**Thesis option**

- HS 818, Fundamental Research Methods in Public Health .......... 3
- HS 885, Thesis ....................................... 1-3
- Practicum-project option
  - HS 640, Practicum/Project ................................ 6
  - Total ............................................. 36

**Degree Requirements**

The award of the MPH degree requires 36 credit hours plus successful completion of the thesis or practicum-project. Stu-
Admission Requirements
Admission to the MPH degree program requires that the applicant:

1. Have a bachelor's degree (or its equivalent) and a grade point average of 3.00 or its equivalent, awarded by a regionally accredited institution of higher learning or a foreign university with substantially equivalent requirements for the bachelor's degree.

2. Demonstrate one or more years of responsible work experience in the health field, or a degree in a recognized health profession, or other evidence of training and/or experience indicative of adequate preparation for the curriculum. Assessment of work experience will be conducted on the basis of written job description(s) or other description(s) of the scope of duties obtained from prior or current employer(s).

3. Has obtained an averaged percentile score of 50th percentile or better on the Graduate Record Examination (GRE) or has successfully completed a postbaccalaureate degree program. Scores from other nationally recognized tests of aptitude for postbaccalaureate study may be substituted for the GRE, e.g., Medical College Admissions Test (MCAT), Law School Aptitude Test (LSAT), Graduate Management Aptitude Test (GMAT), Dental School Admission Test (DSAT).

4. Submit an official report of completion of the Test of English as a Foreign Language (TOEFL) with a composite score of 570 or better if the native language is not English. This report must be no more than two years old at the time it is reviewed by the MPH admissions committee.

To be considered for admission, applicants should assure receipt of the following at the institution to which the application is addressed:

1. Official transcript(s) from all institutions of higher learning attended;

2. Official report of Graduate Record Examination scores;

3. Three (3) letters of recommendation from employers, instructors, or other persons with knowledge of the applicant that is pertinent to an assessment of their potential for success in the MPH program and/or subsequent career in public health or a related discipline;

4. A properly completed Application for Admission to MPH Program of Study;

5. A resume or curriculum vita;

6. A completed graduate school application for the University of Kansas or Wichita State University, as appropriate.

Courses for Graduate/Undergraduate Credit

638. Concepts of Quality. (3). For health care personnel. Covers issues of quality assurance and improvement in health care provision, including definition and measurement of quality. Prerequisite: HSOP 320 or departmental consent.

641. Health Care for Special Populations. (3). Examines the characteristics and needs of many at-risk groups in America today, including homeless people, refugees and immigrants, people with AIDS, alcohol and substance abusers, high-risk mothers and infants, victims of family or other violence, the chronically or mentally ill, and people with mental retardation and developmental disabilities. Demographics of the populations at risk, their access to health care and the quality of health care services they receive are reviewed as are the cost, financing, and regulation of such care. Consideration is given to relevant research initiatives and program interventions. Prerequisites: HSOP 320 and 323 or concurrent enrollment or departmental consent.

644. Health Economics. (3). An application of economic theories, principles and concepts to the U.S. medical care system. Includes the determinants of supply and demand, the role of need, the impact of provider generated demand, the role of health insurance and government in the delivery of medical care. Prerequisite: Econ. 202 or departmental consent.

647. 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: HSOP 320 and 328 or Mgmt. 360 or departmental consent.

652. Strategic Management in Health Service Organizations. (3). Provides an analysis of business problems seen in health care organizations from a strategic management perspective. Uses a series of case studies which require that the student integrate the functional areas of business, including management, marketing, finance, and operations. Discusses all types and sizes of health service organizations in the context of the current environment for these organizations. Prerequisite: HSOP 328 or departmental consent.

Medical Technology

Graduate Faculty
Professor: James A. Jackson
Associate Professor: Mary Conrad (chairperson)
Assistant Professors: JoLynn Campbell, Diana Cochran, Linda S. Hogan

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

Courses for Graduate/Undergraduate Credit

580. 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, 460, 479 and 486, or equivalent, HS 705 or instructor's consent.

760. Hematologic Neoplasms. (3). 3R. 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, pathological changes that can occur in the hemostatic mechanism and the laboratory evaluation of those changes. Prerequisite: Med. T. 462 or instructor's consent.

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

780. Issues in Immunohematology. (3). 3R. In-depth analysis of current issues in a modern transfusion service emphasizing responding to changes in patient care through application in technology, research and supervision. Prerequisites: Med. T. 479 and HS 701 or instructor's consent.

790. Epidemiology and Infectious Control. (3). 3R. A study of the expanding role of hospital personnel in the performance of hospital epidemiology and infection control. Addresses basic epidemiological principles, basic considerations of hospital infections including investigations and surveillance, potential problem areas within the hospital environment, the role of the hospital laboratory and possible endemic and epidemic infections. Prerequisite: course in medical microbiology 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 reference material. Prerequisite: program consent.
# Physical Therapy

**Graduate Faculty**

*Associate Professors:* Roger Scudds (chairperson), Barbara Smith

## Master of Physical Therapy

The program prepares individuals to enter beginning practice as a physical therapist. The graduates are prepared to evaluate neuromuscular, musculoskeletal, sensorimotor, and related functions to determine the degree of muscle strength, motor development, motion, respiratory ventilation, or peripheral circulatory efficiency of individuals. Following referrals from physicians, podiatrists, or dentists, the physical therapist plans and implements appropriate treatment programs for their clients. Graduates are prepared to work in preventive health care as well as rehabilitative care. The program requires full-time study for a period of 24 consecutive months. Students enter the program in the fall semester only.

### Admission Requirements

Admission to the program requires that the student:

1. Have a bachelor's degree from an accredited four-year institution acceptable to the Graduate School.
2. Have a cumulative grade point average of 3.000 in the last 60 hours of graded undergraduate courses, in prerequisite courses, and in all math and science courses.
3. Show evidence of completing the following:
   - Biology—two semesters of introductory biology (which would lead to a biology major) with a laboratory
   - Anatomy and Physiology—eight to 10 semester hours with laboratory
   - College Chemistry—two semesters with laboratory
   - College Physics—two semesters with laboratory
   - English Composition—two semesters
   - Exercise Physiology—one semester
   - 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 by the published deadlines.

Applications will be accepted for review only if they are postmarked in the last two weeks on January 1/20-2/1. Applications received at any other time will be returned to the sender unreviewed.

### Degree Requirements

The student must maintain a 3.000 grade point average and a C or better in each of the following courses:

#### First Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Hrs.</th>
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</thead>
<tbody>
<tr>
<td>HS 700, Gross Anatomy</td>
<td>6</td>
</tr>
<tr>
<td>PT 705, Clinical Medicine I</td>
<td>4</td>
</tr>
<tr>
<td>PT 710, Principles of Physical Therapy I</td>
<td>5</td>
</tr>
<tr>
<td>PT 712, Research I</td>
<td>1</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

#### Spring

| HS 720, Neurosciences | 3    |
| PT 715, Seminar II | 1    |
| PT 722, Research II | 1    |
| PT 726, Clinical Medicine II | 2    |
| PT 730, Principles of Physical Therapy II | 5    |
| PT 735, Physical Therapy Procedures | 4    |
| **Total**     | **16** |

#### Summer

| PT 800, Clinical Education I | 6    |
| **Total**     | **6** |

#### Second Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>PT 810, Principles of Physical Therapy III</td>
<td>4</td>
</tr>
<tr>
<td>PT 815, Physical Therapy Management I</td>
<td>3</td>
</tr>
<tr>
<td>PT 825, Seminar II</td>
<td>1</td>
</tr>
<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>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

### Special Requirements

Students will be required to purchase uniforms and other clinical apparel, professional liability insurance, health insurance coverage and specified immunizations as well as submit evidence of an annual physical examination while in the program. Students must also be certified in cardiopulmonary resuscitation (CPR) prior to entering the clinical rotations.

Students are expected to provide their own transportation to and from the health care facilities used for clinical experiences. During clinical assignments outside Wichita, students may be required to pay all living and travel expenses.

Students are referred to the Department of Physical Therapy *Student Handbook* for more details on special departmental policies and procedures.

### Courses for Graduate/Undergraduate Credit

<table>
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<tr>
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<tbody>
<tr>
<td>PT 810, Principles of Physical Therapy III</td>
<td>PT 815, Physical Therapy Management I</td>
</tr>
<tr>
<td>PT 823, Seminar II</td>
<td>PT 826, Clinical Medicine III</td>
</tr>
<tr>
<td>PT 835, Physical Therapy Theory and Procedures II</td>
<td><strong>Total</strong></td>
</tr>
<tr>
<td><strong>Spring</strong></td>
<td><strong>Total</strong></td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>Summer</strong></td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>Fall</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>Hrs.</strong></td>
</tr>
</tbody>
</table>

726. Clinical Medicine II (2). 2R. Survey of medical conditions seen by physical therapists...
emphasizing causes, effects and treatments. Emphasizes medical model. Coordinated by program. Prerequisite: PT 705.

730. Principles of Physical Therapy II. (3) 2R; 4L. Continuation of PT 710, adding concepts and techniques to develop treatment programs for patients with neuromuscular and musculoskeletal problems. Prerequisite: program consent.

735. Physical Therapy Theory and Procedures I. (4) 2R; 4L. Utilization of physical modalities related to sound, light, electricity, water, paraffin, traction and massage, to achieve physiological and mechanical results. Evaluation, treatment and documentation methods of above modalities, analysis of relevant scientific literature. Prerequisite: program consent.

790. Selected Topics in Physical Therapy. (1-4). Intensive study of current issues, technology, research, and application of selected topic. Repeatable up to 6 credits. Prerequisite: program consent.

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

Courses for Graduate Credit 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: program consent.

810. Principles of Physical Therapy III. (4). 2R; 6L. Correlation of previous course materials and the use of scientific rationale to develop physical therapy evaluations and treatments for industrial and geriatric clients and for patients with specific orthopedic medical diagnoses. Also discusses prevention of musculoskeletal problems and utilization of appliances. Prerequisite: program consent.

815. Physical Therapy Management I. (3). 3R. Study of payment systems, legal aspects of physical therapy, assurance of quality physical therapy care. Includes peer review, documentation, legal and ethical aspects, fiscal considerations, marketing, communication with the public, private sector and government officials. Prerequisite: program consent.

820. Physical Therapy Management II. (2). 2R. Study of management systems including assessment, planning, organization, control and evaluation methods. Includes personnel management, fiscal considerations, electronic device utilization and management styles. Prerequisite: program consent.

825. Seminar II. (1) R; .5L. Discussion of teaching and learning theories as they apply to physical therapy education of patients, students, health professionals, and community. Includes methods of evaluating instruction, content, strategies, and learners. Prerequisite: program consent.

826. Clinical Medicine III. (2). 2R. Continuation of PT 726. Prerequisite: PT 726.

830. Principles of Physical Therapy IV. (3). 2R; 2L. Integration of evaluations, treatment modalities and program planning previously presented in the curriculum to develop and to evaluate specialty services in physical therapy including prosthetics for amputees, arthritis, diabetes, burns and obstetrics/gynecology; developmental investigation of clinical protocols to screen for sclerosis, well babies, and safe work environment. Prerequisite: program consent.

835. Physical Therapy Theory and Procedures II. (4) 2R; 4L. Development of physical therapy evaluations and treatment programs for cardiopulmonary, neurologic and other long-term rehabilitation patients. Assistive devices, home evaluations and problems with architectural barriers are incorporated into discharge planning. Prerequisite: program consent.

836. Physical Therapy in Pediatrics. (2). Provides supplemental skills for the entry-level physical therapist in the area of pediatrics. Didactic work and clinical exposure is incorporated in the class. Offered as an elective in the physical therapy program. Prerequisite: PT 735.

837. Special Populations. (3). Expands upon basic evaluation and treatment skills of geriatrics, women's health, and industrial medicine regarding physical therapy practice. Also includes psychosocial elements, medical complications, health promotion and prevention information at it pertains to the three special populations listed. Prerequisite: PT 735.

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

845. Seminar III. (1) R; .5L. Discussion of information from readings and other sources regarding employment, psychosocial and international aspects of physical therapy. Prerequisite: program consent.

850. Clinical Education II. (6). 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: program 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: program consent.

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

*In the series of three clinical courses, students experience four different settings including general and rehabilitation practice and a selected area of specialization not limited to pediatrics, geriatrics, and orthopedics. The order of the settings is flexible. There is an increase in the level of expectation of performance with each clinical course which is guided by the evaluation process.

School of Nursing

Graduate Faculty

Professor: Donna Hawley (director of graduate program), Bonnie Holaday (chairperson and assistant dean)

Associate Professors: Alicia Huckstadt, Susan Kruger, Pamala Larsen, Mary McHugh, Jan Riorden, Elaine Steinke

Assistant Professors: Karen Hayes, Linda C. Hughes, Martha Shawver, Betty Sullivan

Master of Science in Nursing

The program is individualized to meet the needs and professional goals of each student. The curriculum has been developed to accommodate part-time study (six or fewer credit hours), as well as full-time study (9-12 credit hours). The purpose of the graduate program is to prepare advanced practitioners who function as clinical nurse specialists, nurse practitioners, administrators, and educators.

Admission Requirements

In addition to the general University requirements for admission to graduate studies, the School of Nursing requires:

1. A bachelor's degree with a major in nursing from an NLN-accredited school. Applicants with degrees in other disciplines will be considered and counseled on an individual basis.

2. Admission to the Graduate School at Wichita State University.

3. Cumulative grade point average of 3.000 or better in the last 60 hours for full standing.

4. School of Nursing approval.

5. Evidence of Registered Nurse licensure.

6. Coverage by professional liability insurance in the amount of $1/3 million individual/aggregate, to be renewed annually.

7. One year of nursing practice following professional licensure is recommended.

8. Admission to the Family Nurse Practitioner concentration requires a separate application.

Students may be admitted conditionally until all requirements for admission are completed. Items 5 and 6 must be com-
completed before a student begins any clinical course and prior to filing the plan of study. Approval of the plan of study will clear the admission status from conditional to full standing.

**Prerequisites:** A course in statistics accepted by the School of Nursing and an undergraduate research course are required. Prerequisite courses are not credited to the degree.

### Comprehensive Examination
A comprehensive written examination is required of all graduate nursing students and generally is completed during the student’s last semester.

### Degree Requirements
Satisfactory completion of the following three phases is the minimum requirement for the MSN degree (with the exception of administrative or the dual MSN/MBA degree which are listed last):

#### Phase I (Core) Hrs.
- Nurs. 701, Advanced Health Assessment 2
- Nurs. 702, Lab for Advanced Health Assessment 1
- Nurs. 703, Scientific Inquiry I 3
- Nurs. 705, Scientific Inquiry II 3
- Nurs. 715, Advanced Nursing Practice: Roles and Issues 3
- Nurs. 795, Applied Drug Therapy 3

#### Phase II (Choose Advanced Practice Nurse or Nurse Practitioner)
**Advanced Practice Nurse (Clinical Nurse Specialist) students choose one of the following:**

**Acute Care (21 or 24 hours)**
- Nurs. 781, Pathophysiology for Acute and Critical Care 3
- Nurs. 805, Health Promotion 3
- Nurs. 808, Advanced Role Practicum 3
- Nurs. 834, Adult Nursing Practicum 3
- Nurs. 839, Management of Acute/Chronic Health Problems of Adult 3
- Nurs. 852, Adult Case Management 3

**And one of the following:**
- Elective 3
- Role: Administration, Education or Informatics* 6
- Nurs. 821, Thesis 6

**Psychiatric/Mental Health (21 or 24 hours)**
- Nurs. 783, Brain Disorders in Mental Illness: Assessment and Nursing Interventions 3
- Nurs. 808, Advanced Role Practicum 3
- Nurs. 819, Foundations of Psychiatric/Mental Health Nursing 3
- Nurs. 822, Psychiatric/Mental Health Nursing: Practicum I 3
- Nurs. 843, Perspectives in Psychiatric/Mental Health Nursing 3
- Nurs. 844, Psychiatric/Mental Health Nursing: Practicum II 3

**And one of the following:**
- Elective 3
- Role: Administration, Education or Informatics* 6
- Nurs. 821, Thesis 6

**Women’s Health (21 hours)**
- Nurs. 793, Advanced Pathophysiology 3
- Nurs. 805, Health Promotion 3
- Nurs. 808, Advanced Role Practicum 3
- Nurs. 829, Foundations of Pediatric/Women’s Health Nursing 3
- Nurs. 832, Pediatric/Women’s Health Nursing: Practicum I 3
- Nurs. 836, Pediatric/Women’s Health Nursing: Practicum II 3
- Nurs. 853, Reproductive Health of Women 3

**Nurse Practitioner students choose one of the following:**

**Acute Care (28 hours)**
- Nurs. 781, Pathophysiology for Acute and Critical Care 3
- Nurs. 786, Advanced Health Assessment Practicum 2
- Nurs. 805, Health Promotion 3
- Nurs. 834, Adult Nursing Practicum 3
- Nurs. 839, Management of Acute/Chronic Health Problems of Adult 3
- Nurs. 852, Adult Case Management 3
- Nurs. 855, Management of the Acutely/Critically Ill 3
- Nurs. 849, Nurse Practitioner Preceptorship 6

**Pediatrics (21 or 24 hours)**
- Nurs. 793, Advanced Pathophysiology 3
- Nurs. 805, Health Promotion 3
- Nurs. 808, Advanced Role Practicum 3
- Nurs. 829, Foundations of Pediatric/Women’s Health Nursing 3
- Nurs. 832, Pediatric/Women’s Health Nursing: Practicum I 3
- Nurs. 843, Perspectives in Psychiatric/Mental Health Nursing 3
- Nurs. 844, Psychiatric/Mental Health Nursing: Practicum II 3
- Nurs. 851, Clinical Date Management 3

**Phase III (Final Core)**
- Nurs. 851, Clinical Date Management 3

**Administration/Nursing Systems (39-42 hours)**
- Nurs. 703, Scientific Inquiry I 3
- Nurs. 705, Scientific Inquiry II 3
- Nurs. 715, Advanced Nursing Practice: Roles and Issues 3
- Nurs. 811, Foundations of Nursing Administration 3
- Nurs. 812, Nursing Administration Practicum 9
- Nurs. 827, Resource Management in Nursing 3
- Nurs. 851, Clinical Date Management 3

And both of the following:
Curriculum Plan

Master of Science in Nursing

Core Curriculum

Nurs. 531, Nursing and Computer Technology (MBA prerequisite) .......... 3
Nurs. 703, Scientific Inquiry I .......... 3
Nurs. 705, Scientific Inquiry II .......... 3
Nurs. 715, Advanced Nursing Practice: Roles and Issues .......... 3

Clinical Concentration

Nurs. 775, Health Care Information Systems .......... 3
Nurs. 811, Foundations of Nursing Administration .......... 3
Nurs. 812, Nursing Administration Practicum .......... 3
Nurs. 827, Resource Management in Nursing .......... 3
HS 834, Financing Health Care Services .......... 3

Master of Business Administration

Prerequisites

Math. 111, College Algebra .......... 3
Math. 144, Business Calculus .......... 3
Nurs. 531, Nursing and Computer Technology .......... 3
CESP 704, Introduction to Educational Statistics (or equivalent) .......... 3

Background Fundamentals

Acct. 800, Financial Accounting .......... 3
Econ. 800, Analysis of Economic Theory .......... 3
Mkt. 800, Marketing Systems .......... 3
DS 874, Management Information Systems .......... 3

Required Courses

Acct. 801, Managerial Accounting .......... 3
Mkt. 801, Marketing Management .......... 3
Mgmt. 803, Business Decision Making .......... 3
Econ. 804, Managerial Economics .......... 3
Fin. 850, Managerial Finance .......... 3
Mgmt. 862, Organizational Behavior .......... 3
Mgmt. 885, Advanced Strategic Management .......... 3

Courses for Graduate/Undergraduate Credit

505. Directed Study in Nursing. (1-4). Elective. Individual study of the various aspects and/or problems of professional nursing. Repeatable. Prerequisite: school consent.


531. Nursing and Computer Technology. (3). Focuses on basic terminology and use of computer software for nursing education, practice and administration. Opportunity for hands-on experience with microcomputers. Prerequisite: admission to the nursing program or instructor's consent. Previous knowledge of computers or computer technology is not required.

543. Women and Health Care. (3). Cross-listed as Wom. S. 543. Examines the historical development of the women's health movement, focuses on current issues relevant to women and health care and explores the roles of women in the health care system and as consumers of health care. Examines self-care practices of women and studies ways to promote positive health practices. Open to nonnursing majors.

700. Assessment of Pediatric and Adolescent Clients. (3). 2R; 31. 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 life span. Emphasis is placed on current issues relevant to women and graduate students. Opportunity for hands-on experience; students focus on the assessment of infants and children. Open admission to RN and graduate students.

703. Scientific Inquiry I. (3). Emphasizes the role of theory in scientific inquiry in nursing. The evolution of nursing theory is traced and concepts and theories of human response through the life span are applied to nursing practice. Prerequisite: permission of instructor.

704. Health Maintenance of the School Age Child. (3). Examines and applies major theories, clinical concepts and research studies related to school health nursing. Open to RN and graduate students.

705. Scientific Inquiry II. (3). Builds on Scientific Inquiry I. Discusses the research process in relationship to concepts, frameworks/theories. Various methodological approaches to research are explored. Consideration is given to current issues in nursing research. The research process is demonstrated in a preliminary proposal related to student's practice area. Prerequisite: Nurs. 703 or departmental consent.

706. Organization and Management of the School-Health Program. (3). Examines and applies concepts of organization and management to the school health delivery system.
707. Analysis of Complementary Health Care Modalities. (3). Analyzes the theoretical and empirical basis for various complementary modalities. Includes an exploration of issues involved with the use of specific modalities within today’s health care environment. Research-based discussion focuses on how to best prepare the health care professional to provide guidance to a client and the family to best achieve a physiological, mental and emotional state most responsive to therapeutic interventions. Emphasizes total evaluation and support systems utilized in a variety of environmental, cultural and other cognitive and affective factors. Prerequisite: instructor’s consent.

708. School Nurse Practicum. (2). 6L. An empirical basis for various complementary modalities. Involves an exploration of complementary health care for the school nurse educator to accommodate the changing health care scene. Discusses clinical teaching methods. An exploratory study plan with accompanying clinical evaluation tool is constructed after the student, subject and setting are delineated. Investigates roles of the educator in teaching clinically.

709. Health Problems in Family Violence. (3). Develop understanding of human responses to family violence across the life span. Includes spouse abuse, child witnesses, and elder abuse. Identifies a physiological, emotional, or social health problem and formulate a strategy for primary, secondary, or tertiary prevention based on a conceptual framework. Prerequisite: graduate level or instructor’s consent.

715. Advanced Nursing Practice: Roles and Issues. (3). Designed for student preparing for advanced practice. Historical development of advanced practice role, the ethical, legal, political, and economic issues of such a role and current trends and future directions are discussed. Focuses on issues ranging from concerns within the larger patient setting to national policy issues related to advanced nursing practice. Prerequisite: admission to graduate nursing program.

718. Advanced Technologies. (2). Focuses on application of clinical skills and interpretation of technology utilized in a variety of clinical settings. Nurse practitioner students practice these skills in laboratory and/or clinical settings. Prerequisite: department permission. Enrollment is limited.

733. Diabetes Mellitus Nursing. (3). Exploration of clinical theories; identifies and studies appropriate nursing systems for clients with diabetes mellitus. Emphasizes attaining and maintaining optimal levels of functioning and the psychological adjustment of the client and family to a potentially devastating disease.

734. Diabetes Mellitus Nursing Practicum. (3). An intensive clinical experience; the student studies, designs and implements nursing systems for individuals or groups in the area of diabetes mellitus nursing management. A weekly one hour seminar accompanies the practicum.

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

757. Clinical Teaching Strategies. (3). An exploration of alternative teaching strategies for the clinical educator to accommodate the changing health care scene. Discusses clinical teaching methods. An analysis of clinical rotation plans with accompanying clinical evaluation tool is constructed after the subject, setting and setting are delineated. Investigates roles of the educator in teaching clinically.

775. Health Care Information Systems. (3). Examines information systems as they relate to health care. Examines information systems in clinical management, administration, education and research. Emphasizes issues surrounding information systems and hands-on experience with selected health care information management exercises.


787. Brain Disorders in Mental Illness: Assessment and Nursing Interventions. (3). For the student preparing for advanced practice in psychiatric nursing. Considers neurotransmitters, neuroanatomy, neuropathology in the assessment and intervention approaches to the brain disorders of major mental illnesses. Prerequisite: admission to graduate program.


789. Special Studies in Nursing. (1-6). Students engage in extensive study of particular content and skills directly or indirectly related to nursing practice. Repeatable. Prerequisite: admission to Graduate School and school consent.

793. Advanced Pathophysiology. (3). Explore in-depth scientific knowledge base relevant to selected pathophysiological states confronted in primary care. This provides the basis for the formation of clinical decisions related to diagnostic tests and the initiation of therapeutic regimens. Age specific and developmental alterations are correlated with clinical diagnosis and management. Application is made through age appropriate examples. Prerequisite: admission to graduate nursing program and permission of the school.

795. Applied Drug Therapy. (3). Discusses the clinical application of specific categories of drugs, commonly encountered in primary care settings. Explains the use of protocols, prescription writing and the ethical/legality in counseling patients on drug management and compliance issues related to drug therapy. Prerequisite: admission to graduate nursing program, NURS 701, 702, and permission of the school.

Courses for Graduate Students Only

803. Primary Care I: Management of Common Health Problems through the Life Span. (3). Focuses on common health problems seen in individuals and families throughout the life span. Stresses applications of current research and theory-based interventions appropriate for management by advanced registered nurse practitioners. Emphasizes strategies and protocols to manage common problems in urban and rural patient, interventions to restore individual and family levels of pre-illness health, and positive behaviors. Prerequisites: all core courses, NURS 716 and 786. NURS 715, 793, 795 and 805 may be taken concurrently. Corequisite: NURS 804.

804. Primary Care I: Practicum. (4). Concentrated clinical practicum in a primary care setting that addresses individuals and families throughout the life span within the context of the community. Theory and research used in clinical settings. Health promotion, maintenance, and prevention interventions emphasized. Prerequisites: NURS 701, 793, 795; open to nurse practitioner students only; concurrent with or subsequent to NURS 805.

805. Health Promotion through the Life Span. (3). Focuses on the promotion of individuals and families through the life span seeking to maintain or improve health and prevent illness. Interventions reflect a preventive framework, enhanced by theory and research that provide an understanding of health and lifestyle behaviors. Prerequisites: NURS 701, 702, 703 and 705.
814. Advanced Role Practicum. (3). Prepares the student for advanced nursing practice. An intensive practicum experience; the student works with an advanced nurse practitioner in a selected clinical setting. Emphasizes role development, case management and analysis of strategies to improve nursing practice. Prerequisites: all core courses, Nurs. 797, pathophysiology (Nurs. 781, 783, 785 or 787) and at least 6 hours of a clinical concentration.

809. Primary Care II: Management of Complex Health Problems through the Life Span. (3). Focuses on complex problems seen in individuals and families through the life span. Stresses applications of current research and theory-based interventions appropriate for management by advanced registered nurse practitioners. Emphasizes strategies and protocols to manage complex patient problems in urban and rural patients, interventions to restore individual and family levels of pre-illness health, including secondary and tertiary prevention. Prerequisites: all core courses, Nurs. 786, 793, 803, 804 and 805. Nurs. 715 and 795 may be taken concurrently. Corequisites: Nurs. 810.

810. Primary Care II: Practicum. (4). Emphasizes assessment, research and theoretical understanding of common health problems across the life span, based upon knowledge of theory and research. Primary care clients with common conditions affecting major body systems assessed and managed. Weekly seminars focus upon analysis and evaluation of clinical situations and cases. Prerequisites: all core courses, Nurs. 718, 786, 803, 804, 805 and 793. Corequisites: Nurs. 795 and 809.

811. Foundations of Nursing Administration. (3). Assists the student in acquiring theoretical knowledge of organizations. Considers current issues and research in nursing administration and impact on nursing practice. Prerequisite: school consent prior to registration. Prerequisites or corequisites: Nurs. 701, 702, 703, 705 and 715.

812. Nursing Administration Practicum. (3). Practicum in a nursing administration setting: student, under professional guidance, becomes directly involved. A seminar accompanies the field experience. Types of experience may include roles in nursing education or service, middle-level nursing administration, staff development or community health. May be repeated twice. Prerequisite: Nurs. 811 or 827 or concurrent enrollment.

813. Foundations of Nursing Education. (3). Assists the student to explore theoretical and practical aspects to curriculum development and teaching of nursing in higher education and continuing education. Prerequisite: school consent. Prerequisites or corequisites: Nurs. 701, 702, 703, 705 and 715.

814. Nursing Education Practicum. (3 or 6). Student, under professional guidance becomes directly involved in clinical and classroom teaching, curriculum development and participation in other faculty functions in higher education and continuing education. A seminar accompanies the field experience. Prerequisites: school consent and Nurs. 813.

819. Foundations of Psychiatric Mental Health Nursing. (3). Emphasizes clinical concepts and current research in psychiatric/mental health in relation to formulating a conceptual model for nursing practice. Prerequisites: Nurs. 701, 702, 703, 705 and 715.

821. 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 school consent prior to registration.

822. Psychiatric/Mental Health Nursing: Practicum I. (3). Emphasizes the synthesis of concepts and theories into a functional theoretical framework. Emphasizes the practice of mental health care, including the identification of mental health problems in individuals and families. Experiences based on the student's clinical interests. Prerequisites: completion of all core courses and Nurs. 805. Nurs. 835 may be concurrent.

837. Perspectives in Gerontological Nursing. (3). Emphasizes the synthesis of concepts and theories into a functional theoretical framework. Emphasizes the practice of mental health care, including the identification of mental health problems in older adults and to plan appropriate preventive, rehabilitative or restorative approaches to those problems. Prerequisites: Nurs. 831 and 834.

843. Perspectives in Psychiatric/Mental Health Nursing. (3). A critical examination of the delivery of mental health nursing. Emphasizes assessment, research and theoretical understanding of common mental health problems. Prerequisites: all core courses, Nurs. 781 and 795. Nurs. 805 may be taken concurrently.


845. Seminar in Nursing Administration. (3). An in-depth study and analysis of the role of nurse managers in various health care settings. Prerequisites: all core courses, and at least 3 hours of Nurs. 812.

849. Nurse Practitioner Preceptorship. (6). A concentrated clinical practicum in an acute or primary health care setting that emphasizes the management of care for individuals. Students synthesize concepts and principles from previous classes and clinical experiences, applying theoretical and research content to acute, chronic, urgent and/or common health problems. Preceptorship is in a clinical agency appropriate to the student's clinical interests. Prerequisites: all core courses and all clinical course work. This course is the final practicum.

advanced nursing practice. Existing data from clinical practice settings identified and analyzed for presentation both verbally and in report form. Emphasizes using existing data both to determine health care outcomes and to evaluate delivery of care. Communication of findings will occur. Prerequisites: completion of core courses and at least 6 hours of clinical concentration. Computer literacy is an expectation.

852. Adult Case Management Practicum. (3). Applies case management principles in this intensive clinical experience as the student designs, implements and evaluates nursing care for adults. Emphasizes measuring clinical outcomes and management of resources. Prerequisites: all core courses, Nurs. 781 and 795. Nurs. 805 or 839 may be taken concurrently.

853. Reproductive Health of Women. (3). Examines women's health issues and promotes positive self-care practices for common health problems. Includes epidemiology, assessment data, diagnostic methods and self-care interventions. Encompasses health education and counseling to women during the life cycle and health care resources for women's health. Prerequisite: admission to graduate program or instructor's consent.

855. Management of the Acutely and Critically Ill Adult. (3). Examines advanced nursing interventions focused on client stabilization and management of complications in the acutely/critically ill adult. Emphasizes the management of the adult with complex health problems. Interventions focus on application of advanced practice nursing care to the restoration of health/well being. Prerequisites: all core courses, Nurs. 781, 795, 805, 839 and 3 hours of practicum.

School Nurse
For registered nurses who desire school nurse certification but who do not wish to pursue a degree: Students generally take three courses in the College of Education and three courses in the School of Nursing. The total program requires 14-18 credit hours.

Contact the School of Nursing for details.

The following abbreviations are used in the course descriptions: R stands for lecture and L for laboratory. For example, 4R; 2L means four hours of lecture and two hours of lab. P stands for practicum/clinical hours; 40P means 40 hours of practicum per week.
Fa irmount College of Liberal Arts and Sciences

Offices: 200 LAS
David C. Glenn-Lewin, dean
Carol Konek, associate dean
John Koppenhaver, associate dean
Gerald Lichti, assistant dean

Departments/Graduate Programs

Anthropology, (316) 978-3195—Robert Lawless, chairperson; Arthur Rohn, graduate coordinator

Biological Science, (316) 978-3111—Wendell Lewitt, chairperson; William Hendry III, graduate coordinator

Chemistry, (316) 978-3120—D. Paul Rillem, chairperson; William Groutas, graduate coordinator

Elliott School of Communication, (316) 978-3185—Phillip Gauth, director; Susan M. Huxman, graduate coordinator

Computer Science, (316) 978-3156—Jan Zytkow, chairperson; Rajiv Bagai, graduate coordinator

English, (316) 978-3130—Larry Davis, chairperson; Sarah Daugherty, graduate coordinator

Environmental Science, (316) 978-3111—Karen Brown, graduate coordinator

Geology, (316) 978-3140—William D. Bischoff, chairperson and graduate coordinator

History, (316) 978-3150—John Dreifort, chairperson; John D. Born, graduate coordinator

Liberal Studies, (316) 978-3108—Stuart Lasine, graduate coordinator

Mathematics, (316) 978-3160—Buma L. Fridman, chairperson; Kenneth Miller, graduate coordinator

Modern and Classical Languages and Literatures, (316) 978-3180—Dieter Saalmann, chairperson; Eunice Myers, graduate coordinator

Philosophy, (316) 978-3125—David Seels, chairperson

Physics, (316) 978-3190—David Alexander, chairperson; Don Foster, graduate coordinator

Political Science, (316) 978-3165—James Sheffield, chairperson; David Ericson, graduate coordinator

Psychology, (316) 978-3170—Charles Burdial, chairperson; Gary Greenberg, graduate coordinator

Sociology, (316) 978-3280—Kathleen M. O'Flaherty, chairperson; John Hartman, graduate coordinator

Women's Studies, (316) 978-3358—Dorothy Miller, chairperson

Urban and Public Affairs, Hugo Wall School of, (316) 978-7200—Paul Cromwell, director; Nancy McCarthy Snyder, graduate coordinator

Administration of Justice, (316) 978-3710

Minority Studies, (316) 978-3380

Public Administration, (316) 978-3737

Social Work, (316) 978-3287

Administration of Justice

See Urban and Public Affairs, Hugo Wall School of.

Anthropology

Graduate Faculty

Professors: Robert Lawless (chairperson), Arthur H. Rohn (graduate coordinator)

Associate Professors: Dorothy Billings, Donald Blakeslee, 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 and a foundation in the main subdivisions of the discipline, a grade point average of 2.750 (on a 4.000 scale) in the last 60 hours of credit, and a 3.000 grade point average in anthropology.

Degree Requirements

The MA degree in anthropology has three tracks. Track 1 requires the completion of 30 semester hours, including the presentation of a thesis. At least 60 percent (18) of these hours must be in courses numbered 700 or above. The 30 hours must include a core course in archaeology (501 or 736), cultural anthropology (503 or 746), physical anthropology (505 or 755), and two seminars. Students may substitute other appropriate courses if they can show proof of having taken one or more of the core courses as undergraduates.

Track 2 requires the completion of 33 semester hours, including the three core courses and two seminars and the presentation of a thesis or approved project or internship. Track 3 requires the completion of 36 semester hours, at least 21 in anthropology including the three core courses and seminars, and at least 12 in (an) other discipline(s). Either an examination or a thesis, project, or internship is also required.

Examinations

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

Courses for Graduate/Undergraduate Credit

501. Approach to Archaeology. (3). Lab fee. An introduction to the problems of studying past cultures. Focuses special attention on methodology and techniques available to archaeologists and the theoretical rationale leading to sound interpretations of the structure of extinct cultures. Prerequisite: Anth. 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: Anth. 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; symbol 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: Anth. 102Q, 130Q or equivalent.

505. Approaches to Biological Anthropology. (3). Spring semester only. An intensive study of three central topics in biological anthropology: evolutionary theory, paleoanthropology, and modern human variation. Emphasizes current theories, methods, and issues. Required of all graduate students in anthropology. Prerequisite: Anth. 101Q or equivalent.

506. Peoples of the Pacific. (3). General education further studies course. A survey of the languages and cultures of nonliterate peoples of Polynesia, Micronesia and Indonesia.
508Q. Ancient Civilizations of the Americas. (3). General education further studies course. A cultural survey of the Aztec, Maya and Inca. Prerequisite: Anthr. 124Q or instructor's consent.

511. The Indians of North America. (3). General education further studies course. A survey of tribal societies and native confederations north of Mexico from the protohistoric through the historic period. Prerequisite: Anthr. 120Q or 124Q.


514. Anthropology of Aging. (3). General education further studies course. An introduction to the role of tribal societies and native confederations north of Mexico from the protohistoric through the historic period. Prerequisite: Anthr. 120Q or 124Q.

515Q. China. (3). General education further studies course. An introduction to the culture 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 20th century following political revolutions, industrialization and expanding trade relations.

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

519. Applying Anthropology. (3). General education further studies course. 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). General education further studies course. A survey of the visual and performing arts of nonwestern peoples with special attention to their relationships in the cultural setting. Prerequisite: Anthr. 102Q or 124Q.

526. Social Organization. (3). General education further studies course. A survey of the social organization among nonindustrialized peoples throughout the world. Deals with family systems, kinship, residence patterns and lineage, clan and tribal organizations. Prerequisite: six hours of anthropology.

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

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 resurgence. Prerequisite: Anthr. 102Q or 124Q or instructor's consent.

542. Women in Other Cultures. (3). General education further studies course. Cross-listed as Wom. S. 542. Deals with the place of women in primitive and other non-Western societies, in various kinds of cultures, including industrial, social, religious, domestic, intellectual, psychological and aesthetic. Compares and contrasts societies in order to see how different kinds of roles for women are related to different kinds of societies.

555. Human Paleontology. (3). General education further studies course. 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. 102Q or Biol. 203Q or equivalent.

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


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

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

602. Archaeological Laboratory Analysis. (3-6). 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, 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.

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

611. Southwestern Archaeology. (3). General education further studies course. A comprehensive survey of the prehistoric and historic 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.

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

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

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

651. Language and Culture. (3). Cross-listed as Ling. 651. An introduction to historical and descriptive linguistics. Deals with the ethnography of communication, lexicostatistics and linguistic determination. Prerequisite: six hours of anthropology.

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

690. Field Methods in Anthropology. (3-6). A maximum of six hours can be counted as anthropology hours toward either degree. Demands the student in both an classroom and laboratory 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.

701. Directed Readings in American Studies. (1-3). Prerequisites: six hours of American studies coursework or equivalent and instructor's consent.
736. Advanced Studies in Archaeology and Ethnology. (3). Special area and theory problems in a historical approach to culture. Prerequisites: Six hours of anthropology and departmental consent.

746. Advanced Cultural Anthropology. (3). 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.

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

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

771. Cooperative Education. (1-4). Provides practical experience that complements the student's academic program. Requires consultation with and approval by an appropriate faculty sponsor. Offered Ch/WC only. Prerequisite: Graduate status.

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

Courses for Graduate Students Only

801. 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.

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

820. 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.

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

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

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

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

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

873-874. Advanced Project in Anthropology. (2-2). In consultation with their major advisor and committee, students design a project (e.g., a museum exhibit, a written plan for an international business venture, a lesson plan for an anthropology unit in schools) that applies anthropological method and theory to the specific needs of an institution, group, or population. Requires a tangible end product (e.g., paper, thesis, and/or visual production or exhibit). May be repeated, but limited to a total of 4 credit hours. Prerequisite: Committee consent.

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

Biological Sciences

Professors: L. Raymond Fox, Wendell W. Leavitt (Chairperson)
Associate Professors: Karen L. Brown, Donald A. Distler, William J. Hendry III (Graduate Coordinator)
Assistant Professors: George R. Bousfield, Michael J. Lydy, J. David McDonald, John W. Schmidt, M. Alan Taylor, Debra A. Wollner, Arthur L. Youngman

Master of Science and Areas of Specialization

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

Admission Requirements

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

Degree Requirements

All students are required to attend the departmental seminar course (Biol. 797) each semester and must give at least two oral presentations. They are also required to take the research methods course (Biol. 740). Candidates selecting the research thesis option must complete 30 credit hours of graduate work, including the presentation and oral defense of a thesis based on original research. In addition, all students in the research thesis option must demonstrate proficiency in at least one research tool, such as knowledge of a modern foreign language or completion of acceptable course work in statistics or computer applications. Graduates who select this option may move on to advanced research degrees or careers in research science. Candidates selecting the nonthesis option must complete 36 credit hours of graduate work and successfully pass comprehensive exams in two areas of biology. The nonthesis option is designed for, but not limited to, students employed in professional areas such as the medical community and secondary...
Students earning graduate credit produce a topic chosen in consultation with instructor. General education requirements.

Courses for Graduate/Undergraduate Credit

509G. Foundations of Human Heredity. (3). General education further studies course. Introduction to the mechanisms and societal significances of development, 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 science 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.

518Q. Biology of Aging. (Cross-listed as Ger. 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

502. Vascular Plants. (4). 2R; 4L. An introduction to the structure, reproduction and evolution of the major groups of living and extinct vascular plants. Includes an introduction to flowering plant systematics. Students earning graduate credit produce a primary literature survey on a topic selected in consultation with the instructor and deliver a 30-minute oral presentation to the class. Prerequisite: Biol. 204.

503. Taxonomy and Geography of Flowering Plants. (4). An introduction to 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 Saginaw Bay 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.

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

526. Endocrinology. (4). 3R; 3L. The hormonal regulation of bodily functions is considered in representative vertebrate systems, including humans. Students enroll in both lecture and laboratory portions of class. Students earning graduate credit submit a term paper on a topic chosen in consultation with the instructor. Prerequisite: Biol. 204.

527. Comparative Anatomy. (5). 3R; 4L. An intensive study of representative chordates emphasizing vertebrate anatomy. Students earning graduate credit complete additional assignments chosen in consultation with the instructor, such as a term paper based on technical literature, dissection of additional animals, etc. Prerequisite: Biol. 204.

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

532. Entomology. (5). 3R; 4L. An introduction to the morphology, physiology, life cycles, behavior, ecology and economic significance of insects. Students earning graduate credit produce a term paper based on the technical literature on representative insects and invertebrates. The course is constructed so that students may complete an additional statistical analysis assignment involving the use of the computing facilities. Prerequisites: Biol. 204 and Chem. 531 or instructor's consent.

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

535. Mammalian Physiology Laboratory. (2). An empirical approach to mammalian physiology. Students seeking graduate credit submit an additional laboratory report relating the results of a laboratory experiment to those found in the current technical literature. Prerequisite: concurrent or prior enrollment in Biol. 534.

540. Developmental Biology. (4). 2R; 4L. Developmental processes in animals emphasizing vertebrates. Centered on the cell interactions controlling differentiation and morphogenesis. Students earning graduate credit complete additional assignments chosen in consultation with the instructor. Prerequisites: Biol. 204. Biol. 420 recommended.

553. Ecological Risk Assessment. (4). Risk assessment is the process of assigning magnitudes and probabilities to the adverse effects of human activities or natural catastrophes. It involves global climate change, habitat loss, acid rain deposition, reduced biological diversity, and the ecological impacts of pesticides and toxic chemicals. It uses measurements, testing, and mathematical models to quantify the relationship between the initiating event and the effects. Course is an overview of the basic framework for conducting an Ecological Risk Assessment, and a discussion of individual case studies involving several important environmental issues. An introductory class for students interested in assessing the effects of various stressors on environmental health. Prerequisites: Biol. 418 or equivalent and Chem. 531 or equivalent, or instructor's permission.

560. Plant Ecology. (4). 2R; 6L. Principles and patterns of plant distribution and of adaptation of plants to particular habitats. Emphasizes the experimental approach to plant ecology. Field trips are an integral part of the laboratory. Prerequisite: Biol. 418 or instructor's consent.

572. Computer Methods in Biology. (3). Includes mathematical modeling of biological systems, tools for recording and retrieving experimental results, computer-aided instruction, internet and on-line science resources, software for scientific publication including digital photo-documentation and reference managers for bibliographies. Students select a biology topic of interest, study non-statistical and computer approaches previously used, and develop their own approach. Half the course is lectures and demonstrations and half is individual student projects. Graduate students are expected to have had prior experience with the primary literature and be prepared to execute a more sophisticated library research project. Prerequisite: one of the following: Biol. 418, 419, 420, or instructor's consent.

573. Statistical Applications in Biology. (3). Supplements Stat. 570 by providing experience with practical applications of statistical theory to biological data. Includes computations on data derived from both the primary literature and independently designed research projects. Emphasizes the design of experiments to answer specific hypotheses, the treatment of non-normally distributed data sets and nonhomogeneous experimental test units and the use of packaged computer programs for certain statistical tests. Access to calculators with at least two memory banks is strongly encouraged. Students earning graduate credit complete an additional statistical analysis assignment involving the use of the computing facilities. Prerequisites: Stat. 570.

575. Field Ecology. (3). 4L. Techniques for analysis of systems consisting of living organisms and their environments. Field trips are required. Students earning graduate credit perform an individual project on comparative community structure and report the results as
To enroll in the graduate program in chemistry, students must follow the admission procedures required by the Graduate School. The chemistry department requires a baccalaureate degree in chemistry, a grade point average of at least 3.00/4.00 (both overall and in chemistry), two letters of recommendation from individuals familiar with the applicant's academic background, and a one page typed statement of goals and research interests. International students must have a minimum TOEFL score of 570. For the PhD program, the Graduate School requires submission of test scores from the general aptitude portion of the GRE by the end of the first semester in residence. Students also are encouraged to submit test scores from the analytical and chemistry portions of the GRE as well. Students deficient in any of the requirements may be admitted conditionally provided they follow the specified procedures required to remove any deficiencies.

When admitted to the graduate program in chemistry, students are required to take proficiency examinations based on undergraduate chemistry curricula. 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 advisor by the beginning of their second semester in the graduate program. The research advisor 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 advisor and the department’s advising committee.

Chemical Physics Option. Students who have a particular interest in chemical physics may follow a special option. They must take at least one 700-level course from four of six areas, including physics as the sixth area. Physics courses that may be taken include Phys. 631, 714, 811, 881, or other approved courses. It is 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 proficiency 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 15 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). General education further studies course. Basic inorganic chemistry emphasizing molecular symmetry and structure, fundamental bonding concepts, ionic interactions, periodicity of the elements, systemsatics of the chemistry of the elements, acid-base chemistry and non-aqueous solvents, classical coordination chemistry and introductory biochemical inorganic chemistry. Prerequisite: Chem. 112Q with a grade of C or better.

523. Analytical Chemistry. (4). 2R; 6L. Lab fee. General education further studies course. 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 instrumental and optical chemical methods of analysis and separation of complex mixtures, both inorganic and organic. Also covers basic computer programming as it applies to analytical chemistry. Prerequisite: Chem. 523.

531. Organic Chemistry. (5). 3R; 6L. Lab fee. General education further studies course. An introduction to the study of carbon compounds emphasizing reaction mechanisms, stereochemistry, and spectroscopic 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). General education further studies course. Basic organic chemistry emphasizing topics of importance to health professions and education majors. Special emphasis to carbohydrates, proteins, drugs, pesticides and energy production. Students should enroll in Chem. 534 simultaneously. Credit is not allowed for both Chem. 533-534 and 531. This course does not meet the needs of chemistry majors or premed students. Prerequisite: Chem. 112Q or equivalent.

534. Elementary Organic Chemistry Laboratory. (2). Lab fee. A 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). General education further studies course. Thermodynamics. Studies gases, first law, thermochemistry, second and third laws, phase equilibria, solutions, chemical equilibria, electrochemistry and surface chemistry. Prerequisites: Chem. 112Q, Math. 344 or its equivalent and one semester of college physics.

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). General education further studies course. 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, structure-property correlations and methodology in plastics and composites processing. Prerequisite: Chem. 532 or concurrent enrollment.

605. Medicinal Chemistry. (3). For students interested in chemistry related to the design, development and mode of action of drugs. The primary purpose of the course is to describe those organic substances that are used as medicinal agents and to explain the mode of action and chemical reactions of drugs in the body; to illustrate the importance and relevance of chemical reactions as a basis of pharmacological activity, drug toxicity, allergic reactions, carcinogenicity, etc. and to bring about a better understanding of drugs. Includes transport, basic receptor theory, metabolic transformation of drugs, discussion of physical and chemical properties in relation to biological activity, drug design, structure-activity relationships and discussion of a select number of organic medicinal agents. Prerequisites: Chem. 532 or 533 or equivalent; a semester of biochemistry (Chem. 561 or 662) and a year of biology are strongly recommended.

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

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

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

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

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

663. Biochemistry of Cell Metabolism, Biosynthesis, Structure, Function and Regulation of Proteins and Nucleic Acids. (3). Study of metabolism and control of carbohydrates, lipids, phosphoglycerides, lipoids, steers, amino acids and proteins; synthesis of porphyrins, amides and polynucleotides; synthesis and metabolism of purines, pyrimidines and nucleotides; synthesis and structure of DNA, 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 tissue biochemistry. 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 radioisotope labeling techniques. Should be taken concurrently with Chem. 662 or Chem. 663. Prerequisite: Chem. 532 or equivalent.

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

689. Research in Biochemistry. (2). Cross-listed as Biol. 689. S/U grade only. Students in the biochemistry field major participate in a biochemistry research project under the direction of a faculty member. Requires a written report summarizing the results. May be repeated once for credit. Prerequisites: Biol. 500 and Chem. 662 or 663 and 664.

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

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


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

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

713. Physical Methods in Inorganic Chemistry. (3). An introduction to electronic and vibrational spectroscopy, magnetic susceptibility, EPR, NMR, Mossbauer spectroscopy and X-ray crystallography as applied to inorganic systems. Emphasis on interpretation of results for understanding the electronic and molecular structure of compounds. Prerequisite: Chem. 705 or equivalent.

731. Physical Organic Chemistry. (3). Discussion of advanced topics in stereochemistry and conformational analysis and organic reaction mechanisms. Prerequisite: Chem. 332.

732. Advanced Organic Synthesis. (3). Discussion of modern synthetic methods in organic chemistry including carbon-carbon forming reactions, oxidation and reduction reactions, protective groups and organometallic chemistry. Prerequisite: Chem. 332.


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

744. Computational Quantum Chemistry. (3). An introduction to molecular orbital procedures and methods for calculating a wide range of physical, chemical, and electronic properties of systems large enough to be of interest to inorganic, organic, and biochemists. Using commercial molecular orbital software programs such as MOPAC, SPARTAN, and GAUSSIAN, students learn to select appropri-
ate "model" computational procedures to predict properties of molecules and reactions. By comparison with experiment, students learn to assess the range of applicability and accuracy of the "model" methods as applied to varied categories of chemical systems. Properties considered include energies and structures of molecules, ions, and transition states; vibrational frequencies, IE and RAMAN spectra; thermochemical properties, heat of formation, bond and reaction energies, isomerization energy barriers; reaction pathways; molecular orbitals, atomic charges, dipole and multipole moments, ionization potentials, bond orders; orbital energies and photoelectron spectroscopy; excited state properties, singlet and triplet surfaces. Prerequisite: Chem. 524 or equivalent. (Math. 344 is necessary.)

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

752. Step Growth Polymerization. (3). Polymerization process which proceed by a step growth or ring-opening mechanism. Preparation of thermoplastics, including relationships between molecular weight and reaction condition. Preparation of thermosets including relationships between structure, conversion and gelation. Discusses individual systems such as nylon, epoxy resin and polyimides in some detail. Prerequisites: Chem. 521 and 545.

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 organometallic 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 665 or equivalents.

821. Equilibrium and Statistical Chemistry. (3). Covers homogeneous and heterogeneous solution equilibrium calculations and statistical methods used in experimental 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, chromoamperometry and coulometry; reversible and irreversible diffusion controlled processes: CE (electrochemical reaction before electrical reaction), EC (electrochemical 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, electrocyclic reactions, cycloaditions, 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, steroids, terpenoids, carbohydrates and aromatic and aliphatic natural products. Prerequisite: Chem. 732.

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

835. Bioorganic Chemistry. (3). Includes the chemistry of amino acids and peptides, enzyme structure and function and inhibitor design. Prerequisites: Chem. 652, 653 and 722 or 662 and concurrent enrollment in 653 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 statistics, statistical 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.

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

846. Molecular Spectroscopy. (3). The theoretical basis for spectroscopy and spectrophotometric determinations of molecular structure. Includes polyatomic electronic states, time-dependent perturbation theory, vibration and rotation of diatomic molecules, vibration and rotation of polyatomic molecules, electronic spectra and magnetic resonance spectroscopy. Prerequisites: Chem. 741 or its equivalent and Chem. 702 or its equivalent.

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

852. Techniques of Polymer Characterization. (3). A study of physical, spectrometric 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 prejudice the development of polymeric crystals and encourage amorphous character, relationships between structure, 

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, broad overview of contemporary biotechnology including its role in the production of premium products from biological raw materials. Biotechnology involves 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 biochemical and molecular biology including absorbance and fluorescence spectroscopy, chromatography (affinity, gel filtration, HPCL, 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. Nucleic Acids: Structure, Chemistry and Function. (3). A comprehensive examination of the structure and conformation of DNA, RNA,
and their components. Studies reactivity and modification of nucleotides and polynucleotides for different chemicals and mutants. Reviews chemical synthesis of polynucleotides and sequence analysis of nucleic acids, including site-specific mutagenesis. Studies nucleic acid functions and information transfer in biochemical systems. Also studies major nucleases and discusses DNA-protein interactions.

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.

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

Communication, Elliott School of Graduate Faculty
Professors: Philip Gaunt (director, Elliott School), Vernon Keel
Associate Professors: Katherine Hawkins (associate director), Susan S. Huxman (graduate coordinator), Sharon H. Iorio
Assistant Professors: Les Anderson, Richard Armstrong, Dan Close, Jesse Huxman, Keith Williamson

Master of Arts in Communication and Areas of Emphasis
The Master of Arts in Communication degree program at Wichita State is designed to provide students with a multidisciplinary foundation in human communication that will serve a broad spectrum of interests and needs in many fields of endeavor. The program is based upon integration and synthesis of academic resources in communication in several departments and disciplines throughout the University. The degree includes two areas of interest: Communication and Theatre/Drama.

Admission Requirements
In addition to the general Graduate School admission requirements, applicants for full standing status must have a 3.00 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:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
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</thead>
<tbody>
<tr>
<td>Comm. 702, Contemporary Theories of Oral Communication</td>
<td>2</td>
</tr>
<tr>
<td>Comm. 801, Introduction to Communication Research</td>
<td>3</td>
</tr>
<tr>
<td>Comm. 802, Historical and Qualitative Methodologies in Communication Research</td>
<td>3</td>
</tr>
<tr>
<td>Comm. 803, Empirical/Quantitative Methodologies in Communication Research</td>
<td>3</td>
</tr>
<tr>
<td>Comm. 865, Organizational Communication</td>
<td>3</td>
</tr>
</tbody>
</table>

MAC students emphasizing the Theatre-Drama area must complete the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comm. 801, Introduction to Communication Research</td>
<td>3</td>
</tr>
<tr>
<td>Comm. 802, Historical and Qualitative Methodologies in Communication Research</td>
<td>3</td>
</tr>
<tr>
<td>Comm. 803, Empirical/Quantitative Methodologies in Communication Research</td>
<td>3</td>
</tr>
<tr>
<td>Comm. 804, Development of the Theatre I</td>
<td>3</td>
</tr>
<tr>
<td>Comm. 823, History of Dramatic Criticism</td>
<td>3</td>
</tr>
<tr>
<td>Comm. 824, Development of Modern Theatre Styles</td>
<td>3</td>
</tr>
</tbody>
</table>

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

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

Courses for Graduate/Undergraduate Credit
500. Advanced Reporting I. (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). Selection, evaluation and preparation of copy for pictures for publication. Covers copy editing, rewriting, headline and caption writing and page layout. Prerequisites: junior standing and Comm. 301 with a grade of C or better.


525. Advertising Copywriting. (3). Detailed practice in 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.

526. Media Buying and Selling. (3). Principles, methods, and strategies of buying and selling media for advertising, including such topics as study of reach and frequency of the various media and specialized media, budgeting, research, rates, market share and other tools of media buying and selling strategies. Prerequisite: Comm. 524 or instructor's consent.

535. Communication Analysis and Criticism. (3). A core communication course in how to critique linguistic, pictorial and aural elements of communication for the purpose of discerning consumers of public and mass-mediated messages.

550. Opinion 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. Feature 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.

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

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

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

622. Studio B: 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. 422 or instructor's consent.

626. Advertising/Public Relations Campaign Research. (3). 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.

632. American Public Address. (3). General education further studies course. 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. S. 635. Provides the woman student experience in decision making and improves skills in leadership through role playing and exercise in group dynamics.

640. Issues in Corporate Communication. (3). Examines how corporations craft messages that are persuasive to their various publics. Special attention to how companies use communication strategies in crisis management.

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 nature and procedures of the literature and professional organizations in the field.

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

690. Communication Internship. (1-2). Credit for professional experience that integrates theory with a planned and supervised professional experience designed to complement and enhance academic studies. Individualized programs must be formulated in consultation with and approved by appropriate faculty sponsors. May be repeated, but limited to a total of four credits in Comm. 690 and Comm. 301. Graded CR/NCR. Prerequisite: departmental consent.

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

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

715. International Communication Systems. (3). A comparative study of communication systems around the world, including print media, broadcasting, and new technologies. Examines the relationships 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). 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. Helps participants enhance their understanding and appreciation of, as well as their skill in, the art of conversation. Includes the nature of conversation, principles of conversational communication, types of conversation, conversation in the media and conversation analysis. Prerequisites: Comm. 302 and junior standing or departmental consent.

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 and format of research report and citation of sources in accordance with standard style guides. Course should be taken at the beginning of the graduate program.

802. Historical and Qualitative Methodologies in Communication Research. (3). An introduction to historical, critical and observational methodologies in communication research. Emphasizes historical, critical and observational research, particularly those forms of research common to communication studies. Prerequisite: Comm. 801.

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

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


831. Theories of Rhetoric: Renaissance to Early Modern. (3). Cross-listed as Eng. 836. A study of the emerging patterns of rhetoric from the 14th and 15th centuries. Analyzes the rhetorical systems associated with such figures as Augustine, Fellenz, Bulwer, Sheridan, Steale, Rush, John Quincy Adams, Blair, Campbell and Whately.

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

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

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

875-876. Thesis. (2-3). Prerequisite: departmental consent.


Computer Science
Graduate Faculty
Professors: Suad Alagic, Shang-Ching Chou, Jan Zytkow (chairperson)
Associate Professors: Rajiv Bagai (graduate coordinator), Prakash Ramanan
Assistant Professor: Xumin Nie

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

Admission Requirements
All candidates for graduate study must have a bachelor’s degree (in any field) from an accredited institution. In addition, for MS degree status for Nondegree A status, a candidate’s GPA in the last 60 hours of course work should be at least 2.750. (A probationary admission can be granted to candidates with a GPA in the last 60 hours of course work between 2.600 and 2.750.) All international applicants must have a score of at least 550 on the TOEFL exam.

The MS degree and Nondegree A students are expected to have at least a B average in the following background courses:
1. Math 242Q and 243, Calculus I and II.
2. CS 300 and 560, Data Structures and Algorithms I and II.
3. CS 320, Discrete Structures in Computer Science.
5. CS 810, Programming Language Concepts.
6. CS 540, Operating Systems.

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

Degree Requirements
The MS degree requires 30-36 credit hours of graduate-level work, as follows:
1. Computer theory (3 credit hours)—CS 720, Theoretical Foundations of Computer Science.
2. Advanced courses (12 credit hours)—Four computer science courses numbered 800-889 or CS 898.
3. Electives (9 credit hours)—A coherent block of graduate-level courses from computer science or closely related technical fields, as approved by the candidate’s graduate advisor. All computer science electives must be at the 600-level or above.
4. Thesis/Project/Course Work (6-12 credit hours)—One of the following three options:
   A. Thesis (6 credit hours)—Six credit hours of Thesis research (CS 892) in a specialized area of computer science under the supervision of a computer science graduate faculty advisor. This should culminate in the writing of a thesis. Must pass an oral final examination by an ad hoc faculty committee headed by the thesis advisor. This examination will pertain to, but is not limited to, the subject matter of the thesis. (30 total hours)
   B. Project (9 credit hours)—Three credit hours of Project (CS 891); one computer science course numbered 800-889 or CS 898; and one computer science course at the 600-level or above. The project must be supervised by a computer science graduate faculty advisor, and can be job-related. Must write a report on the project. Must pass an oral final examination by an ad hoc faculty committee headed by the project advisor. This examination will pertain to, but is not limited to, the subject matter of the project. (33 total hours)
   C. Course Work (12 credit hours)—Two computer science courses numbered 800-889 or CS 898, and two computer science courses at the 600-level or above. Must pass a final comprehensive written examination. This examination will cover a variety of topics addressed in the foundation, theory, and advanced courses. (36 total hours)

Courses for Graduate/Undergraduate Credit

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

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

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

560. Data Structures and Algorithms II. (3).
3R; 1L. Design and analysis of algorithms. Techniques for design and analysis of algorithms and proof of correctness. Analysis of space and time complexities of various algorithms including several sorting algorithms. Hashing, binary search trees and height balanced trees. Algorithm design techniques including divide and conquer, greedy strategies, and dynamic programming. Elementary graph algorithms. Prerequisites: CS 300, CS 320; and Math 344 or 511, and Stats. 460 with a grade of C or better in each.

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

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

665. Introduction to Database Systems. (3).
Fundamental aspects of database systems, including conceptual database design, entity-relationship modeling, and object-oriented modeling; the relational data model and its foundations, relational languages, and SQL (Structured Query Language); logical database...
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 Godel'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. Prerequisites: CS 300 and 410, each 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 the computer. At the crossroads of computer technology, management science and human relations, systems analysis is the keystone in the education of the well-trained computer applications analyst. Includes systems design, cost benefit analysis, data base design, distributed processing, project management and documentation. Prerequisite: CS 300 with a grade of C or better.

690. Information Systems Engineering. (3). Study of information systems design techniques, issues of systems evolution, project management, engineering design, various views of information systems and software and formal design approaches. Covers structured analysis and design approach, object-oriented approach, software design, database design, rule modeling, user interface design, performance evaluation issues relative to software design, systems evolution aspects from a software maintenance perspective, project management techniques and information systems engineering. Prerequisite: CS 300 with a 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). 2R; 2L. Introduction to network programming for the internet environment including the basic concepts of TCP/IP, client-server paradigm, programming of clients, and various types of servers, remote procedure calls, concurrency management, and interconnection techniques. Emphasizes the design principles that underlie implementation of practical applications. Prerequisite: CS 300 with a 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 covers objectives and methods of artificial intelligence research and simulation of cognitive behavior. Includes a survey of appropriate examples from various areas of artificial intelligence research. Prerequisite: CS 300.

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

781. Cooperative Education in Computer Science. (1-3). Practical experience in a professional environment to complement and enhance the student's academic program. For master's level, a degree plan must be used to satisfy degree requirements. Offered C/NCR only. Prerequisites: departmental consent and graduate GPA of 3.0 or above.

796. Individual Projects. (1-3). Allows beginning graduate students and mature undergraduate projects 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). Deals with advanced topics in the design and analysis of algorithms, including sorting networks, algorithms for parallel computers, Strassen's algorithm for matrix multiplication, polynomial multiplication and the FFT, number theoretic algorithms (gcd computation), and hard problems and intractability. Prerequisites: CS 560 with a grade of B or better, 720 is recommended.

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

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.

842. Operating Systems Concepts. (3). A comprehensive treatment of the design of executive software for systems ranging from simple multiprogramming to multiprocessor and network environments. Addresses concepts of concurrent and parallel processes, related problems of intra- and inter-system communication, synchronization and integrity. Presents general topics of operating system design and related single-processor and multiprocessor environments. Prerequisite: CS 540 or EE 694.

843. Distributed Computing Systems. (3). A study of hardware and software features of on-line multiple computer systems emphasizing network design and telecommunications. Includes distributed data bases, interprocess communication and centralization versus distribution. Also includes study of the use of microcomputers in representative configurations. Prerequisite: CS 540 or 641 or EE 694.

862. Advanced Database Systems. (3). Covers recent developments and advances in database technology. For students who have had a first database course and have a good background in the related computer science disciplines. Possible topics include extended relational database management systems, object-oriented databases, deductive databases, database type systems and database programming language, persistent languages and systems, distributed databases. 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 the most recent developments; theoretical principles for learning and discovery systems; computational theories of learning processes and cognitive models of human learning; concept and theory formation, and use of analogy in learning. Includes participation in a group project such as developing a computer learning system. Prerequisites: CS 771 or 776 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 important aspects of simulation modeling, including data collection, input and output data analysis, modeling principles, simulation with general-purpose programming languages and special-purpose simulation languages. Emphasizes theory, design, and implementation of modeling languages. Prerequisites: CS 300 and Stat. 460 with a grade of C or better in each, or instructor's consent.

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 include the phases and activities involved in building a project, the skills and tools required for estimating and scheduling and the responsibilities of the individuals involved. Prerequisite: CS 680.

889. Topics in Software Engineering. (3). An in-depth study of one or more topics in software engineering, such as Configuration Management, Quality Assurance, Formal Specification, or Real-time Software Development. Actual topics vary with instructor's area of expertise. May be repeated for credit with different topics, but topics taken under previous course numbers may not be repeated. Prerequisite: CS 680.

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

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

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 (Adele B. Davis Distinguished Professor of Humanities)
Professors: Sarah B. Daugherty (graduate coordinator), Lawrence M. Davis (chairperson), Frank S. Kastor, Philip H. Schneider, William F. Woods
Associate Professors: Tina Bennett-Kastor, Roger A. Berger, Christopher K. Brooks, Jeanine M. Hathaway, W. Stephen Hathaway, Diane D. Quantic, Richard S. Spilman, Frances C. Stephens, Harold A. Veeser, Donald R. Winke, Peter T. Zoller
Assistant Professors: Margaret D. Baughman, Alvin L. Gregg, Beth A. McCoy

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

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

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

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

Applicants who have earned degrees at institutions in 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 language in translation in courses approved by the department's graduate committee as a substitute for the language requirement.

Degree Requirements

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

All work to be counted toward the MA degree in English must be in courses numbered above 700—with the exception of 680 (Theory and Practice in Composition)—and the following courses in linguistics and in literature: Engl. 515, 521, 522, 524, 526, 527, 610, 615, 665, 667, and 672. Engl. 515 may be taken to fulfill in part the major author and/or optional course requirements of the degree plans. Engl. 521, 522, 524, 526, and 527 may be taken to fulfill the period and/or optional course requirements of the degree plans.

Candidates offering 500-, 600-, or 700-level English courses for graduate credit must satisfy a higher differential of performance relative to undergraduate students in the same courses, with the nature of this differential set by professors.

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

Plan A requires the completion of 11 courses for a total of 33 semester hours distributed as follows: Engl. 800 (Introduction to Graduate Study in English); two genre courses; three period courses in the Engl. 817-823 series and/or 521-527 series, with a minimum of two courses in English literature and one course in American literature; one course in composition theory and pedagogy (Engl. 680 or 780); and four elective courses in linguistics, literature, or methods of teaching English. With the approval of the Graduate Studies Committee, one of these electives may be taken in the College of Education. Regents' rules require that at least seven courses be at or above the 700 level. A master's essay is not required, but students must take a comprehensive examination on one period, one genre, and one area of composition, rhetoric, or linguistics. In consultation with the candidate, an advisor in each of the three examination fields will designate up to five books, in addition to those covered in the candidate's course work, for which the student will be responsible. The book list will thus include a maximum of 15 works. This list must be approved by the graduate coordinator.

Plan B requires ten courses for a total of 30 semester hours distributed as follows: Engl. 800 (Introduction to Graduate Study in English); two major author or special topics courses (Engl. 515, 516, 803, 840, 841, 845, or 860), one of which may serve as a context for the development of a thesis prospectus; one genre course consistent with the thesis topic; one period course consistent with the thesis topic; four elective courses; and Engl. 870 (Master's Essay). Regents' rules require that at least six courses be at or above the 700 level. A candidate's Plan of Study, approved by the graduate coordinator, should include an appropriate range of courses in canonical and modern literature. Plan B also requires a comprehensive examination on one period (or linguistics), one genre, and one major author or special topic related to the master's essay, as arranged with the thesis advisor. The first two examination fields should also be consistent with the subject of the master's essay. In consultation with the candidate, an advisor in each of the three examination fields will designate up to five books, in addition to those covered in the candidate's course work, for which the student will be responsible. The book list will thus include a maximum of 15 works. This list must be approved by the graduate coordinator.

Plan C, a program with an emphasis on creative writing, requires the completion of 30 semester hours plus a comprehensive examination and a thesis, which must be original work in fiction, poetry, or some other suitable literary form. A student's program, individually designed in consultation with the director of creative writing, must include nine semester hours in the graduate creative writing sequence. The final comprehensive examination will be based on a list of 40 book-length works that the student will be held accountable for; the list will be drawn up by the student in consultation with the director of creative writing and with the approval of the graduate coordinator. The number of sections of the Plan C comprehensive examination and its length will be equivalent to that given under Plan B, although the content will be based on the list of book-length works described above.

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

Master of Fine Arts in Creative Writing

The degree program for the Master of Fine Arts (MFA) in creative writing places emphasis on the development of skills and understanding in the practice of imaginative writing and upon related academic study. It is not exclusively a studio program; rather, it encourages the development of writers who are able, as the result of additional course work in English, to demonstrate skills useful in teaching, editing, and other related areas. A core of workshops and tutorials leads to a substantial thesis: a collection of fiction or poetry, a novel, or some other appropriate work. Flexibility is provided in academic course work to allow for a variety of possible interests.

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

Admission Requirements

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

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

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

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

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

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

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

A. Required Courses
1. A minimum of three hours per semester in Engl. 801 (Creative Writing: Fiction) or 805 (Creative Writing: Poetry) to a maximum of 12 semester hours.
2. Three hours in Engl. 800 (Introduction to Graduate Study in English) or the equivalent, required of all graduate students. Engl. 800 normally should be included in the student's first semester of graduate study.
3. Three hours in Engl. 830 (Graduate Studies in Drama), 832 (Graduate Studies in Fiction), or 834 (Graduate Studies in Poetry). With departmental consent, each course may be repeated for a maximum of six hours credit.
4. Three hours in Engl. 841 (Graduate Studies in Contemporary Literature), 860 (Graduate Seminar in Special Topics), or another suitable seminar in literature. With departmental consent, seminars may be repeated for a maximum of 12 hours credit.
5. Two to six hours in Engl. 875 (Master of Fine Arts Essay).
6. For purposes of enrichment, candidates must take at least three graduate hours in the humanities or fine arts outside English. The choice is contingent upon the student's having the proper prerequisites.
7. Graduate teaching assistants are required to take Engl. 780 (Advanced Theory and Practice in Composition) unless specifically exempted.

B. Elective Courses
Elective courses may be taken to pursue historical, technical, or theoretical studies that the candidate finds useful, to strengthen areas of weakness, or simply to enrich their degree program appropriately. All candidates must successfully complete a minimum of 15 elective hours in English courses numbered 800 and above, with the exception of English courses numbered 515 through 527, which may be taken for graduate credit. Candidates may take up to 26 elective hours in English courses numbered 800 and above and in the approved 500-level courses. Other exceptions may be made as approved by the director of creative writing and with the consent of the graduate coordinator. Graduate students in 500-, 600-, and 700-level courses are expected to meet higher standards of achievement than those imposed on undergraduates in the same courses. Within this unit, as many as nine hours total of Engl. 880 (Writer's Tutorial: Fiction), Engl. 881 (Writer's Tutorial: Poetry), and Engl. 885 (Directed Reading) may be taken.

Comprehensive Examination. All candidates are required to pass a written comprehensive examination in the final semester of their course work. This examination is based on a reading list of 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

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

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

685Q. Advanced Composition. (3). Explores the relationships among contemporary issues, problem-solving and communication. The first objective is to engage students in interdisciplinary inquiry into some aspect of social policy, inquiry which asks students to apply the analytical approaches of their major fields to current issues of broad, general interest. The second objective is to develop students' abilities to communicate their knowledge and assumptions about this issue to a variety of audiences and for a variety of purposes. Prerequisites: 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. (3-3). Cross-listed as Thea. 516 and 517. The writing of scripts for performance. Emphasizes both verbal and visual aspects of playwriting. If possible, the scripts are performed. Not repeatable for credit. Prerequisite: instructor's consent.


Courses for Graduate Students Only

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

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

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

875. Master of Fine Arts Essay. (1-6).


Literature

Courses for Graduate/Undergraduate Credit

501. 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 transatlantic period and the rise of western and regional literatures.

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

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


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

515. Studies in Shakespeare. (3). Subjects announced each semester. Repeatable for credit. Except by students who take Eng. 340Q. Prerequisites: junior standing and one college literature course or instructor's consent.

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

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

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

526. Readings in Romanic 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. 533. Explores literature written in English by women of diverse ethnic, racial, class and other backgrounds, as well as by varying sexual orientations, ages and degrees of physical ability. Materials analyzed includes both literary works and their 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. 550. 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 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. Studies the Old English language in enough detail to enable the reading of some prose and poetry, including parts of Beowulf in the original. Some literature, including all of Beowulf, is read in translation, with attention to important literary and cultural features of the period.

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

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. Con
cerned 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, Fenelon, 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.


Environmental Science

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

1) to appreciate the complex working of natural systems,

2) to develop an appreciation for the interdisciplinary nature of this subject, and

3) to acquire the skills necessary to analyze and apply solutions to environmental problems.

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

Prerequisites

Applicants for admission must present an undergraduate degree with a GPA that meets department and Graduate School requirements. Prerequisite courses are two semesters of chemistry and either analytical or organic chemistry; two semesters of physics; two semesters of calculus or one semester of calculus and one of statistics; and two semesters of biology including a course in general ecology. Students who have not completed these courses may be accepted in a conditional status with the expectation that prerequisites will be fulfilled concurrently with enrollment in the first year graduate courses. If too many prerequisite course are lacking, a nondegree status may be suggested. Some deficiencies may be required as specific prerequisites for enrollment in the environmental science core courses.

Core Curriculum

All students must enroll in a two-semester (8-credit-hour) environmental science core course that will include advanced topics in environmental biology, chemistry, and geology. During each semester of enrollment up to a maximum of four, students will be required to enroll in a 1-credit-hour environmental science colloquium. In addition to the required 8 hours of core and 4 hours of colloquium, students will complete a plan of study that totals a minimum of 30 hours, which includes credit for either an internship or research thesis.

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

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

Relevant Elective Courses in the Natural Sciences

Biol. 560, Plant Ecology
Biol. 573, Statistical Applications
Biol. 575, Field Ecology
Biol. 578, Aquatic Ecology
Biol. 630, Behavioral Ecology
Biol. 640, Environmental Risk Assessment
Biol. 771, Evolutionary Ecology
Biol. 7xx, Environmental Toxicology
Chem. 514, Inorganic Chemistry
Chem. 523-524, Analytical Chemistry
Chem. 531-532, Organic Chemistry
Chem. 561, Introduction to Biochemistry
Chem. 603, Industrial Chemistry
Chem. 821, Equilibrium and Statistics in Analytical Chemistry
Chem. 822, Analytical Separations
Chem. 823, Analytical Spectroscopy
Chem. 824, Electroanalytical Chemistry
Geol. 560, Geomorphology and Land Use
Geol. 564, Remote Sensing Interpretation
Geol. 602, Laboratory Methods in Geology

LIBERAL ARTS AND SCIENCES/ENVIRONMENTAL SCIENCE 105
Geol. 621, Geochemical Cycling
Geol. 630, 830, Field Studies in Geology
Geol. 650, Geohydrology
Geol. 678, Geologic Perspectives on Climate Change
Geol. 680, Geologic Resources in the Environment
Geol. 684, Methods of Subsurface Analysis
Geol. 720, Geochemistry
Geol. 724, Soils
Geol. 725, Clay Mineralogy
Geol. 730, Geoscience and the Environment
Geol. 751, Advanced Geohydrology
Geol. 821, Special Studies in Geochemistry
Geol. 870, Advanced Biogeology

Geology

Graduate Faculty
Professors: James N. Gundersen, Salvatore J. Mazzullo (graduate coordinator), Peter G. Sutterlin
Associate Professors: William D. Bischoff (chairperson), Collette D. Burke, William E. Full, John C. Gries

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

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

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

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

The student must be accepted by the Graduate School and by the Department of Geology; this assures all prerequisites have been fulfilled. In general, 30 credit hours are required. One to six of these hours may be thesis credit and at least 18 must be at the 700 and 800 level. The department encourages students to take courses relevant to their program outside geology.

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

Examinations. The student is required to present the thesis proposal—Geol. 890—before the faculty to obtain approval before initiating work on the project. The proposal must be presented in enough detail to assure the faculty of the research promise of the topic and that the candidate can complete satisfactorily the project in the allotted time. Upon passing the oral examination, the written proposal is approved. After completing the thesis, the student must give a public oral defense.

Courses for Graduate/Undergraduate Credit

501. Raw Materials of Antiquity. (3). 2R; 2L. Nature of rocks, minerals and metallic ores used in prehistory and ancient times. Also weathering, sedimentation and soil-forming processes; elements of stratigraphy; geologic history of the Pleistocene and Recent Epoch relative and absolute age dating; mineralogy of clays and ceramics; and mining and metallurgical processes of antiquity. Prerequisite: Anthr. 501 or equivalent or instructor’s consent.

520. Optical Mineralogy. (3). 1R; 6L. Optical properties of anorthosites and crystalline materials in polarized light. Introduces use of the petrographic microscope in the quantitative determination of rock-forming minerals and mineraloids in thin section and immersion oil methods. Prerequisite: Geol. 320.

526. Sedimentary Geology. (3). 2R; 3L. Origin, classification, primary structures and physiologic processes controlling deposition of sedimentary rocks, especially carbonates. Includes an analysis of modern and ancient sedimentary depositional environments and a systematic petrographic study of sedimentary rocks in thin section, insoluble residues and heavy-mineral analysis. May require field trips. Prerequisite: Geol. 324.

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.

Plate Tectonics. (3). General education further studies course. 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, Geol. 312 (or taken concurrently), and Geol. 334.

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 340 or equivalent.

Geomorphic and Land Use. (3). General education further studies course. Identification of landforms and their genesis; processes producing landforms; the influence of geomorphology in aspects of natural hazards such as landslides, floods, earthquakes, and volcanic activity; soil erosion, drainage basin modification, coastal and desert environments, mineral resource exploitation, and their effects on humans; importance of these influences in environmental management and land-use planning. Prerequisite: Geol. 111Q; or Geol. 101T or Geol. 300G with a grade of B or better.

Regional Geology of the United States. (3). A detailed regional survey of the general geology, geologic history, stratigraphy and structural geology and their interrelationship in the United States. Requires field trips (instructor’s option). Prerequisite: Geol. 560 or instructor’s consent.

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

707. Biogeology. (3). 2R; 3L. General education further studies course. Systematic survey of major fossil biogeological materials, analysis of the origin and evolution of life and paleoecology. Includes field trips to various environments and climates. Includes handles and binocular microscopic examination of major fossil biogeological materials. Includes application of analyzed fossil data to the solution of problems in biogeochronology, paleontology, paleoclimatology and paleogeography. Cites examples from fields of invertebrate, vertebrate and microfossilology, and palynology. May require museum and field trips. Prerequisite: Geol. 321 or 551.

708. Special Studies in Biogeology. (3). 2R; 3L. General education further studies course. A systematic study in selected areas of biogeology. Prerequisites: Geol. 312, 320; or instructor's consent.

581. Numerical Geology. (3). 2R; 3L. Introduction to applications of numerical methods to problems in geological and environmental geology. Discuss algorithms and computer software for the analysis of numerical data, including univariate and multivariate statistical and deterministic techniques. Also, applications of a higher order computer language (FORTRAN, C/C++, PASCAL) for the manipulation of measurements. Study principles of mapping, data modeling, quantification, and analysis of geological imagery and models of simulating geologic phenomena. Prerequisites: Stat. 370 or equivalent, AE 227 or demonstrated knowledge of a higher order programming language, Math. 344 or 355 recommended or instructor's permission.

602. Laboratory Methods in Geology. (3). Methods of data collection and analysis of geologic samples; special instruction in the use of the scanning electron microscope, atomic absorption spectrophotometer, cathodoluminescope, X-ray diffractometer equipment, computer-assisted image analysis, and field mapping. Prerequisites: Geol. 312, 320 or instructor's consent.

621. Geochemical Cycling. (3). The chemistry of earth materials and the important geochemical processes operating on and within the earth's 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 geology; one-, two-, or three-week period. May be repeated for credit when local and content differ. Where appropriate, travel, lodging and board costs are charged.

640. Field Geology. (6). Field investigation of sedimentary, igneous and metamorphic rock units and their structures. Includes the application of mapping methods in solving geologic problems. Held at an off-campus field camp for five weeks (including weekends). Preparation of geologic columns, sections, maps and an accompanying professionally written report are due on campus during the sixth week. Prerequisite: 12 credits of advanced geology or instructor's consent.

645. Geoscientific Presentations. (2). Essential elements of effective communication of geoscientific information in both written and oral forms. Students preparing original manuscripts on results of geologic research and make numerous in-class presentations using professionally acceptable visual displays. Prerequisites: Geol. 312, but course restricted to juniors, seniors, and graduate students; or instructor's consent.

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

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


678. Geologic Perspectives on Climatic Change. (3). Modern climate and climatic changes, and analysis of climatic deterioration; systematic study of geologic evidence of climate change through time. Emphasis on theoretical causes, feedback mechanisms, and recognition of effects on climatic perturbations in the rock record. Prerequisite: Geol. 312.

680. Geologic Resources and the Environment. (3). 2R; 3L. Occurrence and origin of metallic and nonmetallic economic mineral deposits; laboratory examination or ores and industrial minerals. Occurrence and supply, regeneration, and future demand of water and soil resources, and fossil and nuclear fuels. Study environmental aspects of resource exploitation and use, generation and disposal of waste, environmental hazards, and reclamation. May require field trips. Prerequisite: Geol. 324.

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. Methods of Subsurface Analysis. (3). 2R; 3L. Methods of remotely logging and describing the geologic occurrence of subsurface strata; characterization of subsurface strata, including laboratory analysis of recovered subsurface samples; application to petroleum geology, mineral resource evaluation, and environmental geology. Prerequisites: Geol. 312; Phys. 211Q 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, (i) stratigraphy, (j) geophysics and (k) petroleum. Independent study in selected areas of geology with a required written final report. Prerequisite: consent of sponsoring faculty.

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

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

725. Clay Mineralogy. (3). 2R; 3L. An evaluation of compositional and structural elements of clay mineral families, related phyllosilicates and associated diagenetic-augeneen mineral assemblages in sedimentary environments. Also laboratory identification and classification of minerals by x-ray Powder diffraction and thermal analysis. Prerequisite: Geol. 526.

726. Carbonate Sedimentology. (3). 2R; 3L. The origin and genetic description of carbonate particles, sediments and rocks, mineralogy and textural classifications; depositional environments in carbonate rocks and analysis of modern and ancient depositional systems. May require field trips. Prerequisites: Geol. 526, 582 or equivalents.

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 deep-burial diagenesis, dolomitization processes and products; trace-elements and isotopes as diagenetic tools, cathodoluminescence and x-ray diffraction studies of carbonates; origin and porosity. Prerequisites: Geol. 520 (unless waived by instructor) and 726.

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

740. Basin Analysis. (3). A practical course in analysis of petroleum-bearing or other sedimentary basins; emphasizes detailed subsurface mapping to document depositional, tectonic and burial history of sedimentary basins; subsurface lithologic and geochemical sample analysis and evolution of sedimentary facies systems and hydrocarbons maturation history. Includes compilation of existing data to determine genetic basins. Prerequisites: Geol 682, 684 or instructor's consent.

745. Advanced Stratigraphy. (3). Analysis of stratigraphic sequences at the local to global scales in terms of sequence stratigraphic concepts and high-resolution interpretation of depositional sequences (from outcrop and subsurface data); sequence seismic stratigraphy, and significance of unconformities in sequence identification and development; local to global correlation of sequences and sea level history through time; cratonic sequences of North America. Required 7-day field trip. Prerequisites: Geol 312, 526, and 726.

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

751. Advanced Geohydrology. (3). Integrations of practical and theoretical coverage of subsurface fluid flow as applied to shallow aquifers. Cover the mass transport in both the saturated and vadose zones as well as the occurrence and movement of non-aqueous fluids. Topics include cover ground water quality, sources of groundwater contamination, retardation of contaminants, retardation and attenuation of dissolved solids and the response of non-aqueous substances to subsurface and framework chemistries. Computer simulation models used whenever practical along with detailed analysis of case histories, including those related to environmental geoscience. Prerequisite: Geol 650, 681, Math 344 or instructor's consent.

760. Exploration Geophysics. (3). An introduction to the theory and application of geophysical techniques for hydrocarbon, mineral, and groundwater prospecting. Topics include use of seismic techniques; instrumentation for acquisition on land and sea; seismic processing and analysis of data, and interpretation of subsurface geology. (Note: 3-semester exploration and seismic refraction techniques. Prerequisite: completion of geology undergraduate math and physics requirements; Math 344 or 555; Geol 324 and 544; and instructor's consent.

781. Advanced Numerical Geology. (3). Involves practical implementation of algorithms and computer code. Included is the analysis of multivariate techniques and the development of the computer algorithm skills needed to handle very large databases. Topics include standard statistical approaches to data analysis; treatment of an applied linear geophysics, and matrix theory; and the application of linear and non-linear discriminant analysis, various factor analytic techniques, hard and fuzzy clustering, linear and non-linear unmixing and other forms of data modeling. Prerequisites: Geol 581 or equivalent, competence in one or more high level computer languages, Math 344 or 555, and instructor's consent.

Courses for Graduate Students Only

800. Research in Geology. (3). 9L Research in special areas of geology: (a) general, (b) mineralogy, (c) geology, (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 consent.

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 postgraduate practice in geology.

821. Special Studies in Geochemistry. (3). A systematic study in selected areas of geochemistry. Content differs upon demand to provide in-depth analysis of fields of (a) sedimentary carbonate and silicate geochemistry and mineralogy, (b) organic geochemistry, (c) high pressure and temperature thermodynamics of earth materials, (d) exploration geochemical geology, (e) exogenic geochemical cycling, (f) stable isotope geochemistry. May be repeated for credit to cover all areas listed. May require some laboratory work. Prerequisite: Geol 730 or instructor's consent.

823. Igneous and Metamorphic Petrology. (3, 1R, 6L). Mineral paragenesis, bulk chemical compositions, physical chemical relationships, textures, structures, origins and classifications of igneous and metamorphic rocks. Thin-section studies to facilitate rock identification and the determination of petrogenetic relationships. May require field trips. Prerequisite: Geol 520.

826. Sedimentary Petrology. (3). 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). Detailed 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.

860. Special Topics in Geophysics. (3). Systematic study in one or more selected topics of theoretical and applied geophysical techniques. Emphasis on applications of state-of-the-art concepts and principles to problems of regional to global significance. Potential topics include seismic stratigraphy, vertical seismic profiling, reservoir petrophysical response estimations, shallow aquifer geophysical modeling, geophysical basin modeling, and regional and global environmental modeling. Prerequisites: Geol 581, 760; Math 344 or 555; or instructor's consent.

870. Advanced Biogeology. (3). 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.

881. Special Topics in Numerical Geology. (3). Systematic study in one or more topics of theoretical and applied quantitative analysis appropriate for environmental and geological research. Emphasis on applications of state-of-the-art concepts and principles to problems of regional to global significance. Potential topics include quantitative shape analysis, photogrammetric analysis, multivariate linear and non-linear unmixing, extrapolation and interpolation techniques, quantitative iso-time chronostratigraphic techniques, modeling global phenomena, and simulations of multi-phase flow in aquifers and reservoirs. Prerequisites: Geol 581, 781; and Math 344 or 555; or instructor's consent.

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

Gerontology
See Urban and Public Affairs, Hugo Wall School of.

History
Graduate Faculty
Distinguished Professor: H. Craig Miner
(Willard W. Garvey Distinguished Professor of Business History)

Professors: John E. Dreifort (chairperson), James C. Duram, Anthony P. Gytihel, Phillip D. Thomas

Associate Professor: John D. Born, Jr. (graduate coordinator)

Assistant Professors: Rebecca Conard, Helen Hundleby, Judith R. Johnson, Willard Klunder, Craig L. Torbenson

Master of Arts
and Areas of Specialization
The history department offers courses of study leading to the Master of Arts (MA) degree with specialization in U.S. history, European history, and public history.
Admission Requirements
Admission to the MA program in history requires completion of an undergraduate major in history, or the equivalent; a grade point average of 2.750 or better, including all undergraduate hours; and a 3.000 grade point average in history. Under unusual circumstances applicants with less than a 3.000 average in history may be granted a probationary or conditional admission. International students are required to have a minimum TOEFL of 600.

Degree Requirements
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:

- Hist. 725, Advanced Historical Method ...3
- Hist. 727, Readings in History .............3
- Hist. 729-730, American history seminars ...6
- Hist. 733-734, European history seminars (includes ancient, medieval, and modern European history) ........6
- Hist. 801, Thesis Research ............2
- Hist. 802, Thesis ........2

A majority, but not all, of the remaining hours must be taken in American history courses for a total of 36 credit hours. Students also must satisfy the foreign language requirement and pass an oral examination in one comprehensive field. A written examination must precede the oral examination.

Students following the European history emphasis must take the following:

- Hist. 725, Advanced Historical Method ...3
- Hist. 727, Readings in History .............6
- Hist. 729-730, American history seminars ...6
- Hist. 733-734, European history seminars (includes ancient, medieval, and modern European history) ........6

A majority, but not all, of the remaining hours must be taken in American history courses for a total of 36 credit hours. A written examination must precede the oral examination.

Students following the public history emphasis must take the following:

- Hist. 701, Introduction to Public History ...3
- Hist. 702, Historic Preservation ...........3
- Hist. 703, Museum Administration ........3
- Hist. 705, Introduction to Archives ........3
- Hist. 704, Interpreting History to the Public ........3

Hist. 725, Advanced Historical Method ...3
Hist. 729-730, Seminar in American History .............6
Hist. 801, Thesis Research .............2
Hist. 802, Thesis ........2

*Hist. 725, Thesis Research .............2
**Hist. 803, Internship in Public History .............2

**A European history option is available.
***Hist. 781 may be substituted for Hist. 803 with consent of the director of the public history program.

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 examination 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). General education further studies course. Colonization of the New World emphasizing the British colonists and their development.

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

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

>504. Civil War and Reconstruction. (3). General education further studies course. 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). General education further studies course. 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). General education further studies course. Examines political, social, and economic issues from the Progressive Era through World War II.

>508. The United States: the 20th Century, Since 1945. (3). General education further studies course. The history of the United States from the Truman through the Nixon administrations.

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

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

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


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

528. History of Wichita. (3). General education further studies course. A history of Wichita, Kansas, from 1865 to the present with emphasis on the lessons of local history for future planning and its importance to an individual citizen's sense of place.

529. Indians of Kansas. (3). General education further studies course. 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 relationships and consequent legal and cultural problems.


531. American Environmental History. (3). General education further studies course. Examination of the historical, physical, economic, scientific, technological, and industrial interactions of the peoples of America with their environment. Particular emphasis is placed on the period from 1800 to the present.

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

534. History of the Old South. (3). General education further studies course. An examination of Southern civilization prior to the American Civil War.

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

537. The Trans-Mississippi West. (3). General education further studies course. 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). General education further studies course. Explores the growth of the trans-Mississippi West in the 20th century, with particular attention to social 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). General education further studies course. Indian life, culture and history from the early 16th century to the present emphasizing the impact of federal Indian policy since 1800.

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

545Q. Neither War Nor Peace: The World Since 1945. (3). General education further studies course.

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

558. The Ancient Near East. (3). General education further studies course. 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). General education further studies courses. 559Q: the Hellenic world from prehistoric times to the end of the Peloponnesian War, 560: the 4th century and the Hellenistic period.

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

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

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

576. The Reformation. (3). General education further studies course. Cross-listed as Rel. 476. The dramatic religious changes in the 16th century in the political, social and intellectual contexts.

581. Europe, 1815-1870. (3). General education further studies course.

582. Europe, 1870-1945. (3). General education further studies course. Surveys European history from 1870 to 1945.

583. Europe, 1945-Present. (3). General education further studies course. A survey of European history from 1945-present.

588. History of Early Russia. (3). Covers the political, social and cultural history of Kievan and Muscovite Russia.

591. History of Imperial Russia. (3). A survey of the political, social, and cultural history of Imperial Russia.

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

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

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

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

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
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<tr>
<th>Course Code</th>
<th>Type of Course</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
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<td>Germans and Jews</td>
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<td>617</td>
<td>Liberal Arts and Sciences</td>
<td>History of Antisemitism in Central Europe</td>
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<td>Introduction to Archives</td>
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<td>Introduction to Public History</td>
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<td>Understanding Historical Thought</td>
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<td>Philosophies of History</td>
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<td>Geography of Europe</td>
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**Geography**

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

**Courses for Graduate/Undergraduate Credit**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Type of Course</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
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**Hugo Wall School of Urban and Public Affairs**

See Urban and Public Affairs, Hugo Wall School of.

**Liberal Studies**

*Graduate Coordinator*: Stuart Lasine

*Supervisory Committee*: Collette Burke (geology), John Gries (geology), Judith Johnson (history), James Snyder (psychology), Michael Vincent (modern languages).

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

Admission Requirements
Applicants must have a bachelor's degree from an accredited institution. Barring special circumstances, applicants must also have a grade point average of 3.00 or better for the last 60 hours of course work. No more than six hours of graduate credit from another institution will be considered for transfer into the liberal studies program.

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

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

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

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

1. Complete selection of members of the faculty 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.
3. Complete LAS 800, Research Goals and Strategies, for 3 credit hours.

Once accepted by the Graduate School, the Plan of Study becomes the student's individualized curriculum and any changes to it must be approved by the Student's Advisory Committee and the MALS Supervisory Committee.

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

1. A minimum of 38 semester hours of credit
2. No more than 12 semester hours from any one department
3. A maximum of 12 hours in a college other than liberal arts and sciences
4. At least 23 of the 38 total hours in courses numbered 700 or above
5. Three of the 38 hours must be taken in LAS 800, Research Goals and Strategies. Two hours of LAS 825, Research Proseminar, must be taken in subsequent semesters.
6. A master's thesis for 6 hours' credit or a terminal project the 3-6 hours' credit. The terminal project may involve field work, a practicum or an internship research report. The specific nature of the thesis or project must be described in the Plan of Study.

Courses for Graduate Students Only

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

825. Research Proseminar. (1). Repeatable for 2 credit hours. Exposes the student to interdisciplinary research methods and practices related to the student's specific plan of study. Facilitates development and completion of the student's thesis topic/terminal project.

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.

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

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

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


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

Group B—Linguistic Study of Specific Languages or Language Groups

Courses for Graduate/Undergraduate Credit

505. Russian. Russian Phonology. (2). Cross-listed as Russ. 505.
610. English. Old English. (3). Cross-listed as Eng. 610. Studies the Old English language in enough detail to enable the reading of some prose and poetry, including parts of Beowulf in the original. Some literature, including all of Beowulf, is read in translation, with attention to important literary and cultural features of the period.
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


727. CDS. Teaching English as a Second Language (2-3). Cross-listed as Eng. 727 and CDS 676. Discusses current methods of teaching English to non-native speakers. Students learn to analyze interlanguage patterns and to design appropriate teaching units for class and language laboratory use.

740. Graduate Studies in Linguistics. (3). Cross-listed as Eng. 740. Selected topics in theories of language and methods of linguistic study. With departmental consent, the course is repeatable for 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. Friedman (chairperson), John J. Hutchinson, Victor Isakov, Peter Kuchment, Hari Mukerjee

Associate Professors: Prem N. Bajaj, Stephen W. Brady, Gary D. Crown, Thomas DeLillo, Lop-Hing Ho, Kirk E. Lancaster, Daowei Ma, Kenneth G. Miller (graduate coordinator), Phillip E. Parker, William H. Richardson, Ziqi Sun, Han-Kun Wang

Assistant Professors: Xiaomi Hu, Zhiren Jin, Vassilis Papanicolaou

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

Master of Science

Admission Requirements

Students will be admitted to full graduate standing if they have the equivalent of an undergraduate degree in mathematics, have a grade point average of at least 3.00 in mathematics courses, and meet Graduate School admission requirements.

Degree Requirements

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

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

Generally not more than six hours of approved course work may be transferred from another university. Students may take either a thesis or 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.

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

Doctor of Philosophy

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

Admission Requirements

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

Students may satisfy the prerequisites for the initial required courses 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. Partial Differential Equations for Engineers (757) and Complex and Vector Analysis for Engineers (758) and mathematics or statistics courses numbered below 700 may not be included. At least 36 hours must be in mathematics and statistics courses numbered above 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 language proficiency will be demonstrated by passing an examination that consists of the translation, with the use of a dictionary, of one or more passages of mathematics text from the foreign language into English.

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

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

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

PhD Committee: Upon the student passing the qualifying exam, the graduate coordinator, in consultation with the student, will recommend to the departmental PhD Advisory Committee a PhD committee for the student. The student's PhD committee will consist of the student's dissertation advisor as chair and four other members. At least one, but no more than two, of the committee members shall be from departments outside the Department of Mathematics and Statistics. Within one semester after passing the qualifying exam the student should submit a Plan of Study to the committee for approval. This committee 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 one of the two language requirements must be satisfied. A student who fails the preliminary exam may be permitted to retake the exam if the committee so determines.

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

Courses for Graduate/Undergraduate Credit
Credit in courses numbered below 600 is not applicable toward the MS in mathematics.

501. Elementary Mathematics. (3). A study of topics necessary to an understanding of the elementary school curriculum, such as set theory, real numbers and geometry. Not for major or minor credit. Prerequisites: elementary education major and Math. 111 or equivalent with a grade of C or better or departmental consent.

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

513. Fundamental Concepts of Algebra. (3). Defines group, ring and field and studies their properties. Prerequisites: Math. 415 and 511 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). General education issues and perspectives course. Studies the development of mathematics from antiquity to modern times. Solves problems using the methods of the historical period in which they were arose. Requires mathematical skills. Prerequisites: Math. 511 and two additional courses at the 500 level or above, with C or better in each.

545. Integration Techniques and Applications. (3). A study of the basic integration techniques used in applied mathematics. Includes the standard vector calculus treatment of line and surface integrals, Green's Theorem, Stokes' Theorem and The Divergence Theorem. Also includes the study of improper integrals with application to special functions. Prerequisite: Math. 344 with grade of C or better.

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

551. Numerical Methods. (3). Approximating roots of equations, interpolation and approximation, numerical differentiation and integration and the numerical solution of first order ordinary differential equations. Some computer use. Prerequisites: Math. 344 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. 243 with grade of C or better or departmental consent.

580. 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.

585. 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). A continuation of Math. 547. Prerequisites: Math. 511 and 547 with a grade of C or better in each.

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 formal 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 standard basic topics of abstract algebra. Prerequisite: Math. 513 with C or better or departmental consent.

714. Applied Mathematics. (3). Cross-listed as Phys. 714. A study of mathematical techniques applicable to physics and other sciences. Instructor selects topics, such as power series, infinite products, asymptotic expansions, WKB method, curvature integration and residue methods, integral transforms, Hilbert space, spectral functions, and integral equations. Prerequisite: Math. 550 or instructor's 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.

733. 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.

745. Complex Analysis I. (3). Studies the theory of analytic functions. Prerequisite: Math. 640 with C or better, or departmental consent.

750. Workshop. (1-3). Topics appropriate for mathematics workshops that are not in current mathematics courses. May be repeated to a total of six hours credit with departmental consent. Prerequisite: departmental consent.

751. Numerical Linear Algebra. (3). Includes analysis of direct and iterative methods for the solution of linear systems, linear least squares
problems, eigenvalue problems, error analysis and reduction by orthogonal transformations. Prerequisite: Math. 511, 547 and 551 with C or better in each, or departmental consent.

753. Ordinary Differential Equations. (3). Covers existence, uniqueness, stability and other qualitative theory for ordinary differential equations. Prerequisite: Math. 547 with C or better or departmental consent.

755. Partial Differential Equations I. (3). Studies the existence and uniqueness theory for partial differential equations of all types. Prerequisite: Math. 547 with C or better or departmental consent.


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.

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.

844. 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.

860. Proseminar. (1). Oral presentation of research in areas of interest to the students. Prerequisite: major standing.

881. 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
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). General education further studies courses. Includes probability models, points and interval estimates, statistical tests of hypotheses, correlation and regression analysis. Introduction to nonparametric statistical techniques, least squares, analysis of variance and topics in design of experiments. Prerequisite: Math. 243 with C or better or departmental consent.

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.

571. 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.

572. 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.

573. Applied Regression Analysis. (3). Studies linear, polynomial and multiple regression. Includes applications to business and economics, behavioral and biological sciences, and engineering. Uses computer packages for doing problems. Prerequisites: Stat. 571 and Math. 344 and 511 with C or better in each or departmental consent.

574. 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.

774. Statistical Computing I. (3). Trains students to use modern statistical software for statistical modeling and writing of technical reports. Examines many of the advanced features of most commercial statistical packages. Students perform complete statistical analyses of real data sets. Prerequisites: Stat. 763 and 764 or departmental consent.

775. Applied Statistical Methods I. (3). Covers selected topics from time series analysis including basic characteristics of time series, autocorrelation, stationarity, spectral analysis, linear filtering, ARIMA models, Box-Jenkins forecasting and model identification, classification and pattern recognition. Prerequisite: Stat. 763 with a grade of C or better or departmental consent.

776. Applied Statistical Methods II. (3). Covers selected topics from multivariate analysis including statistical theory associated with the multivariate normal, Wishart and other related distributions, partial and multiple correlation, principal component analysis, factor analysis, classification and discriminant analysis, cluster analysis, James-Stein estimates, multivariate probability inequalities, majorization and Schur functions. Prerequisite: Stat. 764 with a grade of C or better or departmental consent.

Courses for Graduate Students Only

861. Theory of Probability. (3). The axiomatic foundations of probability theory emphasize the coverage of probability measures, distribution functions, characteristic functions, random variables, modes of convergence, the law of large numbers and central limit theorem, and conditioning and the Markov property. Prerequisites: Math. 743 and Stat. 761 or 767.


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; asymptotic efficiency. Prerequisite: Stat. 772.


878. Special Topics. (2-3). Repeatable with departmental consent. Prerequisite: departmental consent.

879. Individual Reading. (1-5). Prerequisite: departmental consent.

884. Statistical Computing II. (3). Teaches special graphics and numerical methods needed in the analysis of statistical data. Includes advanced simulation techniques, numerical methods for linear and nonlinear problems, analysis of missing data, smoothing and density estimation, projection-pursuit methods and graphic techniques. Prerequisites: Math. 751 and Stat. 772 with C or better or departmental consent.

971 & 972. Selected Advanced Topics in Probability and Statistics. (3-3). Topics of current research interest in probability and statistics. Repeatable for credit with departmental consent. Prerequisite: instructor's consent.

978. Advanced Independent Study in Probability and Statistics. (1-3). Arranged individual directed study in an area of probability or statistics. Repeatable to a maximum of 6 hours. 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

See Urban and Public Affairs, Hugo Wall School of.

Modern and Classical Languages and Literatures

Graduate Faculty

Professors: Pedro Bravo-Elizondo, Dieter Saalmann (chairperson)

Associate Professors: Ginette Adamson, Wilson Baldridge, Judy Berry-Bravo, Wilma Detjens, John Koppenhaver, Eunice Myers (graduate coordinator), Gary Toops, Michael Vincent

Assistant Professors: Carl Adamson, Patrick E. Kehoe, Brigitte Rousset

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 advisor, the chairperson of the Department of Modern and Classical Languages and Literatures, and the dean of the Graduate School.

Courses for Graduate/Undergraduate Credit

Upper-division courses are given on a rotating basis. Fren. 300 is a prerequisite for all upper-division literature and civilization courses, unless otherwise indicated. All literature courses, including Fren. 223 and 300, may fulfill the general education literature requirement.


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. (3). Designed to increase proficiency in spoken French. Assignments include oral reports, dialogues and work in the language laboratory. Prerequisite: Fren. 227 and either 220 or 223, or departmental consent.

526. Advanced Composition and Grammar. (3). Emphasizes theme writing, original compositions and detailed study of modern French grammar. Prerequisite: Fren. 220 or departmental consent.

540Q. French Literature in English Translation. (3). Topic varies. May be used to satisfy the general education literature requirement and may count toward a French major or minor if readings and papers are done in French.

541Q. French Literature of Africa and the Caribbean in English Translation. (3). A study of the concept of Negritude through the works of major contemporary African and Caribbean writers. No knowledge of a foreign language is necessary. May be used to satisfy the general education literature requirement and may count toward a French major or minor if readings and papers are done in French.

551. French Civilization: The Middle Ages to the Restoration. (3). Emphasizes key aspects of
the civilization of France as seen in its art, architecture, political structure and history, social evolution and intellectual traditions. Course is interdisciplinary in nature and is designed to complement studies in French language and literature. Includes slide demonstrations, guest speakers on special topics and films. Most classes and required readings are in French. Prerequisite/corequisite: Fren. 300.

552. Contemporary French Civilization. (3) 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. (3) Seminar in French literature, language or civilization. Prerequisite: Fren. 300. Repeatable for credit.

630. Medieval and Renaissance French Literature. (3) Prerequisite: Fren. 300.

631. 17th Century French Literature. (3) Prerequisite: Fren. 300.

632. 18th Century French Literature. (3) Prerequisite: Fren. 300.

633. 19th Century French Literature. (3) Prerequisite: Fren. 300.

634. Contemporary French Literature. (3) Prerequisite: Fren. 300.

635. Introduction to Romance Language Linguistics. (3) Cross-listed as Span. 635 and Ling. 635. An introduction to the historical phonology and morphology of the romance languages emphasizing French and Spanish. Prerequisite: departmental consent.

636. 20th Century French Literature. Reading and discussion of major works of French fiction, poetry and drama from 1900 to 1960. Prerequisite: Fren. 300.

726. Advanced Stylistics. (3) Offers advanced background in rhetoric and stylistics as an approach to literary models, with a view to developing the creative use of style together with grammatical accuracy in writing. Practice in revision forms the basis of this course. Prerequisites: German 524 or departmental consent.

727. Advanced Stylistics. (3) Offers advanced background in rhetoric and stylistics as an approach to literary models, with a view to developing the creative use of style together with grammatical accuracy in writing. Practice in revision forms the basis of this course. Prerequisites: German 524 or departmental consent.

728. Workshop in German. (2-4). Repeatable for credit.

Course for Graduate Students Only

815. Special Studies in French. (3) 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 advisor, the chairperson of the Department of Modern and Classical Languages and Literatures, and the dean of the Graduate School.

Courses for Graduate/Undergraduate Credit

524. Advanced Conversation and Composition. (3) Prerequisites: German 324 or instructor's consent.

650. Directed Study. (1-3) Enrollment in any of the areas listed takes place only upon consultation with the department and agreement with the instructor concerned: (a) introduction to the study of German literature; (b) survey I: from the medieval period through the Age of Goethe; (c) survey II: 19th century to 1945; (d) contemporary literature, including the literature of East and West Germany, 1949-1989; (e) special topics in literature, repeatable once for credit; (f) special topics in language, repeatable once for credit. Prerequisite: German 344Q or instructor's consent.

726. Advanced Stylistics. (3) Offers advanced background in rhetoric and stylistics as an approach to literary models, with a view to developing the creative use of style together with grammatical accuracy in writing. Practice in revision forms the basis of this course. Prerequisites: German 524 or departmental consent.

750. Workshop in German. (2-4). Repeatable for credit.

751. German Civilization since the Middle Ages. (3) Survey of German civilization from the Middle Ages to the present. Emphasizes the social, political, historical and intellectual evolution of the German-speaking countries. Special attention paid to the foundation of the German Republic in 1918, World War II, the unification process initiated in 1989. Prerequisites: German 441Q or departmental consent.

752. German Literature from the Eighteenth Century to the Present. (3) The following offerings available: (a) Genre Studies: novels, novellas, prose, and poetry; (b) Literary Movements: Romanticism, Classicism, Realism, Expressionism, post-1945 literary trends; (c) Major Authors: e.g., Schiller, Goethe, Heine, Kafka, Borchert, Grass, Wolf; (d) Special Topics: intellectual life in Germany, literature and exile, literature and film, writers in East and West Germany: Two Literatures? Prerequisites: German 650 or departmental consent.

Course for Graduate Students Only

815. Special Studies in German. (3) Readings in German literature or culture. May be repeated for credit when the topics change. Prerequisites: graduate standing or departmental consent.

Greek (Ancient Classical)

Although a complete graduate program is not available currently in Greek, the following courses may apply toward a master's degree.

Courses for Graduate/Undergraduate Credit

515. 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 Roman 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 Democritian 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, phonemes, and morphophonemics, as well as the study and production of intonation contours (intonationsynny konstruktist). Prerequisite: any 200-level course or instructor's consent.

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. (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

Master of Arts and Areas of Specialization

The Department of Modern and Classical Languages and Literatures offers courses of study leading to the Master of Arts (MA) degree in Spanish. This degree program allows for specialization in Spanish language and literature or in Spanish-American literature.

Admission Requirements

Admission to the program requires the completion of 24 hours of undergraduate Spanish, 8 hours of which were on the junior-senior level, and a 3.00 GPA in Spanish.

Degree Requirements

The MA degree in Spanish requires the completion of 36 semester hours beyond the BA degree, including at least two seminars—Span. 623, 631, or 632—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, 552, 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). Offered all semester only. Prerequisite: Span. 325 or departmental consent.

526. Advanced Grammar and Composition. (3). Offered spring semester only. 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). Content may vary from semester to semester, including Spanish and/or Latin-American literature. No knowledge of a foreign language is necessary. May be used to satisfy the general education literature requirement and may count toward a Spanish major or minor if readings and papers are done in Spanish and prerequisite of Span. 300 is met. Repeatable for credit.

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. 326 or departmental consent.

620. Survey of Latin-American Literature. (3). Main currents of Latin-American literature from 1500 to 1800. Prerequisite: Span. 300 or departmental consent.

621. Survey of Latin-American Literature. (3). Main currents of Latin-American literature from 1800 to present. Prerequisite: Span. 300 or departmental consent.

622. Special Studies. (1-4). Topic for study chosen with aid of instructor. Repeatable for credit. Prerequisite: instructor's consent.

623. Seminar in Spanish. (1-5). Special studies in (a) language, (b) Spanish and Latin-American literature, (c) Spanish and Latin-American culture and civilization and (d) methods of teaching Spanish in the elementary and secondary schools. Repeatable for credit. Prerequisite: departmental consent.

625. Contemporary Latin-American Novel. (3). Prerequisite: Span. 300 or departmental consent.

626. Spanish Civilization. (3). Intensive study of Spanish culture, including historical and geographical factors in its development and its contributions to world civilization. Prerequisite or corequisite: Span. 300 or departmental consent.

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.

631. Latin-American Short Story. (3). Study of the main writers in contemporary Latin-American literature. Prerequisite: Span. 300 or departmental consent.

635. Introduction to Romance Linguistics. (3). Cross-listed as Frn. 635 and Ling. 635. An introduction primarily to the historical phonology and morphology of the romance languages emphasizing French and Spanish. Prerequisite: departmental consent.

640. Mexico: Its People and Culture. (3). Study of the cultural development of Mexico, exploring the legacy of ancient cultures and the Spanish encounter in areas such as literature, the arts, music and film industry. Prerequisite: Span. 300 or departmental consent.

650. South America: Its People and Cultures. (3). Study of the cultural development of South America, exploring the legacy of ancient cultures and the Spanish encounter in areas such as literature, the arts, music and the film industry. Prerequisite: Span. 300 or departmental consent.
720. Theory and Practice for University Teaching. (2). Deals with recent theories of language acquisition and their application to the teaching of Spanish. Required for teaching assistants. Prerequisite: graduate standing.

750. Workshop in Spanish. (2-4). Repeatable for credit.

Courses for Graduate Students Only


826. Grammar and Stylistics. (3). Intensive study of advanced grammar and stylistic usage.

827. Latin American Civilization and Culture. (3). Introduction to historical and cultural development in Latin America, exploring the legacy of the Spanish encounter/colonization. Emphasis is on Spanish colonization. Prerequisite: graduate standing.

831. Seminar in Spanish Literature. (3). (a) Middle Ages, (b) Renaissance, (c) Golden Age, (d) Cervantes, (e) modern novel, (f) Generation of '98, (i) Romanticism, (j) 20th century poetry, (k) criticism, (l) literature, (m) 20th century theatre, and (n) contemporary Spanish novel.

832. Seminar in Latin-American Literature. (3). (a) colonial period, (b) contemporary novel, (c) short story, (d) poetry, (e) modernism, (f) essay, (i) theater, (k) Latin-American literature.

Philosophy

Graduate Faculty

Professor: Gerald H. Paske
Associate Professors: Robert Feleppa, A.J. Mandt, Ben F. Rogers, David Soles (chairperson), Deborah H. Soles
Assistant Professor: J.W. Mallory

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

Courses for Graduate/Undergraduate Credit

518. Recent British-American Philosophy. (3). Examination of philosophical ideas and movements in recent British and American 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.

546. Rationalism. (3). A study of the philosophical views that emphasize reasoning rather than sensory experience as the source of knowledge with particular attention to the philosophies of Descartes, Spinoza, 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 the self, the concept of the sacred, the meaning of truth, the relation of invariance and process, the existence of universal standards of thought and conduct, the problem of knowledge, skepticism, the nature of language and the character of philosophical inquiry.

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, methodological problems peculiar to social science, the nature of sound explanation concepts and constructs and the roles of mathematics and formal theories in social science.

557. Contemporary European Philosophy. (3). An 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.

558. Studies in a Major Philosopher. (3). A concentrated study of the thought of a 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.

Physics

Graduate Faculty

Professors: David R. Alexander (chairperson), James C. Ho (graduate coordinator)

Associate Professors: Elizabeth Behrman, Hussein Hamdeh, Pawan K. Kahol, Syed M. Taher

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 advisor and the department chairperson. Two options are available to the student: (1) the thesis option requires the completion of 30 semester hours of graduate course work, which includes the presentation of a thesis, and (2) the nonthesis option requires the completion of 36 semester hours of graduate work. In both options at least 12
hours must be in courses numbered 800 or above. The department recommends that each Plan of Study include Phys. 821, Classical Mechanics; Phys. 871, Statistical Mechanics; Phys. 811, Quantum Mechanics I; and either Phys. 812, Quantum Mechanics II or Phys. 813, Quantum Mechanics III. Up to nine semester hours of course work may be taken outside the department under the thesis option. For the nonthesis option up to 12 semester hours may be taken outside the department.

An MS degree in physics with a chemical physics option is available. Requirements are those listed above, with nine hours of chemistry chosen from Chem. 615, 641, 741, 846, 847, or other approved chemistry courses. Students should take Phys. 642 unless they took it for undergraduate credit.

Other program options are available which provide the possibility of combining the study of physics with interests in other fields such as astronomy, engineering, geology, computer science, biological sciences, and education.

Examinations
During the first semester, students are given a diagnostic entrance examination. A qualifying examination must be passed at least one semester before graduation and an oral defense of the thesis also is required.

Courses for Graduate/Undergraduate Credit

501. Special Studies in Physics for Educators. (1-3). 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). 1R; 3L. Experiments in electronics that treat some of the applications of electronics in scientific research. Experiments cover the uses of vacuum tubes, transistors, IC and digital circuits. Prerequisite: Phys. 314Q.

551. Topics in Modern Physics. (3).* An introduction to selected areas of modern physics emphasizing the features of atomic nuclear and solid state physics that require modifications of classical physics for their explanation. Prerequisite: Phys. 214Q or 314Q or departmental consent. Corequisite: Math. 344.

555. Modern Optics. (3). Geometrical and physical optics, coherence theory, and Fourier optics. Additional topics may include radiation, scattering, optical properties of solids, and optical data processing. Prerequisite: Phys. 214Q or 314Q and Math. 344.

590. Stellar Astrophysics. (3). Focuses on the application of basic physical principles to the study of stars. Includes stellar atmospheres, the structure of stars, formation and evolution of stars, nuclear reactions and nucleosynthesis, unusual stars, the death of stars and the interstellar medium. Prerequisite: Phys. 551.

595. Galactic and Extragalactic Astronomy. (3). Primary topics are galaxies and the structure of the universe. Includes the constituents and dynamics of our galaxy, the characteristics of normal galaxies, active galaxies and quasars, and cosmology. Prerequisite: Phys. 551.

600. Individual Readings in Physics. (1-3). Repeatable but total credit may not exceed six hours. Prerequisite: departmental consent.

601. Individual Readings in Astrophysics. (1-3). Studies several topics in astrophysics in depth. Lectures, independent readings, and student projects may be assigned. May be repeated up to six hours. Prerequisite: instructor’s consent.

611. Modern Physics I. (3). Introduction to quantum mechanics, the Schrödinger equation, elementary perturbation theory and the hydrogen atom. Prerequisite: Phys. 551.


616. Computational Physics Laboratory. (3). 2R; 2L. Provides a working knowledge of computational techniques with applications in both theoretical and experimental physics, including a brief introduction to the FORTRAN language. Prerequisites: Phys. 551 and Math. 550 or 555.

621. Elementary Mechanics I. (3).* Motion of a particle in one and several dimensions, central forces, the harmonic oscillator and the Lagrangian formulation of mechanics. Prerequisites: Phys. 214Q or 314Q and Math. 344 with grades of C or better.

625. Electronics. (2). 1R; 4L. Provides a working knowledge of electronic devices and circuits for the student or research worker who has little or no background in electronics. Prerequisite: instructor’s consent.

631. Electricity and Magnetism I. (3).* Direct and alternating currents; electric and magnetic field theory, including an introduction to Maxwell’s electromagnetic wave theory. Prerequisites: Phys. 214Q or 314Q and Math. 344 with grades of C or better.

632. Electricity and Magnetism II. (3).* A continuation of Phys. 631. Prerequisite: Phys. 631 or instructor’s consent.

642. Chemical Physics. (3). Topics in areas of overlapping interest for students of chemistry and physics, such as thermodynamics, kinetics, quantum mechanics, solids, and various types of spectroscopy. Chemists and physicists discuss standard experimental and theoretical techniques used in chemical physics research. Prerequisites: Chem 641 or instructor’s consent.

671. Thermodynamics. (3). The laws of thermodynamics, distribution functions, Boltzmann equation, transport phenomena, fluctuations, and an introduction to statistical mechanics. Prerequisites: Phys. 214Q or 314Q and Math. 344.

714. Theoretical Physics. (3). Cross-listed as Math. 714. A study of mathematical techniques applicable to physics and other sciences. Instructor selects topics, such as power series, infinite products, asymptotic expansions, WKB method, contour integration and residue methods, integral transforms, Hilbert spaces, special functions, and integral equations. Prerequisites: Math. 550 or 555 or instructor’s consent.

*Course may not be counted for credit toward a graduate physics major.

Courses for Graduate Students Only

800. Individual Readings. (1-3). Repeatable for credit up to three hours. Prerequisites: 30 hours of physics and departmental consent.

801. Selected Topics in Physics. (2-3). Repeatable for credit up to six hours. Prerequisite: departmental consent.

807. Seminar. (1). Review of current periodicals; reports on student and faculty research. Repeatable for credit up to six hours. Prerequisite: 20 hours of physics.

809. Research. (1-3). Repeatable for credit up to six hours.

811. Quantum Mechanics I. (3). The Schrödinger and Heisenberg formulations of quantum mechanics. Applications include rectangular potentials, central forces and the harmonic oscillator. Also include spin, time independent and time dependent perturbation theory. Prerequisites: Phys. 621 and 611 or departmental consent and Math. 550.

821. Quantum Mechanics II. (3). Applications of quantum mechanics including the WKB approximation, scattering, transformation theory, interaction picture, molecules and relativistic quantum mechanics. Prerequisite: Phys. 811.

813. Quantum Mechanics III. (3). Applications of quantum mechanics including the N-body problem, second quantization photons, the electromagnetic field, superconductivity and magnetism. Prerequisite: Phys. 811.


831. Classical Electricity and Magnetism I. (3). Maxwell’s equations with application to static electricity and magnetism. Also may include

871. Statistical Mechanics. (3). An introduction to the basic concepts and methods of statistical mechanics with applications to simple physical systems. Prerequisites: Math. 550 and Phys. 621.

881. Solid State Physics I (3). The basic knowledge of the nature and properties of the solid state, including the structural, thermal, mechanical, electrical and magnetic properties. Also studies the electron theory of metals and band theory of solids. Prerequisites: Phys. 551 or departmental consent and Math. 550.


Political Science

Graduate Faculty
Professor: Melvin A. Kahn
Associate Professors: Kenneth Cibulski, James W. McKenney, John E. Stanga, Jr., James F. Sheffield, Jr. (chairperson)
Assistant Professor: David Ericson (graduate coordinator), Nathalie J. Frenslay

Master of Arts and Areas of Specialization
The political science department offers the Master of Arts (MA) degree with areas of concentration in American politics/policy and in comparative politics/international relations.

Admission Requirements
All applicants are expected to meet Graduate School standards for admission. In addition, the department requires students to have completed at least 15 credit hours of study in political science, including an introductory American politics course (Pol. S. 121Q or equivalent), with at least a B average in those courses. Students must also have completed an elementary statistics class with a grade of C or better. The department requires all applicants to take the Graduate Record Examination (GRE) and to submit their scores on the verbal, analytic, and quantitative portions of the test prior to admission into the program.

Degree Requirements
The MA degree in political science requires 30 or 33 credit hours, depending upon the completion option selected. All students must satisfactorily complete Pol. S. 701 and 703 and at least three of the following four courses, depending upon the area of concentration: Pol. S. 580, 810, 835, and 856. Up to 9 hours of credit in courses outside of political science may be applied toward the degree with the advisor's approval, and up to 9 hours of graduate credit earned at other universities may be transferred into the program with the approval of the departmental Graduate Studies Committee. All students must satisfactorily complete at least 60 percent of their course work at the 700 level or above and complete a minimum of 12 hours at the 800 level.

Areas of Concentration

American Politics/Policy Concentration. Students in this concentration pursue advanced study in American politics and public policy. They must complete Pol. S. 580, 701, 703, 856, and either 810 or 835. They must also complete at least 9 credit hours chosen from Pol. S. 540, 551, 552, 560, 700, 760, 821, 814, 851, and 855, or graduate courses in other departments with their advisor's consent.

Comparative/International Politics Concentration. Students in this concentration pursue advanced study in comparative politics and international relations. They must complete Pol. S. 701, 703, 810, 886, and either 580 or 856. They must also complete at least 9 credit hours chosen from Pol. S. 523, 524, 533, 534, and 700, or graduate courses in other departments with their advisor's consent.

Completion Options

Students may complete their degree programs using any one of the following three options:

1. Thesis Option. This option is designed for students planning graduate work beyond the MA degree or careers in research. Students must complete 30 hours for the degree, six of which relate to writing an acceptable thesis (Pol. S. 875-876). Candidates must pass an oral defense of a thesis prospectus and the thesis.

2. Seminar Paper Option. This option requires the student to revise, extend, and orally defend a seminar paper he/she has written in his/her area of concentration under the direction of an advisor with expertise in that area. Students must enroll in Pol. S. 873 when completing this option and satisfactorily complete 33 credit hours of graduate work.

3. Internship Option. This option is for students seeking an intensive, applied learning experience. The MA degree requires 33 hours, up to 6 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 506. Shows how governments in the United States make decisions in the health field, describes the political forces shaping governmental policy in health and analyzes the arguments for and against an increased governmental role in health.

523Q. Government and Politics of Latin America. (3). General education further studies course. An examination of the political institutions and processes that currently exist in the Latin American republics. Emphasizes the social, economic and psychocultural factors affecting these institutions and processes.

524. Politics of Modern China. (3). General education further studies course. Emphasizes study of China's political system since 1919 in terms of non-Western goals and ideas of social organization. Focuses on political integration and political development to minimize internal conflict. Studies political attitudes and political structures. Examines the Communist Party, the role of the government and the social and economic systems and processes. Major aspects include the study of the political system as it is now and the goals China is striving to realize. Some assessment of the development of communism in China. Includes Chinese communism and the ideological heritage; political culture; political leadership; leadership succession; political participation; the Communist Party; political communications and socialization; legal developments; political choices; and major events such as the Hundred Flowers Campaign, Great Leap Forward and the Proletarian Cultural Revolution.


534. Problems in Foreign Policy. (3). General education further studies course. Examines domestic and international political problems associated with U.S. foreign policy.

547. Contemporary Political Theory. (3). General education further studies course. Introduces the radically new ideas that emerged in the last century as a result of Darwin's theory of evolution, the doctrine of historicism and the growth of modern science and explores their impact upon political thought. Although the multiplicity of philosophies makes generalization difficult, most of them draw strength from common sources. Studies philosophers such as Plato, Spinoza, Aristotle, Kant, Marx, Nietzsche and John Dewey. Gives attention to the importance of these new philosophies upon political structures and issues.

551. Public Law. (3). General education further studies course. An analysis of the role of appellate, especially of the U.S. Supreme Court—in the American political system. Emphasizes judicial review of state and federal legislation, the separation of powers, federalism, the taxing power and the commerce clause.
560. The Planning Process. (3). Cross-listed as P. Adm. 560. For students desiring to work in an urban planning agency or who will be involved in planning issues as an administrator at the city, county, state or federal level. Also for students seeking an understanding of the complex process of urban-related life. Examines the role of planning in solving human and environmental problems. Emphasizes the relationship between specialists, citizens, and elected officials as participants in the planning process.

561. Public Management of Human Resources. (3). Cross-listed as P. Adm. 561. Surveys the major areas of management of human resources in the public sector. Includes planning, training, evaluation, and pay promotion policies. Special emphasis on the laws governing public personnel management and on the unique merit, equal employment opportunity, productivity, unionization, and collective bargaining problems found in the public sector.

564. Comparative Public Administration. (3). Cross-listed as P. Adm. 564. Studies the administration of select developed and developing countries emphasizing the various methods and approaches of comparative analysis and the relationships between administrative institutions and their environmental settings.


700. Advanced Directed Readings. (3). Repeatable for credit. Prerequisite: departmental consent.

701. Method and Scope of Political Science. (3). Emphasizes philosophy of science and methodology (as distinguished from method and technique) and exposes students to recent works of methodological import in the various subfields within the discipline. Prerequisite: departmental consent.

703. Professional Seminar in Political Science. (3). Introduces entering graduate students to the various subfields of the discipline. Should be taken the first or second semester of graduate study.

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 and P. Adm. 760. An analysis of state and local government expenditure and revenue systems with an introduction to state and local financial administration. Prerequisites: Econ. 200Q 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 government. Prerequisite: departmental consent.

821. The Budgetary Process. (3). Cross-listed as P. Adm. 821. 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). An intensive analysis of urban politics emphasizing individual research projects. Prerequisite: departmental consent.

842. Administration in Local Government. (3). Cross-listed as P. Adm. 842. Examination of administrative processes and problems in local government, including the role of the professional chief executive. Examines problems from the following: labor-management relations, program evaluation, county government reform, governmental decentralization, citizen participation, grant-in-aid programs, interlocal cooperation, affirmative action requirements, and services contracting. Prerequisite: Pol. S. 317.

845. Seminar in Political Theory. (3). Detailed study of the relevant works of a major political philosopher and his/her contribution to contemporary thought. Prerequisite: departmental consent.

851. Seminar in Public Law and Judicial Behavior. (3). Analysis of special problems in and approaches to the study of legal systems. Emphasizes developing awareness of research in the field. Prerequisite: departmental consent.

855. Seminar in Public Finance Systems. (3). Cross-listed as P. Adm. 855. An analytical study of selected topics in the politics and administration of revenue, expenditure, and borrowing policies of governmental organizations. Prerequisite: departmental consent.

856. Seminar in American Politics and Institutions. (3). Analytical study of selected topics in American political behavior emphasizing individual research. Repeatable for credit when content differs substantially. Prerequisite: departmental consent.

873. Seminar Paper Option. (3). Requires students to extensively revise a seminar paper they wrote within their area of emphasis. Paper is written under the direction of a faculty member and orally defended before a committee of three or more faculty, including a chairperson. Prerequisite: departmental approval.

874. Internship. (0-6). S/U grade only. An intensive applied learning experience supervised by a University department or committee. To receive credit, a student must secure the approval of a written report from his/ her own department. Prerequisite: departmental consent.

875. Research Design. (3). S/U grade only. Requires the development of a research design for the thesis. The design must be submitted to a departmental committee for evaluation and approval. Prerequisite: departmental consent.

876. Thesis. (1-3).

Psychology
Graduate Faculty
Professors: Charles A. Burdsal, Jr. (chairperson), Darwin Dorr, Gary Greenberg (graduate coordinator), Charles Halcomb, Gregory J. Melser, James J. Snyder

Associate Professors: Robert K. Knapp, Donald W. Nance, Ersie R. Shore, Marilyn L. Turner, Robert D. Zettle

Assistant Professors: Paul D. Ackerman, Alex Chaparro, Darryl G. Humphrey, M. James Klingsporn, Rhonda K. Lewis, Louis J. Medvene

Degrees Offered
The psychology department offers courses of study leading to the Doctor of Philosophy in Human Factors Psychology and Community/Clinical Psychology.

Admission Requirements
For all students: Appropriate applications for admission should be filed with the dean of the Graduate School and the psychology department by February 1 (community/clinical) or March 1 (human factors) for enrollment the following fall. In addition to the usual application information, the following are required: (1) four letters of reference from people acquainted with the applicant’s academic background and potential; (2) a brief autobiographical statement describing particular interests, experiences, and goals related to academic and professional work in psychology; and (3) scores on the Graduate Record Exam (GRE: verbal and quantitative). Applicants are evaluated with respect to (1) undergraduate grade point average; (2) amount, type, and scope of undergraduate preparation; (3) reference letters; and (4) GRE scores. Applicants are
informed of admission or rejection by approximately April 1. Applications received after February 1 and March 1 are acted on periodically until fall enrollment, with acceptances depending upon the department's graduate teaching capacity.

Prerequisites
Regardless of the program to which the student is applying, for full graduate standing the student must have undergraduate courses in general psychology, psychological statistics, experimental psychology, and systems/theories or history of psychology. Additional program requirements are:

**Human Factors:** Applicants for this program are expected to have interdisciplinary strengths in the sciences, mathematics, computer technology, and related fields.

**Community/Clinical:** Applicants for this program are expected to have interdisciplinary strengths in the social sciences, health, and related fields.

Important: For both the community/c clinical and human factors programs, interested students who are not psychology majors or who lack specific prerequisites may be provisionally accepted with an opportunity to make up deficiencies.

Degree Requirements
Students should be aware of the Graduate School's time limit for completing doctoral degree programs. The psychology department expects all degree-bound students to make satisfactory progress toward the completion of their degree programs. Students in both doctoral programs must complete the following foundational courses: Biological and Philosophical Foundations of Psychology, Cognitive/Learning Foundations of Behavior, Personality and Individual Differences, Social/Developmental Foundations of Behavior, Advanced Research Methods I and II.

**Human Factors:** The following additional courses are required for students enrolled in the human factors doctoral degree program: Seminar in Human Factors Psychology, Aerospace Psychology, Psychological Principles of Human Factors, and Seminar in Software Psychology. Each student must take 24 hours of elective courses, 12 of which will be outside the human factors program, selected in consultation with his or her advisor. Students must complete a Research Internship of three hours per semester over a period of two semesters for a total of six hours and must enroll in Graduate Research each semester for a total of 16-18 credit hours.

**Community/Clinical:** The following additional courses are required for each student enrolled in the community/clinical doctoral degree program: Advanced Abnormal Psychology, Applied Research Methods in Community Settings, Seminar in Cognitive-Behavioral Assessment, Seminar in Cognitive-Behavioral Therapy, Seminar in Community and Organizational Intervention, Seminar in Community-Clinical Psychology I and II, Seminar in Prevention. Each student will enroll in three semesters each of the Practicum in Clinical and in Community Psychology.

Students in both programs must complete a predoctoral research program before admission to doctoral candidacy. Students will take a comprehensive examination prior to acceptance for doctoral candidacy and the onset of data collection for the dissertation.

All doctoral degree students are required to complete a dissertation with enrollments in Psy. 910. The dissertation will ordinarily be a major research project which must be preceded by approval of a formal written proposal by the student’s dissertation committee. In addition to regular course examinations, all students must pass an oral examination based on their dissertation.

Courses for Graduate/Undergraduate Credit

**502Q.** Comparative Psychology. (3). Compares and contrasts psychological and ethological analyses of behavior. Stresses the evolution and development of behavior. Includes a critical analysis of the instinct and sociobiological interpretations of behavior. Field trips supplement lectures. Prerequisite: 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). General education further studies course. A survey of the primates (including humans) and their behavior. Includes principles of evolution and taxonomy, the transition to homo sapiens, the evolution of behavior, the development of language, learning in the primates and the development of behavior. Prerequisite: Psy. 111Q.

**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 lifestyle and behavior in relation to health and illness. Prerequisite: Psy. 111Q.

**516.** Drugs and Human Behavior. (3). General education further studies course. A survey of the actions and effects of use of legal and illegal psychoactive drugs, and of the use of prescription drugs in the treatment of psychological disorders. Details social-cultural, personal and situational determinants and consequences of drug use and abuse. Prerequisite: Psy. 111Q.

**522.** Biological Psychology. (3). General education further studies course. A review of the biological foundations of behavior. Includes the evolutionary basis of behavior, behavior genetics, a critical analysis of brain-behavior relationships, the role of hormones in behavior and neurochemical correlates of behavior. Prerequisite: 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). General education further studies course. Cross-listed as Ling. 545. Survey of psychological, linguistic and informational analyses of language. Includes the performance-competence distinction, child development of speech, animal communication systems and the relation of language to thought. Prerequisite: Psy. 111Q.

**534.** Psychology of Women. (3). General education issues and perspectives course. 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. Prerequisites: Psy. 111Q and instructor's consent.

**544.** Abnormal Psychology. (3). An introductory survey of abnormalities of behavior. Examines definitions, causes, types and classifications of abnormal behavior. Gives attention to various theories of abnormality, research evidence and various methods of diagnosis and treatment. Presents hypotheses regarding prevention of abnormality. Prerequisite: Psy. 324Q.

**546.** Practicum in Applied Behavior Analysis and Social Learning. (3). 1R. 4L. Placement in local human service agencies for about eight hours a week for 14 weeks. Under supervision,
students afford 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 6) 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 advisor 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.

720. Aerospace Psychology. (3). Exploration of the many roles of scientific psychology in aviation and aerospace science. Surveys the research and literature in areas such as psycho-physiological aspects of flight, environmental effects on human performance in aviation, aircrew skill requirements and training, pilot workload, cockpit control and display systems and aviation safety. Prerequisites: 15 hours of psychology or instructor's consent.

750. Psychology Workshop. (1-3). Specialized instruction, using various formats in selected topics and areas of psychology. Graded S/U.

Courses for Graduate Students Only


Design issues include research planning, validity, quasi vs. experimental designs, prediction vs. explanation and modeling. The associated lab provides basic computer skills for access to the mainframe and some basic training in SPSS-X, SAS and BIOMED statistical routines. Prerequisite: instructor's consent.

811. Advanced Research Methods II. (4). 3R; 3L. Continuation of Psy. 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. 810 and instructor's consent.

812. Biological and Philosophical Foundations of Psychology. (3). Develops the idea that psychology is a biosocial science. Accordingly, exposes the philosophical foundations of science itself before exploring the biological foundations and contextual nature of psychological science. Readings cover biological factors as they pertain to psychology: evolution, genetics, maturation, functional neuroanatomy, physiology. Includes critical reviews of genetic determinism, neural localization, and hemispheric specialization.

813. Cognitive/Learning Foundations of Behavior. (3). Focuses on how human beings learn, maintain and modify behavior, and how cognitive knowledge is acquired, maintained, represented and used. Serves as an integrated resource of the main issues and theoretical questions investigated in the psychology of learning and cognition. Provides a basic understanding of classical and instrumental conditioning, and the cognitive processes of memory, language, speech, thought, decision making and problem solving. Prerequisite: instructor's consent.

814. Personality and Individual Differences. (3). Provides an advanced understanding of the theories and measurement of personality and individual differences. Also discusses the utilization of this information to an applied psychological setting. Prerequisite: instructor's consent.

815. Social and Developmental Foundations of Behavior. (3). Examines basic assumptions, theories and methods in social and 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 attraction, socialization and interpersonal interaction, social roles and contextual roles over the life span. Considers applications of theories and research in social-development psychology to the solution of individual and social problems. Prerequisite: instructor's consent.

820. Seminar in Human Factors. (3). Focuses on a sample of contemporary human factors problems through review of current literature and theory. Content changes as new problems attain prominence internationally but a typical sample might be human factors in the aging population; human factors in airport security and baggage markings; and human factors in third-world industrialization. Prerequisites: completion of 38 hours of Foundations of Psychology doctoral courses; for doctoral students from other disciplines, instructor's consent after an interview.

830. Seminar in Community-Clinical Psychology I. (3). Introduces basic historical conceptual, research, methodological and ethical issues in community-clinical psychology. Examines the responsibilities and roles of psychologists in the promotion of human functioning, reviews models and determinants of human behavior from individual, developmental and ecological/contextual perspectives. Details the reciprocal relationship between research and practical applications of psychological knowledge and the application of that knowledge to human psychosocial problems. Prerequisite: instructor's consent.

831. Seminar in Community-Clinical Psychology II. (3). Introduces methods of assessment and intervention used to promote human functioning in the contexts of primary and 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 theories and methods of intervention, including psychotherapy, consultation, social action and organizational development. Students apply these theories and methods to selected psychosocial problems. Prerequisite: Psy. 830.

840. Seminar in 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, and some aspects of pollution and occupational and psychosocial problems through environmental intervention. Prerequisite Psy. 815.

841. Seminar in Motivation and Emotion. (3). Intensive study of theory and research in motivational and emotional processes. Prerequisite: instructor's consent.

842. Seminar in Psychology of Learning. (3). Intensive study of theory and research in learning processes. Includes the study of principles of individual behavior and some of the variables of which the function as illustrated by respondent and operant conditioning along with some areas of application. Prerequisites: Psy. 302 and instructor's consent.

843. Seminar in Psychotherapy. (3). Provides an in-depth description and critical analysis of various theories and methods of psychotherapy, an examination of the efficacy of these 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.
Regarding program development, internship in community-clinical psychology, including research design issues, provides the doctoral human factors psychology student an opportunity to apply the principles of human factors psychology. Prerequisite: advisor's consent.

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. 813; and instructor's consent after interview for doctoral students from other disciplines.

Seminar in Software Psychology. (3). Intensive study of principles and methods of software engineering (human factors) applies to the design and evaluation of computer software. Topics include research methods, programming as human performance, programming style, software quality evaluation, organizing the programming team, interactive interface issues, and the design of interactive computer systems. Prerequisite: instructor's consent.

Applied Research Methods in Community Settings. (3). An examination of research methods which are used in community settings to develop and evaluate programs. Regarding program development, there is discussion of different data collection strategies used to assess community needs. A variety of topics related to program evaluation are explored including research design issues, developing criteria of merit, and the politicization of program evaluation. Prerequisite: instructor's consent.

Internship in Community-Clinical Psychology. (1-3). Graded S/U only. A planned placement experience in an off-campus setting designed to give the doctoral community-clinical psychology student an opportunity to further develop and apply skills in community-clinical psychology. Repeatable for a maximum of nine credit hours. Prerequisite: advisor's consent.

Practicum in Clinical Psychology. (1-3). Provides supervised practice working in community-based organizations on such tasks as need assessment, program development, and program evaluation. Organizational settings may be in the areas of mental health, health, and education. Services may be prevention-oriented. Repeatable for credit. Graded S/U only. Prerequisite: instructor's consent.

Seminar in Cognitive-Behavioral Assessment. (4). Surveys issues of reliability and validity, provides description, critical analysis and practice in clinical use of such psychological assessment methods as interviewing, observation, self-report and standardized intelligence and personality tests. Focuses upon comprehensive clinical assessment, including integration and reporting of assessment data for treatment planning. Prerequisite: instructor's consent.

Seminar in Cognitive-Behavior Therapy. (3). Seminar in Motor and Sensory Processes. (3). 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.

Seminar in Community and Organizational Intervention. (3). Focuses on the development and/or change of community-based programs and organizations and the implementation and funding of community-based programs. Explores theoretical and conceptual basis of these interventions, drawing on material from community psychology, clinical psychology, public health, health psychology, and applied social psychology. Intended to help prepare students to become involved as professionals in community-based health or mental health interventions in a variety of roles: as program developers, proposal writers, program implementers, and program managers. Prerequisite: instructor's consent.

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.

Development of Abnormal Behavior. (3). A consideration of the descriptive characteristics of abnormal behavior; a developmental perspective. Considers the ecological, social-environmental, personal and genetic-biological contexts and causes of such behavior. Discusses implications for preventative and clinical interventions. Prerequisite: instructor's consent.

Seminar in Perception. (3). Intensive study in theory and research in perceptual processes. Prerequisites: Psy. 332, or equivalent, and instructor's consent.

Public Administration
See Urban and Public Affairs, Hugo Wall School of.
Religion
Graduate Faculty
Associate Professor: Stuart Lasine

Although there is no graduate program in religion, the following courses may be taken for graduate credit.

Courses for Graduate/Undergraduate Credit

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.

Russian
See Modern and Classical Languages and Literatures

Spanish
See Modern and Classical Languages and Literatures

Social Work
See Urban and Public Affairs, Hugo Wall School of.

Sociology
Graduate Faculty
Professor: John J. Hartman (graduate coordinator)
Associate Professor: Nancy Brooks
Assistant Professors: Gretchen Hill, Sandra S. Houts, Lingzhi Huang, Ronald R. Matson, Kathleen M. O’Flaherty (chairperson), David W. Wright

Master of Arts

The sociology department offers courses of study leading to the Master of Arts (MA) degree with options for thesis and nonthesis programs, as well as an emphasis in gerontology.

Admission Requirements

Applicants are evaluated for admission with respect to their undergraduate record, Graduate Record Examination scores (optional), and three letters of reference from professors who supervised their undergraduate work. For consideration for admission to degree status, applicants are expected to have at least 15 hours in sociology including courses in social statistics, social theory, and research methods. Specific course prerequisites may be made up after admission by students with otherwise adequate backgrounds. Final recommendation on a candidate’s admission to the MA program in sociology is made to the Graduate School by the graduate coordinator of the Department of Sociology.

Degree Requirements

Students pursuing the MA degree in sociology may follow either a thesis or a nonthesis program.

Thesis Program. Students in the thesis program must take a total of 32 hours, including Soc. 812, Research Methods in Sociology, and 845, Seminar in Sociological Theory, and two 800-level graduate seminars 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. 812, Research Methods in Sociology, and 845, Seminar in Sociological Theory, and two 800-level graduate seminars. Each student must demonstrate skill in a collateral area, such as research or computer programming. Soc. 851, Directed Research, is needed to fulfill this requirement. A total of 60 percent of the 36 hours must be 700 level or above.

Degree Requirements for the MA

With Gerontology Emphasis

Students may complete the MA degree in sociology with an emphasis in social gerontology under either the thesis or nonthesis program as described below. For either program 60 percent of the courses must be 700 level or above.

Thesis Program. Students must complete the sociology core, Geront. 800, and three of the gerontology courses listed below.

Sociology Core Courses

- Soc. 512, Measurement and Analysis ....3
- Soc. (Geron.) 513, Sociology of Aging ....3
- Soc. 812, Research Methods
- Soc. 845, Seminar in Sociological Theory ..................................3
- Soc. 872-876, Thesis* ........................................... 3-6
- Seminar in electives (2 seminars above 800) ...................... 6

Gerontology Courses

- Geront. 800, Seminar I .................. 3
- and three of the following courses
- Geront. (Anthro.) 514, Anthropological Perspectives in Aging ....3
- Geront. (Biol.) 518Q, Biology of Aging .......3
- Geront. (Econ.) 663, Economic Insecurity .................. 3

Geront. 801, Field Research in Gerontology .................. 3

Total .................................................... 36

*Thesis must be aging related.

Nonthesis Program. Students must complete the sociology core, Geront. 800, and four of the gerontology courses listed below.

Sociology Core Courses

- Soc. 512, Measurement and Analysis ....3
- Soc. (Geron.) 513, Sociology of Aging ....3
- Soc. 812, Research Methods
- Soc. 845, Seminar in Sociological Theory ..................................3
- Soc. 851, Directed Research* .................. 3
- Seminar electives (2 seminars above 800) ...................... 6

Gerontology Courses

- Geront. 800, Seminar I .................. 3
- and four of the following courses
- Geront. (Anthro.) 514, Anthropological Perspectives in Aging ....3
- Geront. (Biol.) 518Q, Biology of Aging .......3
- Geront. (Econ.) 663, Economic Insecurity .................. 3
- Geront. 801, Field Research in Gerontology .................. 3

Total .................................................... 36

*Directed research must be aging related.

Examinations

Students electing the thesis program in sociology must pass an oral defense of the thesis.

Courses for Graduate/Undergraduate Credit

501. Sociological Statistics. (3). Generally offered fall semester only. Application of descriptive and inferential statistics to sociological problems. Includes measures of central tendency, dispersion and association, simple linear regression, hypothesis testing and analysis of variance. Prerequisites: Soc. 111Q, Soc. 212 or 312, Math. 111 or 331Q or equivalent.

512. Measurement and Analysis. (3). Generally offered in the spring only. Develops knowledge and understanding of some of the fundamental skills and conceptual tools used in conducting sociological research, including both qualitative and quantitative approaches, through performing selected techniques: problem formulation, data collection, analysis, and presentation of results. Prerequisites: Soc. 111, Soc. 212 or 312, Soc. 301.

513. Sociology of Aging. (3). General education further studies course. Cross-listed as Geront. 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). General education further studies course. 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). General education further studies course. Cross-listed as Wom. S. 516. Analyzes the institutional sources of man's and woman's roles, the source of changes in these roles, the consequent ambiguities and conflicts. Prerequisite: Soc. 111Q.

517. Intimate Relations. (3). General education further studies course. Examines the social dimensions of intimacy including an analysis of intimacy in different types of relationships, i.e. romantic, friendship, marriage. Reviews theory and research in the area with a special focus on the place of intimacy in social interaction. Prerequisite: Soc. 111Q.

520. Family and Aging. (3). Cross-listed as Geron. 520. An analysis of the families and family systems of older people. Special emphasis on demographic and historical changes, loneliness, caring and intergenerational relationships as these relate to the family life of older people. Prerequisites: Geron. 100 or jr. standing.

523. Sociology of Law. (3). General education further studies course. A consideration of the impact of law on society, the role of law in affecting social change, various methods of dispute resolution, and recent research on judicial, legislative, and administrative processes, all with the aim of comparing and evaluating strengths and weaknesses of legal systems, with partial, but not exclusive, emphasis on those societies utilizing the common law. Prerequisite: Soc. 111Q.

527. Violence and Social Change. (3). General education further studies course. 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). General education further studies course. Urban population organization and institutions and programs of city planning. Prerequisite: Soc. 111Q.

537. The Social Consequences of Disability. (3). General education further studies course. 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). General education further studies course. An analysis of social and cultural factors related to physical and mental illness. Also includes the dynamics of communication and role relationships among patients and medical personnel and social research and theory relevant to the health professions. Prerequisite: Soc. 111Q.

539. Juvenile Delinquency. (3). General education further studies course. The factors related to juvenile delinquency and the measures of treatment and prevention. Prerequisite: Soc. 111Q.

540. Criminology. (3). General education further studies course. The extent and nature of criminal behavior and societal reactions to it. Prerequisite: Soc. 111Q.

541. Contemporary Corrections. (3). Historical and contemporary programs for the treatment of offenders viewed as societal reactions to criminal behavior. Prerequisite: Soc. 539 or 540.

545. Sociological Theory. (3). Generally offered fall semester only. A comprehensive survey of sociological theory, spanning both classical and contemporary theorists relevant to the development of sociology. Prerequisites: 9 hours of sociology.

558. Internship. (1-6). Supervises persons involved in internships or placements in the community where credit can be given. Prerequisite: departmental consent.

600. Selected Topics in Sociology. (3). Study in a specialized area of sociology emphasizing student research projects. Includes deviant behavior, political sociology, the family and others. Repeatable for a maximum of six hours credit. Prerequisites: Soc. 111Q, instructor's consent and substantive area course.

651. Directed Research. (3). Gives the student further research skills in an area of special interest. All students are under the direction of a member of the graduate faculty who guides them in developing research skills. Prerequisites: Soc. 512 or equivalent and instructor's consent.

670. Independent Reading. (1-3). For the advanced student capable of doing independent work in an area of special interest. Prerequisites: 15 hours of sociology and instructor's consent.

750. Sociology Workshop. (1-3). Provides specialized instruction using a variable format, in a sociologically relevant subject.

781. Cooperative Education in Sociology. (1-4). 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/MC only.

*Prerequisite may be waived with departmental consent.

Courses for Graduate Students Only

812. Advanced Research Methods. (3). Provides graduate students with practical experience addressing sociological questions with available data. This experience involves deciding on a research topic, developing an appropriate literature review, performing data analysis and presenting a written and oral report of the overall project. Students should develop an understanding of the strengths and limitations of empirical research. Prerequisite: Soc. 512.

815. Seminar on the Family. (3). Review of recent research on the family and the theoretical implications therefor. Prerequisite: Soc. 515 or departmental consent.

820. Seminar in Social Movements. (3). Analysis of the elements in social movements as factors in social and cultural change. Prerequisite: departmental consent.

822. Seminar in Deviant Behavior. (3). In-depth examination of recent theory, methods and research in the area of deviance. Includes implications of future theory development. Prerequisite: departmental consent.

825. Seminar in Organizational Analysis. (3). Exploration of selected problems in organizational theory based on major theoretical and empirical approaches, both classical and contemporary. Prerequisite: departmental consent.

830. Seminar in Stratification and Power Structure. (3). Exploration of selected problems in organizational theory based on major theoretical and empirical approaches, both classical and contemporary. Prerequisite: departmental consent.

834. Seminar in Urban Sociology. (3). Independent research projects in urban sociology. Prerequisite: departmental consent.

845. Seminar in Sociological Theory. (3). Emphasizes contemporary developments in European and American social theory. The perspective is both historical and analytical spanning the 18th, 19th and 20th centuries and concluding with the works of representative contemporary theorists. Prerequisite: Soc. 545 or departmental consent.

847. Seminar in Recent Developments in Sociology. (3). Major issues, new theories, new techniques of research, new areas of research and new applications. Repeatable for credit 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. 812 and instructor's consent.

860. Proseminar—Teaching Sociology. (1). Exposes students to the techniques and roles of the academic role of a sociologist. Prerequisite: graduate student status.

870. Independent Reading. (2-3). Advanced systematic reading in a topical area under the direction of a member of the graduate faculty. Repeatable for credit but not to exceed six hours. Prerequisite: departmental consent.

875-876. Thesis. (3-6).
Urban and Public Affairs, Hugo Wall School of
The Hugo Wall School of Urban and Public Affairs enhances the University's ability to respond to its urban mission through the cooperative efforts of the academic units and centers which comprise the new School. The School, created in 1993, includes academic programs in Administration of Justice, Gerontology, Minority Studies, Public Administration, and Social Work, as well as the Kansas Public Finance Center, a Government and Community Services division, and the Institute for Research on Communities and Crime. The Hugo Wall School provides a quality educational opportunity for students and also functions as a research and service unit that assists with a broader range of needs identified in the community.

Financial Assistance
The Board of Trustees of Wichita State University and the Graduate School offer 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 school's teaching, research, and public service activities.

Administration of Justice
Graduate Faculty
Professors: Dae H. Chang, Paul Cromwell (director, Hugo Wall School of Urban and Public Affairs)
Associate Professors: Ronald G. Iacovetta, Michael Palmiotto
Assistant Professors: Delores Craig-Moreland (graduate coordinator), Andra Katz

Master of Administration of Justice
Admission Requirements
Applicants for the degree program must meet the Graduate School requirements for admission. In addition, the minimum Administration of Justice admission requirements are listed below:

1. Full standing: a grade point average of at least 3.00 based upon the last 60 hours of course work.
2. Probation standing: a grade point average of 2.75 based upon the last 60 hours of course work.

Students may be admitted to nondegree standing Category B if they have a grade point average of 2.25 based upon the last 60 hours of course work.

Applicants must have completed a minimum of 15 hours of work in administration of justice or approved equivalent. Limitations on the number of students admitted to the MAJ degree program each academic year may be established because of constraints imposed by the department's graduate teaching/advising capacity.

Degree Requirements
The MAJ degree requires a minimum of 36 hours, including 21 hours taken in courses numbered 800 or above. All students are required to take AJ 891, 893, 894, 895, 896, and 897. To complete their degree, students must either complete a thesis for 6 hours of credit or pass a comprehensive examination.

It is recommended that MAJ students complete the core requirements prior to enrollment in elective classes. Each core requirement course will be offered once each academic year. Elective courses will be selected in consultation with the student's graduate advisor. Note the restrictions on the following elective hours: there is a maximum of nine hours total in AJ 781, 782, 783, 881, and 882; there is a maximum of six hours total in AJ 781, 881, and 882; and there is a maximum of six hours total in AJ 782 and 783.

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

Courses for Graduate/Undergraduate Credit

593. Crime Causation and Criminal Justice Policy. (3). Introduction to theoretical issues in criminal justice. Primary emphasis is on the etiology of criminal and delinquent activity and the response of the criminal justice system to such behavior. Discusses the significant contributions of outstanding criminologists, as well as elaborating the application of these perspectives to criminal justice agencies. Prerequisites: AJ 191Q and 307.

597. 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 administration of justice. Prerequisites: AJ 191Q and 307.

600. Forensic Anthropology. (3). Cross-listed as Anth. 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. Prerequisites: AJ 191Q, 292, 307, or instructor's consent.

610. Correctional Counseling. (3). Analysis of the role of a correctional counselor. Emphasis is placed on current practices in community-based and institutional correctional counseling. Discusses application of theories of counseling which are widely used in correctional settings, rehabilitative programs, and special needs of offenders. Prerequisites: AJ 191Q, 292, 307, or instructor's consent.

621. Environmental Law. (3). An in-depth analysis of emerging federal, state, and local legislation; judicial decisions; and administrative policy to environmental protection. Explores the roles of the administration of justice and a variety of governmental and nongovernmental protective agencies as related to prevention, investigation, and enforcement processes of environmental protection. Special emphasis on the contribution administration of justice agencies can make toward development and implementation of effective environmental public education and assistance programs. Prerequisites: AJ 191Q and 307 or instructor's consent.

630. Security, Theory, and Practice. (3). Advanced course emphasizing the interrelationships between theories underlying contemporary security practice. Prerequisite: AJ 191Q, 307, 531, or instructor's consent.

641. Forensic Psychiatry. (3). Analysis of the role of psychiatry in the administration of justice process. Introduces the student to concepts and procedures of forensic psychiatry. Prerequisites: AJ 191Q and 307, or instructor's consent.

643. Forensic Science. (3). Analysis of the medical role of prevention, detection, and treatment as related to the administration of justice. Emphasizes medical specialty areas, such as pathology and psychiatry which have significant effect on segments of the administration of justice process. Prerequisites: AJ 191Q and 307 or instructor's consent.

651. Dispute Resolution in Administration of Justice. (3). Analysis of community and individual reactions to agency policy and services. Emphasizes the agency's role as mediator between offenders and victims of crime and between other groups and individuals in conflict. Prerequisites: AJ 191Q and 307 or instructor's consent.

692. Community Policing. (3). Reviews the various models and strategies of community policing. Examines key concepts, such as problem oriented policing, crime prevention, community relations, and empowering the community, and the integration of these concepts into community policing. Prerequisites: AJ 191Q, 292, 307, and 453 or 651 or instructor's consent.

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

782. Workshop in Administration of Justice. (1-3). Prerequisite: instructor's consent.

783. 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: instructor's consent.

Courses for Graduate Students Only

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

655. Seminar on Juvenile Justice. (3). An analysis of the criminal justice process as related to the youthful offender. Emphasizes functional components, such as training of corrections personnel, community coordination for delinquency prevention and control, police-school relations, and ethical, administrative, and operational aspects of juvenile justice agencies.

866. Agency-Community Relations. (3). In-depth analysis of the role of agency administrators in community relations and related public officials in existing community programs. Special emphasis on a multiplicity of approaches for developing new lines of communication between the agency and the community.

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

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

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

891. Judicial Process. (3). The review and analysis of local, state and federal criminal statutes and court decisions as they apply to the administration of justice process.

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

894. Critical Issues. (3). Investigates emergent phenomena in the overall system of criminal justice to demonstrate the pertinence of theory to practice. Includes role conflicts in law enforcement and corrections; police professionalism; the offender as a client for services; and corrections as a setting for research.

895. Policing in America. (3). A study of law enforcement topics including the historical development of policing, the police role, occupational socialization and problems of police work in the United States.

896. Corrections in America. (3). Focuses on analysis and evaluation of contemporary correctional systems in America including both institutional programs, such as prisons and jails and noninstitutional programs which focus on alternatives to incarceration in community settings, such as diversion, probation, parole, halfway houses, work release centers and restitution.

897. Advanced Research Methods in Administration of Justice. (3). Advanced research course; studies the selection and formulation of research problems, research design, hypotheses generation, scale construction, sampling procedures and data analysis and interpretation. Prerequisite: AI 977 or equivalent.

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

Gerontology

Graduate Faculty

Associate Professors: William C. Hays, Ellen Holmes

Instructor: Mary Corrigan

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 University draws upon the biological sciences, psychology, economics, sociology, the health professions, and anthropology.

Master of Arts

The gerontology program offers two options leading to the MA degree, the generalist option and the specialist option. Both options require a minimum of 30 hours for the thesis track and 36 hours for the nonthesis track.

The generalist option is designed for students with little or no previous training in gerontology, among them professionals in such areas as communicative disorders, recreation, physical or occupational therapy, the ministry, counseling, social work, adult education, and mental health, where older people make up a significant and increasing proportion of the client population and where professionals with gerontological training are presently scarce.

The specialist option is designed for students who have undergraduate course work in gerontology. Since employment in the area of aging often demands the combination of knowledge and skills found in a particular discipline such as public administration, social work, or mental health, the specialist option combines graduate course work in gerontology with an emphasis (12 hours) in another department or discipline.

Admission Requirements

In addition to the Graduate School admission requirements, applicants must have a grade point average in their bachelor’s degree of 3.000 (on a 4.000 scale). Students desiring to pursue the generalist option must have an undergraduate degree in an applied or professional area or have work experience with older people. Those who wish to pursue the specialist option must have completed course work in each of the following four areas: biology or physiology of aging, psychology of aging, economics of aging, and sociology of aging. They must have maintained a 3.000 average in these courses. These students also must meet the admission requirements of the department in which the area of specialization is being taken.

Degree Requirements

Students must take certain required core courses, as well as courses in the generalist or specialist option, with a minimum total of 30 hours for the thesis and 36 hours for the nonthesis track.

Core (Required) Courses: All students enrolled in the MA program in gerontology must take the following courses:

Hrs.

Geron. 800, Seminar in Gerontology I ........3
Geron. 801, Field Research in Gerontology ........3
Geron. 802, Social Policy and Aging ........3
Geron. 810, Advanced Gerontology Internship ........5
Thesis (if option selected) ........3
Written comprehensive exams are required of all students who pursue the nonthesis program option.
With the approval of the graduate coordinator and a member of the gerontology faculty, only three hours of Geron. 710 may be required with the thesis option.

**Generalist Option:** In addition to the core courses, students pursuing the generalist option must take the following courses. **Hrs.**

Geron. 715, Adult Development and Aging ..............................................3
Geron. 663, Economic Insecurity ..............................................3
Two of the following three courses: .........6
Geron. 513, Sociology of Aging
Geron. 514, Anthropology of Aging
Geron. 518Q, Biology of Aging

**Elective gerontology courses**: 3-9

**Specialist Option.** In addition to the core courses, students pursuing the specialist option are required to take a minimum of 12 hours offered by the department in the area of specialization. These courses must meet the approval of the graduate coordinator or department chairperson in the department of specialization.

The internship and thesis, if the specialist option is selected, must be related both to gerontology and to the area of specialization. The Plan of Study required by the Graduate School must also be approved by the gerontology program and the outside department.

**Gerontology Emphasis**

The gerontology emphasis is a 12- to 15-hour concentrated core in gerontology taken as part of a master's degree program in another department. Students who wish to pursue the gerontology emphasis must fulfill the requirements in the degree granting department as well as the designated gerontology core.

**Courses for Graduate/Undergraduate Credit**

501. Field Experience. (3-6). A supervised field experience in an agency or organization planning or providing services to older people, individually designed to enhance each student's skills and knowledge of the aging service network. Repeatable for six hours credit. Prerequisite: 12 hours of gerontology credit and instructor's consent.

512. Issues in Minority Aging. (3). Cross-listed as Min. S. 512. Addresses the needs and interests of students who are interested in providing services to the minority elderly, exploring the 'issues' of concern to minority elderly, becoming familiar with the rights of older/minority Americans, learning the legal procedures for resolving specific problems of minority elderly, and offering tried and tested solutions to problems of minority elderly. Prerequisites: Min. S. 100Q, Geron. 100Q, Soc. 111Q or instructor's consent.

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


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

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

520. Family and Aging. (3). Cross-listed as Soc. 520. An analysis of the families and family systems of older people. Special emphasis is placed upon demographic and historical changes, widowhood, caregiving and intergenerational relationships as these relate to the family life of older people. Prerequisite: Geron. 100 or junior standing.

537. The Social Consequences of Disability. (3). Cross-listed as Soc. 537. An ecological survey of the social aspects of disability, showing the impact of social values, institutions and policies upon adults with disabilities. Appropriate for both students of sociology and the service professions. Prerequisite: Soc. 111Q.

550. Selected Topics in Gerontology. (1-6). Study in a specialized area of gerontology with the focus upon professional programs and current issues in the field of aging. Emphasizing knowledge and skills in applied areas of gerontology as they relate to an emerging area of research and application. Repeatable up to 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: 9 hours of gerontology credit or instructor's consent.

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

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. Prerequisites: Geron. 798 or six hours of gerontology.

720. Independent Readings in Gerontology. (1-3). Directed study in a specialized topic in gerontology. Repeatable up to six hours. Prerequisite: 13 hours of gerontology credit and department consent.

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

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

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

**Courses for Graduate Students Only**

800. Seminar in Gerontology I (3). Advanced study of the theories of aging from a multidisciplinary perspective emphasizing social gerontology. Prerequisite: Geron. 798 or 12 hours of gerontology or instructor's consent.

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

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

810. Advanced Gerontology Internship. (3-6). Integrates academic gerontology and practical experience emphasizing application of research findings. Students are assigned to an agency or organization engaged in planning, administering or providing direct services to...
Public Administration

Graduate Faculty
Regents Distinguished Professor of Public Finance: W. Barley Hildreth
Professor: H. Edward Flentje, Joseph P. Piscottte, Samuel J. Yeager
Associate Professors: Mark A. Glaser, Nancy McCarthy Snyder, George M. Platt, John D. Wong
Assistant Professor: Lee Parker

Master of Public Administration

The Master of Public Administration (MPA) degree at Wichita State University is designed to prepare students for professional careers in public and nonprofit 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.

The core curriculum is designed to provide students with advanced study in social sciences, law, and public administration. The program is interdisciplinary in nature and is structured to respond to the unique clientele of an urban university.

Admission 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:

- F. Adm. 625, Computer Applications for Public Policy
- F. Adm. 702, Research Methods in Public Administration
- F. Adm. 710, Scope of Public Administration
- F. Adm. 730, Decision Making: F. Adm. 770, Environment of Public Administration
- Pol. S. 561, Public Management of Human Resources
- Pol. S. /Econ. 760, Local Government Finance

Areas of Specialization. The degree allows students to develop a specialization in one of three areas: 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
- F. Adm. 720, State and Local Government Administration, and at least one of the following:
- P. Adm. 761, State and Local Financial Systems
- P. Adm. 821, Budgetary Process
Elective Courses
Minimum of two of the following courses or other related courses approved by advisor and program coordinator:
P. Adm. 560, Planning 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, Human Resource Selection
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 advisor and program director:
P. Adm. 821, Budgetary Process
P. Adm. 740, Policy Evaluation
P. Adm. 755L, Local Government Law
Acct. 801, Managerial Accounting
Econ. 702, Mathematical Methods in Economics
Econ. 653, Public Finance
Econ. 688, Urban Economics
Fin. 612, Capital Budgeting
Fin. 840, Financial Systems

Policy Analysis
Required Course
P. Adm. 740, Policy Evaluation

Elective Courses
Minimum of two of the following courses or other related courses approved by advisor and program 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. 810, Advanced Research Methods I
Psy. 811, Advanced Research Methods II
Econ. 663, Economic Insecurity
Econ. 831, Econometrics

Internships
Internships are an important part of the MPA Program. Pre-service students are encouraged to take an internship which must last at least nine months. Internship (P. Adm. 890) will carry three hours credit and will include attendance at a monthly seminar. Students opting for an internship also must complete an applied research paper (three hours) which may be based upon an appropriate internship project. Intern positions are remunerative and are awarded on a competitive basis. Although placement cannot be guaranteed, the public administration program of the Hugo Wall School has an excellent placement record.

Financial Assistance
The public administration program of the Hugo Wall School may designate two outstanding graduate assistants as Hugo Wall Fellows. Each fellow receives a stipend in addition to the regular graduate assistantship remuneration. The George Pyle Fellowship, which carries a stipend each semester, is also awarded by the public administration program. Applications for each fellowship are available in the spring.

In addition to the Hugo Wall Fellowships, a number of graduate assistantships are provided from the City of Wichita and Sedgwick County million dollar funds. Recipients receive a stipend for the academic year plus a partial tuition waiver. Graduate assistants work 20 hours per week with faculty in the school’s teaching, research, and public service activities.

Courses for Graduate/Undergraduate Credit

560. The Planning Process. (3) Cross-listed as Pol. S. 560. For students desiring to work in an urban planning agency or who will be involved in planning issues as an administrator at the city, county, state, or federal level. Also for students seeking an understanding of the complex process of urban-related life. Examines the role of planning in solving human and environmental problems. Emphasizes the relationship between specialists, citizens and elected officials as participants in the planning process.

561. Public Management of Human Resources. (3) Cross-listed as Pol. S. 561. Surveys the major areas of management of human resources in the public sector. Includes hiring, training, evaluation and pay promotion policies. Special emphasis on the laws governing public personnel management and on the unique merit, equal employment opportunity, productivity, unionization and collective bargaining problems found in the public sector.

564. Comparative Public Administration. (3) Cross-listed as Pol. S. 564. Studies the administrative system of selected developed and developing countries emphasizing the various methods and approaches of comparative analysis and the relationships between administrative institutions and their environmental settings.


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.

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) 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 in 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.

750. Public Administration Workshops. (1-3). Specialized instruction using variable format in a public administration or urban affairs relevant subject. Repeatable for credit.

775. 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.

760. Local Government Finance. (3) Cross-listed as Econ. 760 and Pol. S. 760. An analysis of state and local government expenditure and
Although a complete graduate program is not available currently in social work, the following courses may apply toward a master's degree.

Courses for Undergraduate/Graduate Credit

500. Social Welfare Policy: Analysis and Evaluation. (3) Develops systematic frameworks for examining factors shaping social policy and programs, evaluating major social welfare programs and alternative designs, and engagement with community organizations and an urban environment. Prerequisites: Pol. S. 121Q or Hist. 132Q, Sc. Wk. 200Q.

502. Social Work Practice: Strategies and Techniques. (4) Introduces the study and practice of interpersonal professional interaction skills within the framework of a social work helping process. Focuses on developing skills in professional observation, communication, interviewing, recording and reporting. Course is didactic as well as interactive and includes an integrated laboratory component which focuses on experiential learning. Required for social work majors. Prerequisite: program admission.

541. Women, Children, and Poverty. (3) Cross-listed as Wom. St. 541. Addresses the problem of poverty among women in the U.S. today and examines existing and proposed public policies designed to alleviate the problem. Explores theoretical models of poverty policy analysis and the role of values in their formulation and implementation. Discusses issues of age, race and family; special attention to poverty among women in Kansas. Prerequisites: 6 hours of social science preferably in women's studies, including Wom. S. 388Q, or instructor's consent.

551. Independent Studies. (1-3) Individual projects for social work students who are capable of doing independent work in areas of special interest. Repeatable for credit not to exceed six hours. Prerequisite: instructor's consent.

560. Personal Human Interaction within Society. (3) Provides a beginning theoretical framework within which the integration of prior knowledge can be made regarding physical, mental and social development of the human being, perspectives on American culture and subcultural variations and their effect on human adaptability in the social environment and the relationship of those entities to beginning professional social work practice. Prerequisites: Six hours from a list of social and behavioral science courses approved by the social work faculty and selected in consultation with a social work 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. Prerequisite: 150. Prerequisite: instructor's consent.

600. Social Welfare Development. (3) Develops social work knowledge and skills to foster innovation and change within human service organizations, in program networks, community dynamics, and in arenas of public policy. Social work models are developed to lessen the magnitude of social problems and advance social justice in urban environments with diverse populations and dynamic resource systems. Prerequisites: Sc. Wk. 200, Pol. S. 121Q or Hist. 132Q.

601. Advanced Social Work Practice. (3) Emphasizes becoming knowledgeable and skillful 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: Sc. Wk. 502 and departmental consent.

602. Practicum I. (4) Placement in community social work agencies for supervised 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. Prerequisites: a grade of B or better in Sc. Wk. 502 and departmental consent.


605. Practicum II. (3-5) Placement in community social work agencies for supervised direct service assignments emphasizing formulation of appropriate goals. Includes the selection of several social work roles and in-depth development of techniques and skills common to the selected field of social welfare. Prerequisite: Sc. Wk. 602.

610. Topics in Social Work. (1-3) Selected topics in practice, policy, research, and human behavior in the social environment within a selected field of social welfare. This course covers specific topics identified by the department in consultation with majors, groups of community practitioners, and area service institutions. Repeatable. Prerequisite: instructor or departmental consent.

750. Social Work Workshops. (1-5) Specialized instruction using a variable format in a social welfare related subject. Course may be offered together with Sc. Wk. 150. Prerequisite: instructor's consent.

Women's Studies

Graduate Faculty

Associate Professors: Gayle Davis, Carol Konek, Ramona Liera-Schwichtenberg

Dorothea C. Miller (director)

Assistant Professor: Deborah Gordon

Students may earn a master's degree in several areas with an emphasis in...
women's studies. These include curriculum and instruction; counseling, educational, and school psychology; sociology; and cross-cultural communications. Women's studies may be included as one of two or three areas of interest under the MA degree in liberal studies, an individually designed, interdisciplinary graduate program (described in the Fairmount College of Liberal Arts and Sciences, Liberal Studies section of the Graduate Bulletin). In other areas, such as the community/clinical program in psychology, students may orient course electives and thesis research to accommodate an interest in women's studies. The following courses are available for graduate credit.

Courses for Graduate/Undergraduate Credit

531. Women in Early America, 1600-1830. (3). General education further studies course. Traces women's contributions and experiences in building the U.S., from 1600 to the 1830s. Includes both conventional and newly developed methodologies in women's history research.

532. Women and Reform in America, 1830-Present. (3). General education further studies course. Examines the history of women in the U.S. from 1830 to the present. Focuses especially on women's involvement in various social reform activities, efforts which eventually led to women's movement toward equal rights and improved conditions for women.


535. Literary Images of Women: Diverse Voices. (3). Cross-listed as Engl. 535. Explores literature written in English by women of diverse ethnic, racial, class and other backgrounds as well as of varying sexual orientations, ages and degrees of physical ability. Analyses 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. (1-3). Cross-listed as Engl. 536. 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 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, Children, and Poverty. (3). General education issues and perspectives course. Cross-listed as Soc. Wk. 541. Addresses the problem of poverty among women in the U.S. today and examines existing and proposed public policies designed to alleviate the problem. Explores theoretical models of poverty policy analysis and the role of values in their formulation and implementation. Discusses issues of age, race and family; special attention to poverty among Kansas families. Prerequisites: 6 hours of social science preferably in women's studies, including Wom. S. 287Q.

542. Women in Other Cultures. (3). Cross-listed as Anthr. 542.

543. Women and Health. (3). Cross-listed as Nurs. 543. Examines the historical development of 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.

586. Gender, Race, and Knowledge. (3). Examines the impact of gender and race on knowledge (understanding of objects, people, events, and activities). Assumes that gender, race, and knowledge are socially constructed categories. Concerned with science as a practice of representation. Focuses on the "white masculinist" ideas or beliefs that motivate and affect the practice of academic disciplines. Consider: What is the relationship between the making of masculinity and femininity and science? How are gender and race woven into science and social science and with what results? Does the entrance of white women and people of color into the sciences and humanities change how they are practiced? Do they produce significantly different understanding about the world? Central premise is that all knowledge emerges from some type of love or passion. What types of passion produce knowers, knowing, and the known?

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

Courses for Graduate Students Only

870. Directed Readings. (2-3). For graduate students to pursue research in areas not normally covered in course work. Repeatable for credit with departmental consent. Prerequisite: instructor's consent.

880. Seminar in Women's Studies. (3). Intensive study of selected women's studies topics. Seminar discussion, reports and research project. Previous topics include Advanced Theories of Feminism and Contemporary Women's Fiction. Repeatable for credit with departmental consent. Prerequisite instructor's consent.

The following abbreviations are used in the course descriptions: R stands for lecture and L for laboratory. For example, 48; 2L means four hours of lecture and two hours of lab.
Graduate Faculty 1996-97

Full Membership

Date or dates following title refer to time of initial and successive appointments. Faculty listed have academic rank.


Alexander, David R., Professor and Chairperson, Physics, and Executive Director, Lake Afton Public Observatory (1971). BS, Kansas State University, 1967; AM, Indiana University, 1968; PhD, 1971.

Alage, Suad, Professor, Computer Science (1993). BS, University of Sarajevo, 1978; MS, University of Massachusetts, 1972; PhD, 1974.

Alley, Robert D., Professor, Curriculum and Instruction (1967). BS, Iowa State University, 1957; ME, University of Montana, 1960; EdD, Arizona State University, 1967.

Anderson, Peggy J., Assistant Professor, Curriculum and Instruction (1993). BS, Emporia State University, 1967; MA, University of Kansas, 1979; PhD, Wichita State University, 1993.

Armstrong, Richard N., Assistant Professor, Elliott School of Communication (1987). BA, Southern Utah State College, 1972; MA, Brigham Young University, 1974; PhD, Bowling Green State University, 1978.

Bagal, Rajiv, Associate Professor and Graduate Coordinator, Computer Science (1990). MS, Birla Institute of Technology and Science, 1983; MS, University of Victoria, 1987; PhD, 1990.


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, Administration, Counseling, Educational, and School Psychology (1985). BA, Northern Michigan University, 1960; MS, Utah State University, 1979; EdD, Boston University, 1983.


Ballenger, Marcus T., Professor, Curriculum and Instruction and Associate Dean, Education (1970). BSE, North Texas State University, 1959; MEd, Texas Tech University, 1963; EdD, 1970.


Baleman, Morita M. Associate Professor, Finance, Real Estate, and Decision Sciences (1966). BSME, University of South Carolina, 1946; MS, University of North Carolina, 1950; PhD, Oklahoma State University, 1967.

Baughman, Margaret, Assistant Professor, English (1993). BA, University of Virginia, 1979; MS, Northwestern University, Evanston, 1980; MFA, City University of New York, Brooklyn College, 1989.


Belt, John A., Associate Professor, Management (1971). BA, University of Southern California, 1966; PhD, Texas Tech University, 1971.


Bischoff, William, Associate Professor and Chairperson, Biology (1988). BS, DePauw University, 1979; MS, Northwestern University, 1982; PhD, 1985.

Blakeslee, Donald J., Associate Professor, Anthropology (1976). BA, University of Nevada, 1969; MA, 1971; PhD, University of Wisconsin-Milwaukee, 1975.

Blocher, Larry R., Associate Professor, School of Music (1995). BM, Morehead State University, 1975; MME, 1977; PhD, Florida State University, 1986.

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.


Brady, Stephen W., Associate Professor, Mathematics and Statistics, and College Algebra Program Director (1967). AB, Indiana University, 1963; AM, 1965; PhD, 1968.

Bravo-Elizondo, Pedro, Professor, Modern and Classical Languages and Literatures (1975). Universidad Tecnica del Estado, Chile, 1957; MA, Education, Catholic University, Valparaiso, Chile, 1964; MA, University of Iowa, 1971; PhD, 1974.

Britton, Clark V., Jr., Professor, School of Art and Design (1957). BAA, Auburn University, 1952; MAA, 1955.

Brooks, Christopher K., Associate 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.


Foster, Mary Sue, Associate Professor, School of Art and Design (1966). BSE, University of Kansas, 1961; MSE, 1963; MFA, 1971.


Full, 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, Administration, Counseling, Educational, and School Psychology (1990). BS, Bowie State University, 1972; MA, George Mason University, 1976; PhD, Vanderbilt University, 1980.

Gaunt, Philip, Professor and Director, Elliott School of Communication (1990). BA, Reading University, U.K., 1959; MA, Indiana University, 1968; PhD, 1989.

Gibson, George, Professor, School of Music (1967, 1980). BM, University of Miami, 1956; MM, University of Texas, 1959; DMA, University of Southern California, 1971.

Glaser, Mark A., Associate Professor and Director, Institute for Crime Prevention, Hugo Wall School of Public and Urban Affairs (1994). BBA, Wichita State University, 1970; MUA, 1974; PhD, University of Texas-Arlington, 1981.


Glenn-Lewin, David, Professor and Dean, Liberal Arts and Sciences (1994). AB, Knox College, 1965; PhD, Cornell University, 1972.


Goldstein, Karen, Assistant Professor, Public Health Science (1995). BA, American University, 1967; MPh, Columbia University, School of Public Health, 1986; PhD, University of Illinois at Champaign-Urbana, 1993.


Goodell, Phillips W., Associate Professor, Marketing and Entrepreneurship (1986). AB, Princeton University, 1953; MBA, Stanford University, 1957; PhD, Texas Tech University, 1987.

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.


Greysam, Mahesh S., Professor, Mechanical Engineering (1969). BSC, University of Allahabad, India, 1953, BS, University of California at Berkeley, 1957; MS, 1959; PhD, 1962; Licensed Professional Engineer-Kansas.

Gries, John C., Associate Professor, Geology (1971). BS, University of Wyoming, 1962; MS, 1965; PhD, University of Texas, 1970.


Gythiel, Anthony P., Professor, History (1971). Diplome d'Humanites, St. Stanislas Popperinge, Belgium, 1950; BPh, Maison de Philosophie, Belgium, 1953; MA in Theology, Universite de Louvain, Belgium, 1957; MA, University of Detroit, 1966; PhD, 1971.

Hagood, Thomas, Assistant Professor and Director of Dance, School of Performing Arts (1994). BS, State University of New York-Brockport, 1978; MA, University of Utah, 1984; PhD, University of Wisconsin-Madison, 1990.

Halcomb, Charles G., Professor, Psychology (1990). BA, Oklahoma Baptist University, 1958; PhD, Baylor University, 1964.

Hamdeh, Hussein, Associate Professor, Physics (1989). BS, Lebanese University, 1978; MS, Northeastern University, 1980; PhD, 1986.

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; MSBSEE, South Dakota School of Mines and Technology, 1965; PhD, University of Missouri, 1967. Licensed Professional Engineer-Kansas.

Kabakama, Daisy, Assistant Professor, Hugo Wall School of Public and Urban Affairs, Minority Studies Program (1994). BA, Makerere University, Uganda, 1975; MA, Iowa State University, 1983; PhD, 1988.

Kaiser, Mark, Assistant Professor, Industrial and Manufacturing Engineering (1996). BS, Purdue University, 1985; MS, 1988; PhD, 1991.

Kahol, Pawann, Associate Professor, Physics (1988). BS, Panjab University, India, 1979; MS, 1974; PhD, 1979.

Kear, Dennis J., Professor and Chairperson, Curriculum and Instruction, and Associate Dean, Teacher Education (1978). BSE, Emporia State University, 1970; MSE, 1975; PhD, Arizona State University, 1978.


Kelley, James W., Associate Professor and Dean, University College (1968). BS, Oregon State University, 1964; MA, University of Denver, 1966; PhD, 1970.

Khalil, Salah, Assistant Professor, Arab Gulf Center for Petroleum Studies (1965). University of Tripoli, Lebanon, 1967; MA, University of Houston, 1970; PhD, University of Texas at Austin, 1972.

Kling, Donald, Professor, Psychology (1966). AB, University of Minnesota, 1957; MA, University of Kansas, 1965; PhD, 1972.

Klingsporn, M. James, Assistant Professor, Psychology (1965). AB, University of Nebraska, 1957; MA, 1962; PhD, 1965.

Klunder, Willard Carl, Assistant Professor, History (1986). BA, Saint Olaf College, 1969; AM, University of Illinois, Urbana-Champaign, 1972; PhD, 1981.

Knauff, Robert K., Associate Professor, Psychology (1961). BA, Kent State University, 1954; MA, 1956; PhD, Michigan State University, 1960.

Koert, David N., Assistant Professor, Mechanical Engineering (1993). BSME, Villanova University, 1986; MSME, Drexel University, 1984; PhD, 1990.

Konek, Carol W., Associate Professor, Women's Studies, and Associate Dean, Liberal Arts and Sciences (1969). BS, University of Kansas, 1961; MA, Wichita State University, 1968; PhD, University of Oklahoma, 1977.


Kruger, Susan F., Associate Professor, School of Nursing (1975). BA, Tabor College, 1970; MED, Wichita State University, 1975; MN, 1978; EdS, 1982; PhD, Kansas State University, 1987.


Lancaster, Kirk E., Associate Professor, Electrical Engineering (1993). BSEE, National Taiwan University, 1975; MSE, 1978; PhD, University of Michigan, 1984.


Larsen, Pamela, Assistant Professor and Director of Undergraduate Program, School of Nursing (1995). BS, Fort Hays State University, 1969; MS, University of Colorado-Denver, 1984; PhD, University of Northern Colorado, 1989.


Leavitt, Wendell W., Professor and Chairperson, Biological Sciences (1989). AB, Dartmouth College, 1939; MS, University of New Hampshire, 1941; PhD, 1963.


Lengnick-Hall, Cynthia A., Professor, Management (1990). BA, University of California-Los Angeles, 1970; MBA, 1976; PhD, University of Texas at Austin, 1981.

Lengnick-Hall, Mark L., Associate Professor, Management (1990). BBA, University of Texas at Austin, 1975; MBA, 1980; PhD, Purdue University, 1988.


Levi, Donald, Professor and Kansas Chair, Real Estate and Land Use Economics, Finance, Real Estate, and Decision Sciences (1980). BS, University of Missouri, 1964; JD, 1966; PhD, Washington State University, 1974.


Loper, Gerald D., Jr., Associate Vice President for Research, Director of the Office for Research Administration, and Associate Professor, Physics (1964). BA, Wichita State University, 1959; MS, Oklahoma State University, 1962; PhD, 1964.


Lydy, Michael J., Assistant Professor, Biological Sciences (1994). BA, Wittenberg University, 1984; PhD, Ohio State University, 1990.

Ma, Daowei, Associate Professor, Mathematics and Statistics (1993). MS, Wuhan University, China, 1982; PhD, Washington University-St. Louis, 1990.

Malzahn, Don E., Professor, Industrial and Manufacturing Engineering (1973). BS, Oklahoma State University, 1968; MS, 1969; PhD, 1975.

Mandt, A.J. (Jay), Associate Professor, Philosophy, and Director, Emory Lindquist Honors Program (1976). BA, Trinity College, 1972; MA, Vanderbilt University, 1974; PhD, 1978.


Martin, Charles L., Associate Professor, Marketing and Entrepreneurship (1985). BBA, West Texas State University, 1981; MBA, 1982; PhD, Texas A&M University, 1986.

Mathis, Julie A., Associate Professor, Mechanical Engineering (1985), BSEE, Northern Arizona University, 1979; MSEE, University of New Orleans, 1980; PhD, Louisiana State University, 1989, Licensed Professional Engineer-Louisiana and Kansas.


May, Phillip T., Professor, School of Accountancy (1984). BA, Lawrence University, 1957; MBA, Indiana University, 1959; PhD, University of Wisconsin, 1966. CPA-Wisconsin.


Mccormick, B. Jack, Professor, Chemistry (1979), BS, West Texas State University, 1959; Ph.D, Oklahoma State University, 1962.

McDonald, J. David, Assistant Professor, Biological Sciences (1992). BS, Kansas State University, 1983; PhD, 1988.

McHugh, Mary L., Associate Professor, School of Nursing (1993). BSN, Wichita State University, 1973; MS, University of Michigan, 1978; PhD, 1987.


Miller, Dorothy C., Associate Professor and Director, Women's Studies and Religion (1989). BA, University of Pennsylvania, 1967; MS, Columbia University, 1969; DSW, 1981.


Miller, Lori K., Associate Professor, Physical Education (1996). BS, Emporia State University, 1984; PhD, Texas A&M University, 1986; MBA, University of Louisville, 1993; Ed.D, East Texas State University, 1989.


Murdock, 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.

Murphy, Dwight D., Professor, Finance, Real Estate, and Decision Sciences (1967). BSL, University of Denver, 1957, JD, 1959.


Myose, Roy Y., Assistant Professor, Aerospace Engineering (1992). BSAE, University of California, 1983; MS, California Institute of Technology, 1984; PhD, University of Southern California, 1991.

Nagati, M.Gwad, Associate Professor, Aerospace Engineering (1984). BS, Cairo University, Egypt, 1966; MS, 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 Texas, 1966; M.Ed, 1967; PhD, 1968.

Nie, Xumin, Assistant Professor, Computer Science (1994). BS, Harbin Institute of Technology, China, 1982; MS, Temple University, 1986; PhD, University of North Carolina, 1989.

O’Flaherty, Kathleen, Assistant Professor and Chairperson, Sociology (1983). BA, Clarke College 1979; MA, Miami University, 1980; PhD, Purdue University, 1984.


Palmo, Michael, Associate Professor, Hugo Wall School of Urban and Public Affairs, Administration of Justice Program (1994). BS, Mercy College, 1971; MS, City University of New York, 1974; PhD, University of Pittsburgh, 1980.

Papadakis, Michael, Associate Professor and Boeing Fellow, Aerospace Engineering (1986). BTE, Loughborough University, England, 1979; MS, 1981; PhD, Wichita State University, 1986.


Paske, Gerald H., Professor, Philosophy (1967). BS, University of Wisconsin, 1958; MS, 1962; PhD, 1964.

Patton, Bobby R., Professor, Communication Studies and Vice President, Academic Affairs (1994). BFA, Texas Christian University, 1958; MA, University of Kansas, 1962; PhD, 1966.


Pitetti, Kenneth H., Associate Professor and Chairperson, Public Health Sciences
(1987). BS, University of San Francisco 1968; MS, Ft. Hays State University, 1980; PhD, University of Texas Health Science Center-Dallas, 1986.

Pop, Harold A., Professor, School of Music (1993). BME, Ottawa University, 1959; MME, Indiana University, 1960; MFA, University of Iowa, 1967; PhD, 1969; MHL, Ottawa University, 1979 (Honorary Degree).

Quantic, Diane D., Associate Professor, English, and Director, Writing Program (1973). BA, Kansas State University, 1962; MA, 1966; PhD, 1971.

Rajan, Venkat, Assistant Professor, Industrial and Manufacturing Engineering (1993). B. Tech, Indian Institute of Technology, 1986; MS, Rensselaer Polytechnic Institute, 1987; PhD, Purdue University, 1993.


Reed, Paul E., Associate Professor, School of Music (1966). BM, Drake University, 1956; MM, 1957.


Riordan, Janece, Associate Professor, School of Nursing (1993). Diploma in Nursing, Evangelical Deaconess Hospital, 1955; BS, Kansas Newman College, 1976; MN, Wichita State University, 1979; EdD, Oklahoma State University, 1987.

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.


Romig, Charles A., Associate Professor, Administration, Counseling, Educational, and School Psychology (1985). BA, University of Illinois, 1977; MA, Trinity Evangelical Divinity School, 1979; PhD, Purdue University, 1982.


Roush, Dean, Associate Professor, School of Music (1968). BFA, Ohio University, 1973; MM, Bowling Green State University, 1975; DMA, Ohio State University, 1985.

Sallmann, Dieter, Professor and Chairperson, Modern and Classical Languages and Literatures (1971). BA, Northwestern State University, 1963; MA, Johns Hopkins University, 1965; PhD, Washington University, 1970.


Schmidt, John W., Assistant Professor, Biological Sciences (1993). BS, University of Massachusetts, 1981; PhD, University of Washington, 1987.

Schneider, Philip H., Professor, English (1967). BA, State University of New York College at Oneonta, 1965; MFA, University of Iowa, 1967.


Schuh, John H., Professor, Administration, Counseling, Educational, 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, Communicative Disorders and Sciences (1972). BA, Wichita State University 1964; MA, 1972; PhD, 1978.

Scudds, Roger, Associate Professor and Chairperson, Physical Therapy (1998). MCSP (Diploma), Glasgow Royal Infirmary, School of Physiotherapy, 1969; BS (PT), University of Western Ontario, 1980; MA, 1985; PhD, 1989.

Sethi, Awanti P., Associate Professor, 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 and Chairperson, Political Science (1974). BA, Mississippi State University, 1969; MS, Florida State University, 1970; PhD, 1973.


Smith, Bert L., Professor, Aerospace Engineering (1966). BSME, University of Missouri at Rolla, 1953; MSME, 1960; PhD, Kansas State University, 1966.

Smith, Nicholas E., Professor, School of Music, and Associate Dean, College of Fine Arts (1975). BM, Pittsburg 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, Division of Academic Outreach (1975). BA, College of St. Catherine, 1963; MA, Indiana University, 1966; DA, University of Oregon, 1971.


Soles, David E., Associate Professor and


Spillman, Richard S., Associate Professor and Director of Creative Writing, English (1992). BA, Illinois Wesleyan University, 1968; MA, San Francisco State University, 1972; PhD, State University of New York-Binghamton, 1982.

Steck, James E., Assistant Professor, Mechanical Engineering (1990). BS, University of Missouri at Rolla, 1980; MS, 1984; PhD, 1989.

Steinke, Elaine, Assistant Professor, School of Nursing (1990). BSN, Wichita State University, 1979; MN, 1982; PhD, Kansas State University, 1987.

Stephens, Frances C., Associate Professor, English (1970). BA, Texas A&M University, 1956; MA, University of Texas, 1967; PhD, 1970.

Stevenson, William T.K., Professor, Chemistry (1967). BS, University of Glasgow, Scotland, 1977; PhD, 1980.

Stone, Brian J., Associate Professor, Administration, Counseling, Educational, and School Psychology (1990). BA, Columbia College, 1983; MEd, Brigham Young University, 1985; PhD, Ball State University, 1989.


Sudermann, Frederick, Assistant Professor, Political Science, and Vice President, Research and Governmental and Industrial Relations (1964). BA, Wichita State University, 1958; MA, 1960.

Sullivan, Betty A., Assistant Professor, School of Nursing (1971, 1976, 1986). BSN, University of Kansas, 1958; MEd, Wichita State University, 1970; MN, 1983; PhD, University of Texas at Austin, 1988.


Sutterlin, Peter G., Professor, Geology, and Coordinator, General Education (1983). BS (Hon), McMaster University, 1953; PhD, Northwestern University, 1958.


Taher, Syed M., Associate Professor, Physics (1975). BS, Dacca University, 1964; MS, 1966; MA, California State University, Long Beach, 1970; PhD, Washington State University, 1974.

Talaty, Erach R., Professor, Chemistry (1969). BSc (Honors), Nagpur University, India, 1948; PhD, 1954; PhD, Ohio State University, 1957.


Taylor, M. Alan, Assistant Professor, Biological Sciences (1991). BS, Southwest Missouri State University, 1980; PhD, University of Missouri-Columbia, 1985.

Terrell, William T., Associate Professor, Economics (1967). BS, Oklahoma State University, 1958; MS, 1961; PhD, Vanderbilt University, 1970.

Teshome, Astrat, Associate Professor, Electrical Engineering (1988). BSC (EE), Addis Ababa University, 1965; BSc (Math), 1973; MS, Cornell University, 1976; PhD, 1980.

Thomas, Phillip D., Professor, History (1965, 1984). BA, Baylor University, 1960; MA, University of New Mexico, 1964; PhD, 1965.


Toops, Gary H., Associate Professor, Modern and Classical Languages and Literatures (1988). BA, McGill University, 1975; MA, University of British Columbia, 1979; MA, Yale University, 1983; MPhil, 1982; PhD, 1985.

Trechak, Andrew Jr., Assistant Professor, School of Music (1980). BM, Oberlin Conservatory, 1973; MM, State University of New York-Stony Brook, 1975; DMA, University of Texas-Austin, 1988.


Vincent, Michael, Associate Professor, Modern and Classical Languages and Literatures, and Acting Dean, Graduate School (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.

Vukovich, Matthew D., Assistant Professor, Health and Physical Education (1994). BS, Iowa State University, 1988; MS, 1990; PhD, Ball State University, 1993.

Wahbeck, Phillip G., Professor, Chemistry (1972). BS, University of Illinois, 1954; PhD, 1958.


Webb, Samuel C., Professor, Economics (1966). BS, University of Missouri, 1957; MS, 1959; PhD, University of Kansas, 1968.


Williamson, L. Keith, Assistant Professor, Elliott School of Communication, and Director, Basic Oral Communication Program (1977). BA, Wichita State University, 1965; MTh, Southern Methodist University, 1968; PhD, Temple University, 1975.

Wilson, John H., Professor, Curriculum and Instruction (1968). BA, Wichita State University, 1958; MEd, 1964; EdD, University of Oklahoma, 1967.

Wimalasena, Kandatege, Associate Professor, Chemistry (1989). BS, University of Peradeniya, Sri Lanka, 1977; PhD, Georgia Institute of Technology, 1986.

Wollmer, Debra, Assistant Professor, Biological Sciences (1993). BA, University of California, San Diego, 1982; PhD, University of Washington, 1987.

Wong, John D., Associate Professor, Hugo Wall School of Urban and Public Affairs (1990). BBA, Wichita State University, 1982; MA, 1984; JD, Washburn University, 1986; PhD, Northeastern University, 1990.


Wright, David W., Assistant Professor, Sociology (1993). BA, Indiana University-Purdue University at Indianapolis, 1987; MA, Purdue University, 1989; PhD, 1992.

Yeager, Samuel J., Professor, Hugo Wall School of Urban and Public Affairs (1976). BA, University of Massachusetts, 1967; MLS, George Peabody College, 1968; MS, Troy State University, 1971; MPA, Auburn Uni-
versity, 1972; DPA, University of Georgia, 1976.

Yenne, Vernon L., Associate Professor, School of Music (1966), BME, Indiana University, 1961; MME, 1963; DMA, University of Illinois, 1969.

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., Professor, Chemistry (1966). BA, Friends University, 1966; MS, Wichita State University, 1968; 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 Assistant Chairperson, Psychology (1968). BA, University of Kansas, 1964; MA, 1966; PhD, 1968.


Babich, Judith, Associate Professor, School of Performing Arts (1984). BA, Edgecliff College, 1974; MA, University of Cincinnati, 1976; PhD, University of California, 1981.

Badgett, Barry T., Assistant Professor, School of Art and Design (1993). BFA, Virginia Commonwealth University-Richmond, 1985; MFA, Syracuse University, 1990.


Bees, Julie L, Associate Professor, School of Music (1986). BM, Peabody Conservatory, 1974; DMA, University of Colorado, Boulder, 1982.


Bowman, Barbara E., Assistant Professor, Biological Sciences, and Director, Affirmative Action (1966). BS, University of Utah, 1954; MSEE, Wichita State University, 1966; PhD, University of Kansas, 1979; MLS, Emporia State University, 1995.

Cavarozzi, Joyce P., Associate Professor, School of Performing Arts (1965). BSE, Ohio University, 1953; MA, Ohio State University, 1963.


Ciboski, Kenneth N., Associate Professor, Political Science (1968). BA, University of Kansas, 1961; MA, 1965; PhD, University of Washington, 1971.

Claycomb, Vincentia (Cindy) A., Assistant Professor, Marketing and Entrepreneurship (1994). BBA, Wichita State University, 1979; MBA, 1981.

Close, Dan E., Assistant Professor, Elliott School of Communication (1990). BA, Wichita State University, 1981; MA, 1993.

Conrad, Mary Elaine, Associate Professor and Chairperson, Medical Technology (1980). BS, Kansas Newman College, 1957; MS, Kansas State University, 1974; PhD, 1991.

Deskins, James, Professor and Director, School of Accountancy (1985). BBA, University of Oklahoma, 1960; MBA, 1961; PhD, University of Texas at Austin, 1965. CPA, Oklahoma and Texas.


Distler, Donald A., Associate Professor, Biological Sciences (1963). BA, University of Louisville, 1952; MS, 1958; PhD, University of Kansas, 1966.

Eggers, Jill A., Assistant Professor, School of Art and Design (1993). BFA, Western Michigan University, 1983; MFA, Yale University School of Art, 1991.


Faires, Wesley L., Associate Professor and Chairperson, Communicative Disorders and Sciences (1965). BA, Wichita State University, 1958; MA, 1962; PhD, 1965.

Fowler, Thomas A., Assistant Professor, School of Music (1979). BME, Wichita State University, 1970; MME, 1979.

Fox, L. Raymond, Professor, Biological Sciences (1979). BA, University of California, Santa Barbara, 1963; PhD, 1967.

Frensley, Nathalie J., Assistant Professor, Political Science (1996). BA, University of Texas at Austin, 1982; MA, Syracuse University, 1986; PhD, University of Texas at Austin, 1996.

Gladhart, Stephen C., Assistant Professor, Public Health Sciences, and Assistant Dean, School of Health Sciences, and Interim Director, Master of Public Health Program (1974). BA, Wichita State University, 1969; MA, 1972; EdD, University of Kansas, 1977.


Gregg, Alvin L., Assistant Professor, English (1968). BA, Texas Tech University, 1956; MA, 1957; PhD, University of Texas, 1969.

Hackett, Donald W., Associate Professor, Marketing and Entrepreneurship, and Director, Center for Entrepreneurship (1973). BBA, University of Oklahoma, 1967; MBA, 1970; DBA, 1974.

Hamilton, Cheryl M., Assistant Professor, School of Art and Design (1993). BFA, University of Nebraska-Lincoln, 1970; MS, University of Tennessee-Knoxville, 1977.

Hartman, John J., Professor, Sociology (1968). BS, Southwest Missouri State University, 1961; MS, University of Missouri, 1963; PhD, 1966.


Hogan, Linda, Assistant Professor, Medical Technology (1972). BA, Emporia State University, 1965; MT (ASCP), 1965; BB (ASCP), 1972; MEd, 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.

Hu, Xiaomi, Assistant Professor, Mathematics and Statistics (1994). BS, Jiangxi Polytechnic University, China, 1982; PhD, University of Missouri-Columbia, 1993.

Huang, Lingzhi, Assistant Professor, Sociology (1995). MA, Jinan University, PR
China, 1989; MS, Purdue University-West Lafayette, 1992; PhD, 1995.

Hughes, Linda, Assistant Professor, School of Nursing (1994). BSN, Oklahoma Baptist University, 1972; MSN, Texas Women's University, 1978; PhD, University of Texas-Austin, 1993.


Jackson, John L., Assistant Professor, Hugo Wall School of Public and Urban Affairs, Minority Studies Program (1994). BS, New Hampshire College, 1972; MBA, Suffolk University, 1974; EdD, Western Michigan University, 1993.


Kneill, Thomas R., Assistant Professor, Communicative Disorders and Sciences (1967). AB, Bowdoin College, 1955; MS, Syracuse University, 1960; PhD, University of Iowa, 1972.

Koppelhauer, John H., Associate Professor, Modern and Classical Languages and Literatures, and Associate Dean, Liberal Arts and Sciences (1966, 1972). BA, Wichita State University, 1964; MA, University of Iowa, 1966; PhD, 1974.


Lause, Timothy W., Assistant Professor, Sociology (1978). BS, Central Missouri State University, 1973; MA, 1974; PhD, St. Louis University, 1981.


Leslie, John, Professor, Industrial and Manufacturing Engineering, and Director, Institute for Rehabilitation Services (1993). BS, Wichita State University, 1961; MS, 1964; PhD, Oklahoma State University, 1972.


Li, Qing, Assistant Professor, Economics (1995). BA, East China Normal University, PR China, 1990; MA, University of Houston, 1992; PhD, 1995.


Madhavan, Viswanathan, Assistant Professor, Industrial and Manufacturing Engineering (1996). B Tech, Indian Institute of Technology, Madras, India, 1991; MS, Purdue University, 1993; PhD, 1996.


McCullough, 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 (1966). BA, Willamette University, 1958; MA, University of Oregon, 1964; PhD, 1969.

McMurlin, Mark, Assistant Professor, Industrial and Manufacturing Engineering (1996). BS, University of Idaho, 1989; MS, Virginia Polytechnic Institute and State University, 1992; PhD, 1996.


Nielsen, Carl C., Associate Professor, Finance, Real Estate, and Decision Sciences (1968). BS, Dana College, 1956; MA, University of Nebraska, 1963; PhD, 1966.


Pendse, Ravindra, Assistant Professor, Electrical Engineering (1994). BSEE, Osmania University, 1982; MSEE, Wichita State University, 1985; PhD, 1994.

Porter, Stephen S., Assistant Professor, Marketing (1995). BS, Friends University, 1976; MBA, Wichita State University, 1982; PhD, Oklahoma State University, 1994.

Richardson, William H., Associate Professor and Associate Chairperson, Mathematics and Statistics (1962). AB, California State University, Chico, 1959; MS, Iowa State University, 1961.


Rogers, Ben F., Associate Professor, Philosophy (1966). BA, University of Tennessee, 1958; MAT, Vanderbilt University, 1961; MA, Indiana University, 1966; PhD, 1970.

Rogers-Adkinson, Diana, Assistant Professor, Curriculum and Instruction (1994). BS, Ball State University, 1983; MEd, Kent State University, 1981; PhD, 1994.

Rousseau, Brigitte, Assistant Professor, Modern and Classical Languages and Literatures, and Coordinator of Undergraduate Teaching Education (1990). BA, University of La Sorbonne, 1976; MA, 1981; PhD, University of Kansas 1991.

Sanders, Martha M., Assistant Professor, Management (1991). BA, Catholic University of America, 1980; MA, Ohio State University, 1986; PhD, 1991.


Shawver, Martha M., Assistant Professor, Nursing, and Associate Vice President, Academic Affairs (1975). BSN, Eastern Mennonite College, 1965; MA in Nursing, University of Iowa, 1974; PhD, University of Kansas, 1985.

Sherman, Twyla G., Assistant Professor, Curriculum and Instruction (1965). BA,

Shlaes, Carole, Assistant Professor, Industrial and Manufacturing Engineering (1995). BS, Iowa State University, 1980; JD, Hamline University School of Law, 1985; MS, Portland State University, 1992; PhD, Arizona State University, 1995.

Stanga, John E., Jr., Associate Professor, Political Science (1968). BA, Southeastern Louisiana University, 1961; MA, Louisiana State University, 1963; PhD, University of Wisconsin, 1971.


Thompson, Johnnie, Assistant Professor, Curriculum and Instruction (1989). BS, Brigham Young University, 1982; MA, 1985; PhD, University of Oklahoma, 1992.

Town, Robert L., Associate Professor, School of Music (1965). BM, Eastman School of Music, 1960; MM, Syracuse University, 1962.

Turk, Randall L., Assistant Professor, Administration, Counseling, Educational, and School Psychology (1994). BS, Butler University, 1965; MEd, Seattle University, 1988; PhD, Texas A&M University, 1994.


Vickery, W. Dean, Assistant Professor, Management (1971). BA, Wichita State University, 1954; MS, 1968.

Wells, Candace, Assistant Professor, Curriculum and Instruction (1980). BA, University of Chicago, 1971; MA, University of Missouri, 1973; EdD, Oklahoma State University, 1980.

Widener, Russell D., Assistant Professor, School of Music (1981). BM, Baylor University, 1968; MM, Catholic University, 1972.

Wine, Thomas R., Assistant Professor, School of Music (1995). BAME, Alderson-Broaddus College, Philippines, 1980; MME, Duquesne University, 1982; PhD, Florida State University, 1994.


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 (1968). 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.

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)
Elliot Hall (C)
Engineering Building (D)
Fairmount Towers Commons (A)
Fairmount Towers North (A)
Fairmount Towers South (A)
Fiske Hall (B)
Gaddis Physical Plant Complex (D, E)
Gardner Plaza (C)
Geology Building (C)
Golf Course Maintenance Building (E)
Golf Pro Shop (F)
Grace Memorial Chapel (C)
Grace Wilkie Hall (D)
Henrich Hall (C)
Hesker Center (D)
Hesker Center Storage (D)
Housing Maintenance Shop (A)
Hubbard Hall (C)
Human Resources Center (C)
Intensive English Language Center (A)
Jabara Hall (C)
Jardine Hall (C)
Levitt Arena (B)
Lindquist Hall (C)
Lutheran Student Center (D)
Marcus Center for Continuing Education (F)
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)
Sheldon Coleman Tennis Complex (C)
Tyler Field (E)
University Alumni and Faculty Club (F)
Visual Communications (D)
Wallace Hall (D)
Wheatshocker Apartments (E)
Wiedemann Hall (B)
Wilner Auditorium (B)
Woodman Alumni Center (F)

Fraternities
Alpha Tau Omega (B)
Beta Theta Pi (A)
Delta Upsilon (C)
Kappa Sigma (D)
Phi Delta Theta (E)
Sigma Alpha Epsilon (B)
Sigma Nu (B)
Sigma Phi Epsilon (C)

Sororities
Alpha Phi (D)
Delta Delta Delta (D)
Delta Gamma (D)
Gamma Phi Beta (D)

Wichita State has an ongoing program to provide people with disabilities full access to all buildings; however, some barriers still exist. For more information regarding any campus building's accessibility to the disabled, call the Office of Disability Services, (316) 978-3309.

Visitors to the Wichita State campus should obtain temporary parking permits from the Police Department, open 24 hours a day.

For more information contact the Wichita State University Office of Admissions, 111 Jardine Hall, (316) 978-3085.
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Key to Course Descriptions

Symbols

When two course numbers are joined by a hyphen (-), the first semester is prerequisite to the second; when the numbers have an ampersand (&) between them, the two semesters may be taken in either order. Unless specifically noted otherwise, the first course listed is offered in the fall semester and the second in the spring.

The number of hours of credit for each course is indicated in parentheses following the course title. The number of class meetings per week is normally the same as the number of credit hours. Two hours of laboratory work usually are required for one hour of credit. In courses involving meetings other than lectures, the following symbols are used: R, lecture; L, laboratory; C, conference; D, demonstration; and P, practicum/clinical, with the hours of practicum/clinical per week given in front of the letter (6-8P means six to eight hours of practicum/clinical per week).

Abbreviations

The following abbreviations of academic departments and areas are used in references to courses offered by those departments.

| Acct. | Accounting |
| AE    | Aerospace engineering |
| AJ    | Administration of justice |
| Anthr. | 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 |
| CDS | Communicative disorders and sciences |
| CESP | Counseling, educational, and school psychology |
| Chem. | Chemistry |
| 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 |
| Hist. | History |
| Hnrs. | Honors Program |
| HS | Health sciences |
| HRM | Human Resource Management |
| IE | Industrial engineering |
| LAS-I | Liberal arts interdisciplinary |
| Latin | Latin |
| Legal | Legal assistant |
| Ling. | Linguistics |
| Math. | Mathematics |
| ME | Mechanical engineering |
| Med. T. | Medical technology |
| Mgt. E. | Manufacturing engineering |
| 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 and physical education |
| Phil. | Philosophy |
| Phys. | Physics |
| Pol. S. | Political science |
| Psy. | Psychology |
| PT | Physical therapy |
| PTA | Physical therapist assistant |
| RE | Real estate |
| 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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American Assembly of Collegiate Schools of Business
American Bar Association
American Dental Association
American Physical Therapy Association
American Speech-Language and Hearing Association,
North Central Association of Colleges and Schools
Association of University Programs in Health Administration
Committee on Allied Health Education and Accreditation
Council on Social Work Education
Kansas Board of Emergency Medical Services
Kansas State Board of Nursing
Kansas State Department of Education
National Association of Schools of Dance
National Association of Schools of Music
National Council for Accreditation of Teacher Education
National League of Nursing

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