This Catalog offers information about the academic programs and support services of the University. This Catalog is as accurate as possible, but the information may not remain current for all of the academic year. Circumstances may prompt changes in courses, course content, credit, fees, regulations, semester calendar, curriculum, degrees offered, and other University matters. Such changes authorized by the University apply both to prospective students and to those previously enrolled, unless the latter are specifically exempted.

For information, write to Oklahoma State University, Stillwater, OK 74078, or call (405)744-5000; in Oklahoma, call toll free 1-800-233-5019. Send electronic mail requests to cjd5818@okway.okstate.edu. Publications concerning a number of topics are also available upon request.

OSU information is available via the Internet:
   Admission: www.okstate.edu/registrar/admiss.html
   Catalog: home.okstate.edu/okstate/evp/registrar/coursecat.nsf
   Schedule: www.okstate.edu/registrar/scsinfo.html

The summer and fall class schedule books are usually available in February, and the spring class schedule book in October, and may be obtained from the student academic services offices, or through the mail from the Office of the Registrar.

An application packet and viewbook, with information for prospective students on admission, residence halls, financial aid, scholarship, and the Honors Program, is available from the Office of High School and College Relations.

The OSU Catalog may be obtained by new students, free of charge from their student academic services offices, at the beginning of their first semester at OSU. Other persons may purchase the Catalog through the Student Union Bookstore or through the mail. Reference copies are also available in many administrative offices and libraries, and Oklahoma high schools, junior and community colleges.

To purchase a copy of the OSU Catalog through the mail, send a check or money order for $5.75 for Library Rate or $7.50 for First Class, payable to Oklahoma State University, to Central Mailing Service, Attn: Catalog Requests, Publishing and Printing East, Oklahoma State University, Stillwater, OK 74078.

In addition to these publications, many of OSU's colleges, schools and departments have printed material concerning their programs. Contact the individual departments for specific information.
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University Calendar

Tentative

First Semester 1998-99, Fall 1998 (tentative)
August 10-14, Monday-Friday
Enrollment
August 14, Friday
Last day to cancel enrollment
August 17, Monday
Class work begins
August 21, Friday
Last day to enroll
August 21, Friday
Last day to add (nonrestrictive)
August 28, Friday
Last day to add (restrictive)
August 28, Friday
Last day to file a diploma application
August 28, Friday
Last day to drop a course with no grade and no fees charged for course
August 28, Friday
Last day for 100% refund on withdrawal
September 7, Monday
University holiday
September 25, Friday
Last day to drop a course with an automatic "W"
October 9, Friday
Progress reports for freshmen due from faculty
October 12, 13, Monday, Tuesday
Students’ Fall break (tentative)
October 14, Wednesday
“Monday” classes will meet
October 23, Friday
Last day to drop a course with an assigned "W" or "F"
November 2, Monday
Enrollment for Spring begins
November 25, Wednesday
Last day to withdraw from all courses with assigned "W" or "F"
November 26, Thursday
University holiday begins
November 30, Monday
Class work resumes
November 30 - December 4, Monday-Friday
Pre-finals week
December 7-11, Monday-Friday
Final examinations
December 11, Friday
Class work ends
December 15, Tuesday
Grades due from faculty
December 24-January 1, Thursday
through Friday
University holidays

Winter Intersession
November 30 - December 4, Monday-Friday
Enrollment
December 14, Monday
Intersession begins
December 25, Friday
Intersession ends

Second Semester 1998-99, Spring 1999 (tentative)
January 4-8, Monday-Friday
Enrollment
January 8, Friday
Last day to cancel enrollment
January 11, Monday
Class work begins
January 15, Friday
Last day to enroll
January 15, Friday
Last day to add (nonrestrictive)
January 18, Monday
Student holiday
January 22, Friday
Last day to add (restrictive)
January 22, Friday
Last day to file a diploma application
January 22, Friday
Last day to drop a course with no grade and no fees charged for course
January 22, Friday
Last day for 100% refund on withdrawal
February 19, Friday
Last day to drop a course with an automatic "W"
February 19, Friday
Last day to withdraw from all courses with automatic "W"
March 5, Friday
Progress reports for freshmen due from faculty
March 13, Saturday
Students’ Spring break begins (tentative)
March 22, Monday
Class work resumes
March 22, Monday
Enrollment for Summer and Fall begins
March 26, Friday
Last day to drop a course with an assigned "W" or "F"
April 23, Friday
Last day to withdraw from all courses with assigned "W" or "F"
April 26-30, Monday-Friday
Pre-finals week
May 3-7, Monday-Friday
Final examinations
May 7, Friday
Class work ends
May 8, Saturday
Commencement
May 11, Tuesday
Grades due from faculty

Summer 1999, Regular 8-Week Summer Session (tentative)
May 31, Monday
University holiday
June 3, 4, Thursday, Friday
Enrollment
June 4, Friday
Last day to cancel enrollment
June 7, Monday
Class work begins
June 9, Wednesday
Last day to enroll
June 9, Wednesday
Last day to add (nonrestrictive)
June 11, Friday
Last day to add (restrictive)
June 11, Friday
Last day to file a diploma application
June 11, Friday
Last day to drop a course with no grade and no fees charged for course
June 11, Friday
Last day for 100% refund on withdrawal
June 25, Friday
Last day to drop a course with an automatic "W"
June 25, Friday
Last day to withdraw from all courses with automatic "W"
July 5, Monday
University holiday
July 9, Friday
Last day to drop a course with an assigned "W" or "F"
July 16, Friday
Last day to withdraw from all courses with assigned "W" or "F"
July 30, Friday
Class work ends
August 3, Tuesday
Grades due from faculty
Short summer sessions are usually held for three weeks, May 17-June 4, for four weeks, June 7-July 2, for four weeks, July 6-30.
Proportionate dates for fee refunds, dropping, and withdrawing apply to block and short courses.
First Semester 1999-2000, Fall 1999 (tentative)
August 9-13, Monday-Friday
Enrollment
August 13, Friday
Last day to cancel enrollment
August 16, Monday
Class work begins
August 20, Friday
Last day to enroll
August 20, Friday
Last day to add, (nonrestrictive)
August 27, Friday
Last day to add (restrictive)
August 27, Friday
Last day to file a diploma application
August 27, Friday
Last day to drop a course with no grade and no fees charged for course
August 27, Friday
Last day for 100% refund on withdrawal
September 6, Monday
University holiday
September 24, Friday
Last day to drop a course with an automatic "W"
October 4, 5, Monday, Tuesday
Students’ Fall break (tentative)
October 6, Wednesday
"Monday” classes will meet
October 8, Friday
Progress reports for freshmen due from faculty
October 22, Friday
Last day to drop a course with an assigned “W” or “F”
November 1, Monday
Enrollment for Spring begins
November 24, Wednesday
Last day to withdraw from all courses with assigned “W” or “F”
November 25, Thursday
University holiday begins
November 29, Monday
Class work resumes
November 29-December 3, Monday-Friday
Pre-finals week
December 6-10, Monday-Friday
Final examinations
December 10, Friday
Class work ends
December 14, Tuesday
Grades due from faculty
December 23-31, Thursday through Friday
University holidays
Second Semester 1999-2000, Spring 2000 (tentative)
January 3-7, Monday-Friday
Enrollment
January 7, Friday
Last day to cancel enrollment
January 10, Monday
Class work begins
January 14, Friday
Last day to enroll
January 14, Friday
Last day to add (nonrestrictive)
January 17, Monday
Student holiday
January 21, Friday
Last day to add (restrictive)
January 21, Friday
Last day to file a diploma application
January 21, Friday
Last day to drop a course with no grade and no fees charged for course
January 21, Friday
Last day for 100% refund on withdrawal
February 18, Friday
Last day to drop a course with an automatic “W”
February 18, Friday
Last day to withdraw from all courses with automatic “W”
March 3, Friday
Progress reports for freshmen due from faculty
March 11, Saturday
Students’ Spring break begins (tentative)
March 20, Monday
Class work resumes
March 20, Monday
Enrollment for Summer and Fall begins
March 24, Friday
Last day to drop a course with an assigned “W” or “F”
April 21, Friday
Last day to withdraw from all courses with assigned “W” or “F”
April 24-28, Monday-Friday
Pre-finals week
May 1-5, Monday-Friday
Final examinations
Winter Intersession
November 29-December 3, Monday
Friday
Enrollment
December 13, Monday
Intersession begins
December 24, Friday
Intersession ends
Summer 2000
Regular 8-Week Summer Session (tentative)
May 29, Monday
University holiday
June 1, 2, Thursday, Friday
Enrollment
June 2, Friday
Last day to cancel enrollment
June 5, Monday
Class work begins
June 7, Wednesday
Last day to enroll
June 7, Wednesday
Last day to add (nonrestrictive)
June 9, Friday
Last day to add (restrictive)
June 9, Friday
Last day to file a diploma application
June 9, Friday
Last day to drop a course with no grade and no fees charged for course
June 9, Friday
Last day for 100% refund on withdrawal
June 23, Friday
Last day to drop a course with an automatic “W”
June 23, Friday
Last day to withdraw from all courses with automatic “W”
July 4, Tuesday
University holiday
July 7, Friday
Last day to drop a course with an assigned “W” or “F”
July 14, Friday
Last day to withdraw from all courses with assigned “W” or “F”
July 26, Friday
Class work ends
August 1, Tuesday
Grades due from faculty
Short summer session are usually held for three weeks, May 15-June 2 for four weeks, June 5-30 for four weeks, July 3-28
Proportionate dates for fee refunds, dropping, and withdrawing apply to block and short courses.
The University

Oklahoma State University was founded on December 25, 1890, as Oklahoma Agricultural and Mechanical College, just twenty months after the Land Run of 1889. When the first students assembled for class on December 14, 1891, there were no buildings, no books, and no curriculum.

In 1894, two and one-half years after classes began in local churches, 144 students moved into the first academic building, later known as Old Central, on the southeast corner of campus. In 1896, Oklahoma A&M held its first commencement with six male graduates.

On July 1, 1957, Oklahoma A&M College became Oklahoma State University. Technical branches were established in Okmulgee in 1946 and in Oklahoma City in 1961. (In 1990 their names were changed to OSU-Okmulgee and OSU-Oklahoma City.) In July of 1988, the Oklahoma College of Osteopathic Medicine and Surgery became the College of Osteopathic Medicine of OSU.

OSU is located in Stillwater, a north-central Oklahoma community with a population of more than 36,000. Stillwater is approximately 60 miles from the Tulsa and Oklahoma City metropolitan areas and is readily accessible from other major population centers by interstate highway and air.

The University is coeducational and has an enrollment of approximately 26,000 students on its four campuses. It offers bachelor’s, master’s and doctor’s degrees in a large number of fields, as well as the professional Doctor of Osteopathy and Doctor of Veterinary Medicine degrees. Specialist in Education degrees are also offered in selected fields.

Although OSU is a large, comprehensive university, its size does not minimize the personal attention given to each student. The individual is more than just a number at this university. OSU encourages all students, when they first enroll, to identify the college in which they wish to major. Once the student has identified his or her major department, he or she becomes a very important individual to the faculty and advisers of that department.

Because the average number of students majoring in any one department is less than 150, the student can count on personal attention in a friendly environment.

The largeness of the University has many distinct advantages. It has 1.9 million volumes in the library, modern research laboratories and equipment, excellent physical education, recreation and student union facilities, nationally-recognized residence halls programs, outstanding cultural events, and 36 nationally-affiliated fraternities and sororities, that provide a stimulating educational and social environment.

The Mission

Oklahoma State University is a modern comprehensive land grant university that serves the state, national and international communities by providing its students with exceptional academic experiences, by conducting scholarly research and other creative activities that advance fundamental knowledge, and by disseminating knowledge to the people of Oklahoma and throughout the world.

Athletics Program Mission

Oklahoma State University is committed to providing regionally and nationally competitive athletics programs as an integral part of the overall educational mission of the University. Programs sponsored shall be in compliance with the highest recognized standards of the institution and the athletic governing bodies. Intercollegiate athletics will operate in harmony with the University’s stated mission and be committed to the intellectual, cultural, physical and social development of the student-athletes as individuals. Opportunities for student-athletes shall be provided without discrimination.

Student Profile

OSU has a diverse student body. Students come not only from Oklahoma, but from across the nation and world. Of OSU’s 25,900 students, approximately 19,350 are on the Stillwater campus, (including 800 students at the University Center at Tulsa/Rogers University), 2,300 at Okmulgee and 3,950 at Oklahoma City, and 350 students at the College of Osteopathic Medicine in Tulsa. Eighty percent of the undergraduate enrollment is from Oklahoma; 10 percent from other states; and 10 percent from more than 90 foreign countries. Of the undergraduate population, 53 percent are men and 47 percent are women. Minorities make up 14 percent of the undergraduate student body. The graduation rate of full-time, degree-seeking undergraduate students is 50 percent.

The graduate student enrollment totals 4,300. Of these students, approximately 600 enroll through the University Center at Tulsa. Sixty-six percent are from Oklahoma; 14 percent from other states; and 20 percent from foreign countries. Of the graduate population, 55 percent are men and 45 percent are women. Minorities make up 13 percent of the graduate student body.

An annual report regarding gender equity in OSU’s athletic programs is available upon request from the Athletic Department.

Facilities

The OSU campus is one of exceptional beauty, with modified Georgian style architecture in many of the buildings. The main campus encompasses 840 acres and 200 permanent buildings. These facilities include one of the largest libraries in the entire Southwest, a large student union complete with hotel facilities, the Colvin Physical Education Center, the Bartlett Center for the Studio Arts, and the Seretean Center for the Performing Arts.

Recently three state-of-the-art facilities were constructed that nicely complement the University's campus design and overall mission. Willard Hall was recently rededicated as the new home for the College of Education. In 1995, this 1939-vintage women's dormitory was converted for use by the College in a charming blend of the traditional Georgian architecture that is complemented with stately redesign and furnishings. Willard will continue to reflect the past and create a vision for the future for many years to come. In Fall 1996, the University dedicated the Oklahoma Food and Agricultural Products Research and Technology Center. This vital facility undergirds the essential mission of the College of Agricultural Sciences and Natural Resources by allowing faculty and students the opportunity to investigate the ways and means of adding value to Oklahoma’s raw foodstuffs. The Noble Research Center is a major interdisciplinary research facility that enhances...
collaboration of basic research among various departments throughout the University.

In Fall 1997, the University opened its $31 million Advanced Technology Research Center within the College of Engineering, Architecture and Technology. This multidisciplinary building will further enhance the University's role of being a front runner in basic engineering and related research in a variety of fields that are relevant to Oklahoma, the United States and the world.

OSU is emerging as a leader in network computing resources. Over the past four years, the University has applied the student technology fee in concert with $4.5 million in University resources to create a second-to-none networking system on campus that includes many new computer laboratories, high speed inter-laboratory connectivity, and a virtually seamless interface to the exploding Internet community. It is OSU's belief that the "virtual laboratory" made possible by the nearly boundaryless domain of the Internet will be the research vehicle for the future researcher. During 1998, the University plans to expend nearly a million dollars to increase its fiber optic connectivity on campus.

The Lake Carl Blackwell area, located eight miles west of Stillwater, is also owned by OSU. The area includes approximately 21,655 acres, including the 3,000-acre Lake Carl Blackwell that provides the water supply for OSU. It is also used for research activities, in addition to being a popular regional recreational area.

Additional properties include 1,900 acres in farm land and facilities in Payne County, as well as 2,900 acres and various structures devoted to research stations around the state.

**General Education**

Oklahoma State University is committed to producing graduates who have a depth of knowledge in their major fields of study and a breadth of knowledge outside their majors, the best graduate being one with a mastery of a specific subject matter and a solid and diversified general education. As a result of this commitment to breadth and general education, the following philosophy of general education was adopted in 1978:

The role of General Education at Oklahoma State University is to assist the student in the pursuit of general knowledge and in the development of skills and attitudes conducive to a lifetime of enlightenment. It must stimulate intellectual curiosity, original thought and expression, the capacity for critical analysis and problem solving and the ability to make conscious value judgments consistent with personal needs and the public interest. It must be a blend of the timely and the timeless and assist the graduate to live and function in a rapidly changing, complex and cosmopolitan world.

**Accreditation**

Oklahoma State University is accredited by the North Central Association of Colleges and Secondary Schools, and programs within the colleges are also accredited.

In the **College of Agricultural Sciences and Natural Resources**, the forestry program is accredited by the Society of American Foresters. The landscape architecture program (Bachelor of Landscape Architecture) is accredited by the American Society of Landscape Architects. The landscape contracting program is certified by the Association of Landscape Contractors of America. In addition, the College's teacher education program in agricultural education is accredited by the Oklahoma State Department of Education, and the Oklahoma State Department of Vocational-Technical Education.

In the **College of Arts and Sciences**, the medical technology program is accredited by the National Accrediting Association of Clinical Laboratory Science; the chemistry program is accredited by the American Chemical Society; the School of Journalism and Broadcasting as well as the programs in advertising, broadcast journalism, news editorial, and public relations are accredited by the Accrediting Council on Education in Journalism and Mass Communications; the music department is accredited by the National Association of Schools of Music, and the theater department by the National Association of Schools of Theater. The program in clinical psychology is accredited by the American Psychological Association; the program in communication sciences and disorders is accredited by the American Speech-Language-Hearing Association.

All programs in the **College of Business Administration** are fully accredited by the American Assembly of Collegiate Schools of Business, and the International Association for Management Education. The School of Accounting enjoys separate accreditation by this body.

In the **College of Education**, the aviation programs are accredited by the Federal Aviation Administration, the only nationally-recognized accrediting body for programs in aviation. OSU was the first university in Oklahoma with a program that received this designation. The counseling psychology program is accredited by the American Psychological Association. The leisure studies program is accredited by the National Recreation and Park Association and the American Association for Leisure and Recreation, with accredited options in leisure service management and therapeutic recreation. All professional education programs are accredited by the Oklahoma State Board of Education and the North Central Association of Colleges and Secondary Schools. Business education, as well as technical and industrial education are also accredited by the Oklahoma State Department of Vocational-Technical Education.

In the **College of Engineering, Architecture and Technology**, bachelor's degree programs are accredited by nationally recognized accreditation organizations. Programs in aerospace engineering (an option in mechanical engineering), architectural engineering, biosystems engineering, chemical engineering, civil engineering, electrical engineering, engineering, industrial engineering and management, and mechanical engineering are accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology, Inc (ABET). Programs in construction management technology, electronics technology, and fire protection and safety technology, are accredited by the Technology Accreditation Commission (TAC) of the Accreditation Board for Engineering and Technology, Inc (ABET). The program in architecture is accredited by the National Architectural Accrediting Board (NAAB).

All programs culminating in a B.S. in the **College of Human Environmental Sciences** are accredited by the Council for Accreditation of the American Association of Family and Consumer Sciences. In addition, specialized agencies have approved or accredited specific programs in the College as follows: the Foundation of Interior Design Education Research (FIDER) has accredited the undergraduate interior design program. The Child Development Laboratory is licensed by the state of Oklahoma Department of Human Services. The American Association of Marriage and Family Therapists (AAMFT) has accredited the master's program in marriage and family therapy. The American Dietetic Association (ADA) has approved the Dietetic Internship and the Didactic Program in Dietetics (DPD). The School of Hotel and Restaurant Administration is accredited by the Accreditation Commission for Programs in Hospitality Administration (ACPRA).
The College of Veterinary Medicine is fully accredited by the American Veterinary Medical Association. The Oklahoma Animal Disease Diagnostic Laboratory is accredited by the American Association of Veterinary Laboratory Diagnosticians, and the Boren Veterinary Medical Teaching Hospital is accredited by the American Animal Hospital Association.

Programs at OSU's branch campuses have also received accreditation from national agencies. The OSU College of Osteopathic Medicine is accredited by the Bureau of Professional Education of the American Osteopathic Association.

OSU-Oklahoma City is accredited by the Commission on Institutions of Higher Education of the North Central Association of Colleges and Secondary Schools. In addition, other programs are accredited or certified by the following institutions: Oklahoma Drug and Alcohol Professional Counselors Association, Rehabilitation Services for Deaf and Hearing Impaired, State Health Department for Emergency Medical Technicians, Council on Law Enforcement Education and Training, National League for Nursing, Oklahoma Board of Nursing, American Veterinary Medical Association.

OSU-Okmulgee is accredited by the Commission on Institutions of Higher Education of the North Central Association of Colleges and Secondary Schools. In addition, programs in automotive service technology and automotive body technology are nationally certified by the National Automotive Technicians Education Foundation, Inc. (NATEF). The dietician technology program is accredited by the American Dietetic Association.

Refer to the appropriate college sections in the Catalog for further information on accreditation of specific programs.

Affirmative Action Program
Carolyn Hernandez, Director

OSU has an established policy of providing equal employment and educational opportunity on the basis of merit and without regard to race, ethnicity, color, age, religion, sex, national origin, disability, status as a veteran of the Vietnam Era, or veteran with a disability. All students are provided equal educational opportunity in all phases of the academic program and in all phases of the student life programs. In support of these principles, OSU also has a policy prohibiting sexual harassment in the recruitment, appointment and advancement of employees and in the evaluation of students’ academic performance. OSU is committed to promoting equal opportunity in employment and education for all persons within its constituency in an environment free from sexual harassment. OSU's Affirmative Action Program reflects the University's commitment to equal opportunity and complies with the legal requirements of federal and state equal rights laws.

To adequately meet the needs of protected groups, such as the qualified disabled, self-identification of employees is encouraged so those eligible can be afforded every opportunity to take advantage of the services offered. All information is protected by privacy laws and used only for affirmative action purposes.

Americans with Disabilities Act (ADA) Compliance Program
Ken Chance, Director

Considerable progress has been made to enhance ADA access to OSU programs, services, facilities and grounds. Students with disabilities are encouraged to help with such efforts through the ADA Advisory Council for Individuals with Disabilities. In addition, students may exercise certain ADA appeal "rights" if dissatisfied with satisfaction services or accommodations. OSU is committed to improving the full and nondiscriminatory participation in all aspects of campus life for individuals with disabilities. For more information, contact the Office of ADA Compliance, 315 Student Union.

Entering the University -- Admissions

Gordon L. Reese, Associate Director
Darlene Wilson, Administrative Associate
Paulette Cundiff, Coordinator, Admissions Operations
Linda Peale-Owens, Coordinator, Admissions Programs
Karen Huff, Coordinator, International Admissions
Karen R. Mott, Coordinator, Transfer Credit Evaluations
Carol Dobson, Support Specialist

Application Procedure

When to Apply

It is advisable to apply for admission several months in advance of the first semester in which enrollment is desired. Applications for admission are processed on a "rolling basis." Admission decisions are usually made and applicants notified within a week or two of receipt of all necessary admission documents.

How to Apply

OSU requires a non-refundable application fee of $25 for all applicants. The fee must accompany a student's Application for Admission.

Freshmen. All applicants seeking admission must complete and submit an Application for Admission. A student should request that his or her high school counselor send to the Office of Admissions a current official high school transcript that contains class rank and grade-point average (6th, 7th, or 8th semester). In addition, at the time of application, a request should be made to have the results of the ACT or SAT sent to the Office of Admissions, unless such a request was made at the time of testing.

Transfers. Students who have enrolled in one or more colleges prior to applying to OSU must complete and submit an Application for Admission, and request that the registrar at each college send an official transcript of all work attempted to the Office of Admissions. Students who have earned 23 or fewer hours of college-level credit should also follow the...
procedure outlined above for first-time freshmen.

Readmission. A student who has attended OSU but was not enrolled during the immediate past semester (except the summer session) must file an Application for Readmission. A student who has enrolled in another college or university since last attending OSU, must submit a transcript from each school. Admission status will be determined after an evaluation of all previous work has been made.

Residential Life
All freshmen are required to live on campus their first year. For exceptions, see the "Residential Life" section of the Catalog. The University offers a variety of living and food service arrangements to satisfy most students. A Residence Hall Application is included in the Application Packet and should be submitted early in the senior year of high school to ensure a first-choice assignment. Opportunities abound for transfer students who desire to experience life on campus.

Freshman Admission
One of the goals of Oklahoma's public education system is to provide quality academic preparation for as many college-bound students as possible. In Oklahoma, each year more than 15,000 high school students make the decision to enter college.

Students with the ability to think clearly; to reason, to employ scientific methods, to use language effectively, and to apply knowledge, are those who will become the masters of their destiny in tomorrow's world. These students should pursue an academically-oriented high school curriculum. Such a course of study will help develop the basic academic skills and knowledge needed for success in college. These skills include reading, speaking and listening, mathematics, writing, reasoning and studying. The basic high school subject areas in which these skills can be nurtured are the arts, English, foreign languages, mathematics, natural sciences, and social studies.

Admission Requirements
(Residents and Nonresidents)
For purposes of admission, a freshman student is one who has earned no more than six hours of college-level credit after graduation from high school. (This excludes credits earned concurrently with high school enrollment, and credit earned by examination).

To be admitted in good standing, a student must graduate from an accredited high school or have earned a General Education Diploma (GED), and meet both the performance and curricular requirements listed below. (Accredited high schools are those fully accredited by one of the six regional associations of schools and colleges or by the individual state department of education.)

Performance Requirements. To be admitted in good standing for the 1998-99 academic year, students must satisfy at least one of the following requirements:
1. achieve a four-year high school grade-point average of 3.00 or higher on a 4.00 grading scale, and rank scholastically among the top one-third of their graduating classes; or
2. attain an ACT composite score of 22 or higher or a total SAT composite score of 1010 or higher.

Curricular Requirements. All students beginning college work after July 1, 1997 must have completed the following curricular requirements for admission:

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>English (grammar, composition and literature)</td>
<td>4</td>
</tr>
<tr>
<td>Mathematics (algebra I and above)</td>
<td>2</td>
</tr>
<tr>
<td>History (American history required)</td>
<td>2</td>
</tr>
<tr>
<td>Laboratory science</td>
<td></td>
</tr>
<tr>
<td>Citizenship (economics, geography, government, or non-Western culture)</td>
<td>3</td>
</tr>
<tr>
<td>Other (from any of the above, or foreign language, or computer science)</td>
<td></td>
</tr>
</tbody>
</table>

It is also recommended that students complete at least two units (years) from the areas of fine arts, music, art, drama or speech.

In addition to the requirements listed above, students who have earned any hours of college-level credit must also meet university retention standards to be admitted in good standing.

English Proficiency Requirement. All new applicants for undergraduate study for whom English is a second language are required to present a score of 500 or above on the Test of English as a Foreign Language (TOEFL).

Special Freshman Admission Programs
Alternative Admission. Students whose high school achievement is below the standards specified in the performance requirements and/or who are deficient in no more than one curricular unit, may be eligible for admission under the Alternative Admission Program. Space is limited and only those applicants showing the best promise of success using pre-determined criteria will be admitted. Priority will be given to those who apply by January 15, 1999.

Adult Admission. Adults 21 years of age or older or individuals on active military duty may be admitted, after careful consideration is given in determining the probability of academic success of the student. It is the opinion of Oklahoma State University that factors such as maturity of the individual, job skills and life experiences, motivation, ability to benefit, and access to educational programs should be considered in addition to past academic achievement in determining probability of academic success.

Opportunity Admission Program. Students who have not graduated from high school but whose composite score on the ACT, or combined verbal and mathematics scores on the SAT places them at the 99th percentile, may apply for full admission. Admissibility will depend on test scores, evaluation of maturity level, and whether the experience will be in the best interest of the student, both intellectually and socially.

Home Study or Unaccredited High Schools. An individual who is a graduate of a private, parochial, or other nonpublic high school which is not accredited by a recognized accrediting agency is eligible for admission to the University if:
1. The student has graduated from high school or a home study program, and
2. The student has attained an ACT composite score of 22 or higher, or SAT composite score of 1010 or higher, and
3. The student has satisfied the high school curriculum requirements as certified by the school official or, if home study, the parent.

Correspondence Study Enrollment. Admission to the University is not required for enrollment in correspondence work. However, academic credit for correspondence work will not be applicable toward a degree until the student has been formally admitted to the University and has secured the approval of the appropriate academic officer for such credit.

Non-degree Option. Students who wish to enroll in courses without intending to pursue a degree may be permitted to enroll in up to nine credit hours without satisfying admission requirements. If a student wishes to enroll in additional course work (over the nine hours allowed) he or she will be required to satisfy admission requirements.
Concurrent Enrollment as a High School Student.

1. A senior student enrolled in an accredited Oklahoma high school may, if he or she meets the requirements below, be admitted provisionally as a special student.
   a. He or she must have achieved an ACT composite score of 23 or higher or a total SAT score of 1050 or higher.
   b. He or she must be eligible to complete requirements for graduation from high school (including curricular requirements for college admission) no later than the spring of the senior year, as attested by the high school principal.

2. An eleventh grade student enrolled in an accredited Oklahoma high school may be admitted provisionally as a special student, if he or she meets the requirements below, and the additional requirements listed below.
   a. He or she must have achieved a composite score which places him or her at or above the 90th percentile on the ACT using Oklahoma norms, or
   b. He or she must have a combined verbal and mathematical score on the SAT that places him or her at or above the 90th percentile using national norms.
   c. If the student's ACT or SAT composite score is not at the 90th percentile, as detailed above, but the student's sub-score(s) is at the 90th percentile, he or she may enroll in course work in the discipline with the required score, providing the student does not have a curricular deficiency in the subject area.

3. A student receiving high-school-level instruction at home or from an unaccredited high school may be admitted provisionally as a special student if he or she meets the requirements below:
   a. He or she must be 17 years of age or older and must have achieved an ACT composite score of 23 or higher or a total SAT composite score of 1050 or higher; or
   b. He or she must be 16 years of age and have achieved a composite score which places him or her at or above the 90th percentile on the American College Test (ACT) using Oklahoma norms or whose combined verbal and mathematical score on the Scholastic Aptitude Test (SAT) places him or her at or above the 90th percentile using national norms.
   c. If the student's ACT or SAT composite score is not at the 90th percentile, as detailed above, but the student's sub-score(s) is at the 90th percentile, he or she may enroll in course work in the discipline with the required score, providing the student does not have a curricular deficiency in the subject area.

A high school student admitted as a concurrent student may enroll in a combined number of high school and college courses per semester not to exceed a full-time college work load of 19 semester credit hours. For purposes of calculating work load, one high school credit course is equivalent to three semester credit hours of college work. For calculation of workload for students in "blocked" courses, contact the Office of Admissions.

A student who is otherwise eligible under this policy may enroll in a maximum of nine semester credit hours during a summer session, without the necessity of being concurrently enrolled in high school classes during the summer term. The completion of the high school curricular requirements shall not be required of concurrently enrolled high school students for purposes of admission. (Students may only enroll in curricular areas where the student has met the curricular requirements for college admission.) Concurrently admitted high school students will not be allowed to enroll in any zero-level courses designed to remove high school deficiencies.

Assessment/Course Placement. To help ensure that a student possesses the skills necessary to be successful in college, he or she must obtain a 19 ACT subject score(s) in science reasoning, mathematics, and/or English to enroll in course work in the respective subject area(s). The student must score at 19 or higher in reading to enroll in any other collegiate course(s) outside the subjects of science, mathematics and English.

Once a student is concurrently enrolled at OSU, he or she may continue enrollment provided that during the concurrent enrollment period the student achieves a college grade-point average of 2.00 or higher, and upon graduation from high school meets both the performance and curricular requirements for admission.

Transfer Admission

OSU requires a non-refundable application fee of $25 for all applicants. The fee must accompany a student's Application for Admission.

Oklahoma Residents

For the purpose of determining admission, a transfer student is one who has earned a minimum of seven or more semester hours of college-level credit after graduation from high school. (Students with fewer than seven semester hours of college-level credit are classified as freshmen, and should refer to the "Freshman Admission" section.) Students may transfer to Oklahoma State University from within the state system according to the following criteria:

1. Students who have earned between seven and 23 hours of college-level credit must satisfy both freshman admission requirements (see "Freshman Admission" section) and the retention standards listed below.

2. Students who have earned 24 or more hours of college-level credit must meet high school curricular requirements and the retention standards listed below.

Retention Standards. The standards pertaining to the retention of students pursuing study in undergraduate programs at OSU are:

<table>
<thead>
<tr>
<th>Type of Work Completed</th>
<th>Credits Required</th>
<th>Grade Point Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 through 30 semester hours</td>
<td>1.70</td>
<td></td>
</tr>
<tr>
<td>31 or more semester hours</td>
<td>2.00</td>
<td></td>
</tr>
</tbody>
</table>

Nonresidents of Oklahoma

Students may transfer to Oklahoma State University from outside the state according to the following criteria:

1. Transfer students seeking admission to OSU from colleges or universities accredited by the North Central Association or other regional associations will be given full recognition of their credits earned providing:
   a. They are in good academic standing at the institution from which they are transferring, and
   b. They have a cumulative grade-point average of 2.00 or higher (on a 4.00 scale) for all college-level work attempted.
   c. They meet the curricular requirements listed in the "Freshman Admission" section, or have remediated any curricular deficiency.

2. Transfer students who have earned between seven and 23 hours of college-level credit must satisfy both freshman admission requirements (see "Freshman Admission" section) and the requirements listed in 1. above.

3. Transfer students seeking admission to OSU from colleges or universities not
accredited by a regional association may be given full recognition for their credits earned when the credit is appropriate to the students' degree programs and after OSU has validated the courses. To be admissible, applicants must meet the conditions above.

Pre-engineering (Nonresident of Oklahoma). Engineering is a competitive program; therefore, enrollment preference is given to Oklahoma residents. In addition to the above requirements, a nonresident of Oklahoma applying for admission to pre-engineering must meet requirements determined by the College of Engineering. These requirements may exceed those required for residents of Oklahoma. (See “Admission Requirements” in the “College of Engineering, Architecture and Technology” section.)

Transfer Probation. Any transfer student falling slightly below the admission requirements listed above may be considered for admission on probation.

English Proficiency Requirement. All new applicants for undergraduate study for whom English is a second language are required to present a score of 500 or above on the Test of English as a Foreign Language (TOEFL).

Readmission. A student who has attended OSU but was not enrolled during the immediate past semester (except the summer session) must file an Application for Readmission. A student who has attended another college or university since last attending OSU must submit a transcript of all work attempted after leaving OSU. If the student's grade-point average meets minimum University and department standards, and his or her disciplinary record is satisfactory, he or she will be readmitted to OSU.

International Admission

International students are required to meet academic performance standards which are equivalent to those established for all nonresident applicants.

Application Procedure. For purposes of admission, an international student is defined as "a student who is, or will be, in the United States on a non-immigrant student visa." This specifically refers to the Student (F) and Exchange Visitor (J) visas. All international students are considered nonresident students. The University will process the International Student Application and Financial Guarantee form for undergraduate admission (freshman and transfer) only after all the following items have been submitted:

1. Application for Admission and a fee of U.S. $25.00 made payable to OSU.
2. One official or certified true copy of each academic record with a certified English translation. Students enrolled at U.S. institutions may have certified true copies of their foreign records sent by their current institution. Academic records may comprise one or more of the following:
   a. Secondary school records (yearly marks sheets or transcripts).
   b. Records from each college or university attended (yearly marks sheets or transcripts).
   c. National examination results.
3. An official Test of English as a Foreign Language (TOEFL) score of 500 or above on the examination taken within the last two years.
4. Documented evidence of financial support.

Freshman Admission (International Students). For the purpose of determining admission, a freshman student is one who has earned fewer than seven semester hours of college-level credit. Students completing their secondary level education outside of the United States are required to meet equivalent U.S. high school performance standards. Students who have not earned any college-level credit should refer to the "Freshman Admission" section for nonresidents of Oklahoma. Students who have earned one to six semester hours of college-level credit should refer to both the "Freshman Admission" and the "Transfer Admission" sections for nonresidents of Oklahoma. Students who have earned 24 or more semester hours of college-level credit should refer to the "Transfer Admission" section for nonresidents of Oklahoma.

In evaluating college-level credit for course work completed outside of the United States, OSU requires that the institution where the credit was earned and the program of study be recognized as tertiary level through the standards set by the country where the institution is located. OSU evaluates semester credit hours and grades earned based on U.S. equivalency standards.

Readmission (International Students). An international student who has attended OSU but did not attend OSU the immediate past semester must file an Application for Readmission and an updated Financial Guarantee. A student who has attended another college or university since last attending OSU must submit a transcript of all work attempted after leaving OSU. If the student's grade-point average meets minimum University and department standards, and his or her disciplinary record is satisfactory, he or she will be readmitted to OSU.

Engineering Program Admission (International Students). Engineering is a competitive program; therefore, enrollment preference is given to Oklahoma residents. In addition to the above requirements, an international student applying for admission to pre-engineering must meet requirements determined by the College of Engineering. These requirements may exceed those required for residents of Oklahoma. (See "Admission Requirements" in the "College of Engineering, Architecture and Technology" section.)

Immigration Issues. The Immigration and Naturalization Service (INS) requires that international students file a statement with the University showing adequate financial support for their education. OSU has its own financial guarantee form that international students need to complete as a requirement to receive the 1-20 or IAP-66. Oklahoma State University has almost no financial assistance for international students.

Students should not plan to finance their education with employment. Students who are maintaining their immigration status, and making appropriate progress toward their degrees are eligible to apply for on-campus University employment for 20 hours per week. However, students should take into consideration that campus employment opportunities are limited. Students holding F-1 or J-1 visas are almost never permitted by INS to work outside of the University campus, and can be deported from the United States if they are found to be in violation of this regulation.

Students must notify INS when transferring from one U.S. institution to another.
Students with F-1 status transferring from another U.S. institution must have his or her 1-20 processed for transfer by the Office of International Students and Scholars at OSU within 15 days of the first enrollment. The student with J-1 status should contact the foreign student advisor at his or her current institution and the Office of International Student Services at OSU.

It is the student's responsibility to obtain the correct visa and to maintain his or her status while in the United States. Conditions that apply to F-1 or J-1 status are, summarized on the 1-20 and IAP-66, and are explained in detail during the mandatory international student orientation program. If a student is out of status, or has questions regarding INS regulations and OSU procedures, he or she should contact the Office of International Students and Scholars at OSU.

It is the responsibility of each international student to understand and abide by the INS regulations affecting his or her stay in the U.S.

Beginning the Enrollment Process

Enrollment Information. After admission is granted, all students will receive detailed enrollment information. The fall semester enrollment process for freshmen is completed during scheduled orientation sessions conducted on campus during the summer. Parents are welcome and are encouraged to participate in the enrollment process with the student.

Advance Fee Payment. All new students are required to submit a $40 advance fee payment prior to the beginning of the enrollment process. This fee remains in the student's OSU account while he or she is attending the University; it can be refunded upon withdrawal from the University or applied to any outstanding charge during the student's last semester.

Immunizations. A record of immunizations must be submitted by each new student by the eighth week of the semester. Students will receive the Medical History and Immunization Schedule at enrollment, or students may contact the OSU Wellness Center.

Physical Examination. All new students are required to complete a physical examination. OSU Board of Regents policy allows two options to satisfy this requirement: the student may complete an OSU Wellness Center Health Risk Assessment (HRA) furnished by OSU; or the student may go to a physician of choice at his or her expense, have a physical exam, and submit the physical exam report (including immunization data) to the OSU Wellness Center.

Regardless of which option is chosen, all new students are required to submit an immunization history. This requirement includes proof or documentation of vaccination for measles-two doses of measles vaccine, mumps, polio, rubella, and tetanus-diphtheria.

Refer to the information supplied in the HRA packet for details associated with the immunization requirement.

New students will automatically be billed $20.00 for the HRA during the first semester of enrollment. Students exercising the second option will have the fee waived upon receipt of their physical exam forms at the OSU Wellness Center by the eighth week of the semester.

Residence Classification for Purposes of Admission and Fees

(See also "Admission-Withdrawal" section of the "Academic Regulations."

The admission requirements to Oklahoma State University may vary for residents and for nonresidents of the state; therefore, prospective students should determine their residence status before examining the admission requirements. Although the following policy statement is not necessarily inclusive of all regulations governing the classifications of resident and nonresident students for the purpose of fee payment, it should, nevertheless, be of assistance to most students in determining their residence status. Administration of the state's residence policy as it applies to Oklahoma State University students is designated to the Office of Admissions. Questions concerning interpretation of the policy should be directed to the admissions director for a ruling.

Regulations governing the residence status of students are the responsibility of the Oklahoma State Regents for Higher Education and apply to all colleges and universities of the Oklahoma State System of Higher Education.

Basic Principles Governing Residence.

1. Attendance at an educational institution is interpreted as temporary residence; therefore, a student neither gains nor loses residence status solely by such attendance.

2. A nonresident student attending an Oklahoma college or university on more than a half-time basis is presumed to be in the state primarily for educational purposes.

3. An individual is not deemed to have acquired status as a resident of Oklahoma until he or she has been in the state for at least a year primarily as a permanent resident and not merely as a student. Likewise, an individual classified as a resident of Oklahoma shall not be reclassified as a nonresident until 12 months after having left Oklahoma to live in another state.

4. All married persons shall be treated as equal under this policy. Therefore, each spouse in a family shall establish his or her own residence status on a separate basis. Exceptions include (a) when a nonresident marries an already-established resident of Oklahoma, the nonresident may be considered a resident after documentation of the marriage and proof of domicile are satisfied, and (b) as provided under the "Full-time Professional Practitioner or Worker" provision.

5. The burden of proof of residence status or domicile shall be upon the applicant. Students filing an appeal for reclassification of his or her residence status shall do so on forms provided or approved by the Oklahoma State Regents for Higher Education.

6. Initial classification as a nonresident student shall not prejudice the right of a person to be reclassified thereafter for subsequent semesters or terms of enrollment as an Oklahoma resident provided proof of residence can be established.

Definition of Residence Terms.

Residents of Oklahoma: Residents of Oklahoma are those who have lived continuously in the state for at least 12 consecutive months and whose domiciles are in Oklahoma. Students' domiciles are their permanent homes—the places where they intend to remain and are expected to return. Students can have more than one residence, but only one domicile.

Independent Persons: Independent persons are those enjoying majority privileges (are legally emancipated from their parent(s) or guardian) and who are responsible for their own care, custody and support.

Dependent Persons: Dependent persons are those under the care, custody and support of their parent(s) or other legally sanctioned parental surrogates.

Full-time Students: Full-time students are those enrolled in a minimum of 12 credit hours per semester in an academic year, or a minimum of six credit hours during a summer session.
Residence Status Criteria.

Independent Student Criteria: Students who have achieved majority privileges (are 18 years of age or older), can provide adequate proof of independence from parental or legal guardian domicile, and have come to Oklahoma with the intention of establishing domicile, may be granted residence classification at the next enrollment period after the expiration of 12 consecutive months following the establishment of domicile in Oklahoma. Spouses must establish proof of residence on a separate basis.

In addition to the aforementioned criteria, independent students seeking reclassification as residents of Oklahoma must meet the following criteria for the current and immediately preceding year:

1. The student must not have been claimed as an exemption for state and federal tax purposes by his or her nonresident parent(s).
2. The student must prove self-support as evidenced by having provided the majority of funds for his or her own upkeep.
3. The student must have maintained a continuous residence in Oklahoma for at least 12 months.

Dependent Student Criteria: For the purpose of establishing residence status, the legal residence of dependent students is that of their parent(s) or legally-appointed guardian. Dependent students may become independent through marriage, formal court action, abandonment by parents, or positive actions demonstrating separation from the parent’s domicile. Students who can provide adequate proof of complete emancipation, and have come to Oklahoma with the intention of establishing domicile may be granted residence classification at the next enrollment period after the expiration of 12 consecutive months following the establishment of domicile in Oklahoma.

International Student Criteria: An individual who is not a citizen of the United States may become eligible for classification as an Oklahoma resident provided that he or she holds permanent resident status as defined by the Immigration and Naturalization Service, evidenced by the documents required under applicable federal law, who has resided in Oklahoma for at least 12 consecutive months and who meets the criteria for establishment of domicile.

Military Personnel: Students enrolled at Oklahoma State University while on full-time active duty in the Armed Forces are considered to be temporary residents in the state; therefore, they neither gain nor lose resident status. Members of the Armed Forces stationed in Oklahoma, their spouses, and dependent children may be admitted without payment of nonresident tuition so long as they continue to be stationed in the state in full-time military service and under military orders.

Full-time Professional Practitioner or Worker: An individual who provides evidence of having come to Oklahoma to practice a profession on a full-time basis, conduct a business full-time, or work on a full-time basis shall be declared an Oklahoma resident along with his or her spouse and dependent children so long as he or she continues in such full-time employment capacity.

Enrollment and Records

Robin H. Lacy, Registrar
Doug Reed, Associate Registrar
Joan M. Payne, Assistant Registrar
Darlene Wilson, Administrative Associate
Paula M. Barnes, Coordinator, Athletics and Veterans' Eligibility
BonnieStone, Coordinator, Enrollment Services and Student Data
Lori Morris, Coordinator, Fee Adjustments
Linda J. Bentley, Coordinator, Publications
Shirilyn Dehls, Coordinator, Student Records
Linda Sanders, Specialist, Degree Audits
Carol Dobson, Support Specialist

Student Enrollment

Enrollment is the process whereby students are counseled by academic advisers regarding course selection and placement, and the subsequent scheduling of those courses. A student must be admitted to the University prior to the enrollment process. (See “Entering the University.”) All new freshman and transfer students are required to submit an advance fee payment prior to participation in the enrollment process.

First-time Students (Freshmen and Transfer)

The fall enrollment and orientation period for new freshmen takes place during the summer months, while enrollment for new transfer students begins in the spring. New students receive information about these programs after being admitted to the University. Enrollment and orientation activities include career counseling, academic advising and course selection, and an introduction to campus facilities and services. During the program, students meet with academic advisers who are available to assist in the planning of academic programs and the exploration of interest areas. Parents are encouraged to participate in these programs:

ALPHA Program

ALPHA is the fall orientation program designed for all students new to Oklahoma State University. It is coordinated through the Office of Student Affairs. The program is a combined effort of the University and the local community to provide a sense of belonging and well-being for new students. ALPHA provides an opportunity for new students to begin the process of adjusting to the University environment prior to the arrival of upperclass students. The ALPHA experience encourages students to become aware of the services, resources, and people available to them and to begin to develop peer relationships. ALPHA begins on the Friday before classes start in August. Specific information is mailed during the summer months to all new students who have been admitted.

Continuing Students

Students currently enrolled at OSU may enroll for the subsequent semester during specified periods of the current semester. Priority for these enrollment periods addresses the needs of students in relation to graduation proximity, with priority based on number of hours earned. Prior to the specific enrollment...
periods, students and academic advisers consult regarding course selections. Advisers may sign a Trial Schedule form for students wishing to enroll in the Sectioning Room of the Student Union, or authorize an on-line enrollment clearance for students wishing to self-enroll either by touch-tone telephone or by the IDS system terminals. An overdue account with the University will prevent completion of the enrollment process.

**Priority Enrollment.** Certain groups of students are extended the option of enrolling prior to the time continuing students begin enrolling. Physically handicapped students are extended the option of priority enrollment. Those students actively participating in the University Honors Program are extended the option of priority enrollment. Current OSU students who accept University scholarships which require that the student perform a service for the University at a regular time specified by the University, will be given priority enrollment. Scholarships that qualify students for priority in turning in trial schedules are University band, athletic, and graduate teaching assistantships for teaching or research assignments. Wentz Scholars, President's Distinguished Scholars (PDS), President's Leadership Council (PLC) recipients, and participants in the OSRHE Academic Scholars program are also extended the option of priority enrollment. Working part-time for the University or outside the University does not qualify the student for priority enrollment.

**Late Enrollment**
A student is permitted to enroll during the first week of a semester or through the third day of a summer session or on the first day of a summer short course. A student enrolling late will pay a late enrollment fee. The late enrollment fee will not be charged on or prior to the first day of a summer short course.

**Identification Cards**
As part of the enrollment process, each new student is issued a photo identification card. This card, along with the current fee receipt, establishes the student's identity as an OSU student and authorizes access to certain University facilities. Lost or stolen identification cards will be replaced at a nominal fee with proper photo identification from the student.

**Change of Schedule**
**Adding Courses.** Approval of the student's adviser is required for adding a course. The end of the first week of a regular semester or the third class day of a summer session is the last day a course may be added (nonrestrictive). A short course may be added no later than the first day of the short course. With instructor approval, a course may be added during the second week of classes of a regular semester or the fourth or fifth day of a summer session (restrictive).

**Dropping Courses.** Dropping refers to the dropping of one or more courses while remaining enrolled in at least one course for a given semester. Courses may not be dropped without the approval of the student's academic adviser.

At any time prior to the end of the second week of a regular semester or the first week of a summer session, or during the proportionate period for block or short courses, a student may drop a course, and no record of the course will appear on the student's academic record.

After the deadline for dropping with no record, but prior to the end of the sixth week of a regular semester or the third week of a summer session, or proportionate periods for block or short courses, a student may drop a course and the grade of "W" (dropped) will be recorded on the student's academic record.

After the sixth week of a regular semester or the third week of a summer session but prior to the end of the tenth week of a regular semester or the fifth week of a summer session, a student may drop a course with the grade of "W" (dropped) or "F" (failing) as assigned by the instructor. The grade of "W" or "F" will be recorded on the student's academic record and the grade of "F" will be calculated in the grade-point average.

After the 10th week of a regular semester, or the fifth week of a summer session, or proportionate periods for block or short courses, a student may not drop a course and will be assigned only the grade of "A," "B," "C," "D," or "F," or, when appropriate, "I," "NP," "P," "S," "U," or "X" by the instructor at the end of the semester. (Exceptions to this policy may be allowed by petition due to extraordinary circumstances. The petition process is initiated in the student's dean's office. A petition requires the signatures of the student's instructor, adviser and dean with the grade of "W" or "F" assigned by the instructor.)

A student may not drop any course in which a formal charge of academic dishonesty is pending against the student. If the student is absolved of the formal charge, he or she may drop the course with either a "W" or "F," (according to the drop grade policy), appearing on the academic record. If the student is found guilty, the instructor may take appropriate disciplinary action, including assigning the grade "F" for the assignment or the course.

**Withdrawing from the University**
Withdrawing refers to withdrawing from all courses for which a student is enrolled for a given semester. The withdrawal process is initiated in the student's dean's office. The student should appear in person, request an official withdrawal, and hand carry the form to the appropriate offices to complete the process. If the student is unable to appear in person, the request for withdrawal may be initiated through the mail or by phone to the student's dean's office. A student who withdraws prior to the end of the sixth week of a regular semester or the third week of a summer session will receive a grade of "W" (withdrawn) on the student's academic record. A student who withdraws after the sixth week of a regular semester or the third week of a summer session but prior to "Pre-finals Week," will receive a grade of "W" (withdrawn) or "F" (failing) as assigned by the instructor of each course. The grade of "W" or "F" will be recorded on the student's academic record and the grade of "F" will be calculated in the grade-point average.

After the beginning of "Pre-finals Week" a student may not withdraw from the University and will be assigned only the grade of "A," "B," "C," "D," or "F," or, when appropriate, "I," "NP," "P," "S," "U," or "X" by the instructor of each course.

**Vehicle Registration and Parking Regulations**
Any vehicle driven on the campus of the University by an OSU student should be currently registered with the Department of Public Safety. When a vehicle is registered, the student will be given an OSU vehicle registration decal at no cost. The decal is solely for the purpose of registration and does not afford the student on-campus parking privileges.

Each student is allowed one paid parking permit. The parking permit fee is charged to a student's OSU account. In order to obtain a parking permit, the following items should be presented to the OSU Police Department: a completed Vehicle Registration form, student I.D., and, if living in a residence hall, a Residence Hall contract.

Parking permits for motorcycles, motor-propelled bicycles and scooters may be purchased, and such permit holders will be provided special parking areas.

Bicycle registration may be obtained without charge, an advantage in the
event the bicycle is stolen or lost. When bicycles are recovered by the OSU Police, they are checked against bicycle serial numbers maintained in the registration files for return to the rightful owners.

A copy of the OSU Public Safety Guide is available from the Parking Office, 104 USDA Building, located at Farm Road and Orchard Street.

Veteran Services
Oklahoma State University maintains a full-time office of veteran services for the convenience of veterans and their dependents. OSU is an approved institution for students to receive education benefits by the Department of Veteran Affairs (DVA). Information and assistance is available for completion of appropriate forms necessary to apply for education benefits. The DVA has specific requirements regarding course work and attendance; contact the veterans representative for further information. The office is located in the Office of the Registrar, 103 Whitehurst.

Faculty and Staff
Enrollment in University Courses
The advance fee payment is waived for permanent full-time employees. These employees may audit courses after securing an audit form and paying one-half the general fee. Any individual 65 years or older may audit a class at no charge.

Faculty. Permanent (tenure track), full-time (100%) members of the faculty may enroll for credit in one course per semester or a maximum of five hours during normally scheduled working hours and pay one-half the general and activity fees in effect at that time. Exceptions may be permitted only with approvals of the department head, dean and appropriate vice-president. If enrollment does not exceed one course, only the department head's approval is needed to receive a fee waiver. If the faculty member is enrolled in more than one course, his or her dean and vice-president must also give approval for a fee waiver. Some courses taught through extension and correspondence study are excluded. For more information, refer to the Policy and Procedures Letters.

Early Enrollment. Full-time employees of the University who have approval for enrollment may turn in their Trial Schedule forms to the Office of the Registrar any time after the class schedule book is available. An effort will be made to schedule classes of full-time employees to minimize conflict with their University employment.

Official Records
Freshman Progress Reports
The faculty will report grades for all freshmen on the dates as printed in the official University Calendar. The dates will normally be prior to mid-semester. Progress reports are made available to freshmen students shortly afterward. Copies are made available to the students' advisers and the students' deans.

Grade Reports
Reports of the grades of all students are compiled and released shortly after the end of each semester by the Office of the Registrar. These reports are made available to the students, the students' advisers and the students' deans.

Official Transcripts
All official transcripts of students' academic records at OSU are prepared and released by the Office of the Registrar. The official transcript includes the academic record, both undergraduate and graduate. It contains the signature of a University official and the official, imprinted seal of the University. Primary usage of the official transcript is for application for transfer to other academic institutions and for employment purposes.

Transcripts of academic records at the University may be ordered in person or by mail from the Office of the Registrar, Transcripts Section, 103 Whitehurst.
2. Challenge the contents of the educational record.
3. Have a hearing if the outcome of a challenge is unsatisfactory.
4. Submit an explanatory statement for inclusion in the educational record, if the outcome of the hearing is unsatisfactory.
5. Secure a copy of the institutional policy, which includes the location of all educational records.
6. Prevent disclosure, with certain exceptions, of personally identifiable information from the educational record.

**Withholding Disclosure of Information.** Currently enrolled students may withhold disclosure of directory information. A student may file with the Office of the Registrar a written request not to release directory information. The University assumes that failure on the part of any student to specifically request the withholding of directory information indicates individual approval for disclosure.

**Access to Records.** No other information regarding students' educational records may be disclosed to anyone without written consent of students, except to "school officials" who have a "legitimate educational interest" in the student.

Students, or parents of dependent students, may inspect and review their educational records. Some form of photo identification must be displayed before access to educational records will be allowed. Parents of a dependent student may challenge denial of access by producing the most current copy of Internal Revenue Form 1040.

**Definitions.** "Educational Record" refers to those records which are directly related to a student and are maintained by an educational institution.

"Directory Information" includes: student's name; local and permanent addresses; telephone number; date and place of birth; major field of study; weight and height of students participating in officially recognized sports; dates of attendance at Oklahoma State University; degrees, honors, and awards granted or received; academic classification such as freshman, sophomore, junior, senior, etc.; sex; educational institutions previously attended; degree(s) held, date(s) granted, and institution(s) granting such degree(s); dissertation or thesis title; adviser or thesis adviser; participation in officially recognized organizations, activities, and sports.

"School official" is defined as an individual currently serving as a member of the Oklahoma State University Board of Regents or classified as faculty, administrative, or professional, and the staff such school officials supervise. "Legitimate educational interest" is defined as an interest which results from the duties officially assigned to a school official and which are related to such a school official's responsibility for facilitating the student's development.

## Costs

### Fees and Tuition

It is extremely important that students carefully consider the total financing of their education, from the entering term to the completion of the degree. If financial help will be needed beyond those funds which the student or the family is able to provide, the student should make the necessary applications for financial assistance well in advance of enrollment. Students should pay particular attention to early deadlines for application for grants, scholarships, work-study, and Perkins Loans. While the needs and resources of each student differ, the University can provide a general list of fees and expenses normally encountered.

Students are given information at the time they complete their enrollment on the procedures and deadlines for payment of tuition and fees. (See "Financial Obligations" elsewhere in the Catalog.)

The required fees and nonresident tuition for Oklahoma State University are listed below. General fees and nonresident tuition are based on level of course. All course offerings are listed by four-digit numbers with the first digit indicating level of course. Lower-division courses are all courses with the first digit 0 through 2. Upper-division courses are all courses with the first digit 3 or 4. Graduate-division courses are all courses with the first digit 5 or above.

The figures which follow are for the 1997-98 academic year. These fees are subject to change without notice, as provided by University, Board of Regents, and OSRHE policies.

### Oklahoma Residents

#### Lower-division courses
- $56.50 Resident tuition
- $5.11 Student activity fee
- $ .85 Student assessment fee
- $4.30 Facility fee
- $1.50 Library automation and mainframe fee
- $5.00 Technology fee*
- $73.26 Total per credit hour
- $2.00 The Daily O'Collegian fee per semester
- $46.00 Student health services fee per semester**
- $5.00 Records maintenance fee per semester

#### Upper-division courses
- $60.00 Resident tuition
- $5.11 Student activity fee
- $ .85 Student assessment fee
- $4.30 Facility fee
- $1.50 Library automation and mainframe fee
- $5.00 Technology fee*
- $76.76 Total per credit hour
- $2.00 The Daily O'Collegian fee per semester
- $46.00 Student health services fee per semester**
- $5.00 Records maintenance fee per semester

#### Graduate-division courses
- $80.00 Resident tuition
- $5.11 Student activity fee
- $4.30 Facility fee
- $1.50 Library automation and mainframe fee
- $5.00 Technology fee*
- $95.91 Total per credit hour
- $2.00 The Daily O'Collegian fee per semester
- $46.00 Student health services fee per semester**
- $5.00 Records maintenance fee per semester

*Technology fee: $2,000 per year
**Student health services fee: $400 per year
## Nonresidents of Oklahoma

### Lower-division courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident tuition</td>
<td>$56.50</td>
</tr>
<tr>
<td>Student activity fee</td>
<td>$5.11</td>
</tr>
<tr>
<td>Student assessment fee</td>
<td>$4.30</td>
</tr>
<tr>
<td>Facility fee</td>
<td>$1.50</td>
</tr>
<tr>
<td>Library automation and mainframe fee</td>
<td>$5.00</td>
</tr>
<tr>
<td>Nonresident tuition</td>
<td>$126.00</td>
</tr>
<tr>
<td>Total per credit hour</td>
<td>$199.26</td>
</tr>
<tr>
<td>The Daily O'Collegian fee per semester</td>
<td>$2.00</td>
</tr>
<tr>
<td>Student health services fee per semester**</td>
<td>$46.00</td>
</tr>
<tr>
<td>Records maintenance fee per semester</td>
<td>$5.00</td>
</tr>
</tbody>
</table>

### Upper-division courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident tuition</td>
<td>$60.00</td>
</tr>
<tr>
<td>Student activity fee</td>
<td>$5.11</td>
</tr>
<tr>
<td>Student assessment fee</td>
<td>$4.30</td>
</tr>
<tr>
<td>Facility fee</td>
<td>$1.50</td>
</tr>
<tr>
<td>Technology fee*</td>
<td>$142.00</td>
</tr>
<tr>
<td>Nonresident tuition</td>
<td>$218.76</td>
</tr>
<tr>
<td>Total per credit hour</td>
<td>$2.00</td>
</tr>
<tr>
<td>The Daily O'Collegian fee per semester</td>
<td>$46.00</td>
</tr>
<tr>
<td>Student health services fee per semester**</td>
<td>$5.00</td>
</tr>
<tr>
<td>Records maintenance fee per semester</td>
<td>$141.47</td>
</tr>
</tbody>
</table>

### Graduate-division Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident tuition</td>
<td>$80.00</td>
</tr>
<tr>
<td>Student activity fee</td>
<td>$5.11</td>
</tr>
<tr>
<td>Facility fee</td>
<td>$4.30</td>
</tr>
<tr>
<td>Library automation and mainframe fee</td>
<td>$1.50</td>
</tr>
<tr>
<td>Technology fee*</td>
<td>$174.50</td>
</tr>
<tr>
<td>Nonresident tuition</td>
<td>$270.41</td>
</tr>
<tr>
<td>Total per credit hour</td>
<td>$2.00</td>
</tr>
<tr>
<td>The Daily O'Collegian fee per semester</td>
<td>$46.00</td>
</tr>
<tr>
<td>Student health services fee per semester**</td>
<td>$5.00</td>
</tr>
<tr>
<td>Records maintenance fee per semester</td>
<td>$141.47</td>
</tr>
<tr>
<td>Resident fee per credit hour</td>
<td>$272.95</td>
</tr>
</tbody>
</table>

**Students enrolled in six or fewer hours pay $7.00, without use of medical services.

### College of Veterinary Medicine

<table>
<thead>
<tr>
<th>Course</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident tuition</td>
<td>$2,688.00</td>
</tr>
<tr>
<td>Student activity fee per semester</td>
<td>$5.11</td>
</tr>
<tr>
<td>Facility fee per credit hour</td>
<td>$4.30</td>
</tr>
<tr>
<td>Library automation and mainframe fee</td>
<td>$1.50</td>
</tr>
<tr>
<td>Technology fee per credit hour</td>
<td>$15.00</td>
</tr>
<tr>
<td>Nonresident tuition</td>
<td>$2,688.00</td>
</tr>
<tr>
<td>Total per credit hour</td>
<td>$2.00</td>
</tr>
<tr>
<td>The Daily O'Collegian fee per semester</td>
<td>$46.00</td>
</tr>
<tr>
<td>Student health services fee per semester**</td>
<td>$5.00</td>
</tr>
<tr>
<td>Records maintenance fee per semester</td>
<td>$141.47</td>
</tr>
<tr>
<td>Resident fee per credit hour</td>
<td>$272.95</td>
</tr>
</tbody>
</table>

**College of Veterinary Medicine students who repeat course work will be charged an amount per credit hour for Oklahoma residents and nonresidents. Nonresidents will also be charged nonresident tuition per credit hour.

### Fees for Special Services

All students pay special fees each semester to contribute to the betterment and general welfare of the campus community. The activity fee provides partial support to such programs, services and organizations as the Student Government Association, collegial student councils and related student organizations, Allied Arts, fine arts, athletics, intramural activities and sports clubs, minority student organizations, and the Student Activities Office. User’s fees, other fund-raising activities, and, in some cases, member-ship dues provide the remaining support to make these positive, constructive, and meaningful programs and services available to all students.

The assessment fee provides for skills assessment and evaluation of students’ capabilities at various stages of their academic careers, and to get feedback from students regarding their course work.

Students regularly enrolled in the University are assessed faculty, health and activity fees that entitle them to use the Student Union, the Colvin Physical Education Center, and the Health Clinic, and that provide support for student governance, organizations and programs. Certain groups of students in special courses may be on campus for very short time intervals or may be required by the University to reside off-campus for the entire semester. Such students will not be charged health and activity fees when enrolled (1) only in a specialized course(s) offered for a special-interest group and not in any other course(s) in the University or (2) in a course(s) which requires that the student reside off the campus for the entire semester or summer session (medical technology, geology and forestry summer camps). Such courses typically are offered at unusual times and presented in a concentrated curriculum format. Other extenuating circumstances may be cause to consider denying use of and charge for these facilities or participation in activities sponsored by these fees.

The library automation and mainframe fee defrays the cost of equipment, software, and other aspects related to operating the on-line computerized library service.

The technology fee provides for the maintenance of existing facilities, and the expansion and development of central and collegiate facilities, software, and multimedia capabilities. This fee is apportioned between a central (University) fee and a college fee; all courses are charged the central fee (per semester credit hour) and the college fee (per semester credit hour) based on the rate approved for the college that teaches the specific course.

Students enrolled in seven or more hours per semester will be assessed a health services fee that includes a fee for comprehensive health and pharmacy services. Health and pharmacy services are available to students enrolled in six or fewer hours if the student chooses to pay the full fee.

The records maintenance fee provides for the basic graduation cost, the maintenance of the academic record system, and issuance of official transcripts.
Special Class Charges

In certain courses, special services, supplies or equipment may be used. Costs for these are not normally covered by fees, tuition or departmental operating budgets, and, therefore, the cost is incurred by the student. Special charges are listed in each semester's class schedule book.

Special Fees

Advanced standing examination fee
Locally developed (no charge)
Nationally developed national agency rate

Application fee for all undergraduates students $25.00
Application fee for all graduate students $25.00
Audit without credit same as Oklahoma resident tuition
Automobile parking permit (per year):
Campus residents $44.00
Off-campus residents $54.00
Graduation fees:
Thesis binding fee each $6.00
Dissertation microfilming fee each $35.00
Health risk assessment fee for first-time students $20.00
International student status maintenance fee:
per semester $15.00
per summer session $10.00
Late enrollment fee:
first day $5.00
maximum $10.00
Remedial
Supplementary fee $24.00
(per credit hour, in addition to the general fee)

Other Expenses

Books and supplies used by the student are available in the University Bookstore at reasonable prices. Additional incidental and personal expenses such as clothing and entertainment will depend upon the individual student.

International Students. It is the long-established practice of Oklahoma State University to charge a special administrative/management/programming fee for international students who need extra assistance and/or whose sponsors have indicated a requirement for supplementary assistance. This assistance is beyond the content of the regular academic program of the University established for domestic students. The amount of the fees will be based on the level of professional assistance needed, and the customary fee is $250.00 per semester. It is the established practice and policy of the University to charge appropriate amounts for such items as special training, research costs, enrichment, necessary travel and transportation, and other costs as may be required to provide a complete and appropriate program of education for international students. The Office of International Programs at OSU is the designated office to coordinate, expedite, and administer all aspects of procedures pertaining to such programs of education and training. Sponsors should direct all matters to the University’s Office of International Programs, 307 Center for International Trade Development. Electronic mail may be sent to thuff@okway.okstate.edu. The fax number is (405) 744-7529.

Fee Policy for Faculty and Staff

The advance fee payment, the facility fee and the student health center fee are waived for permanent, full-time faculty and staff. These employees are eligible to enroll for credit or audit courses and be charged fees at the rate of one-half the amount charged other students under the University fee waiver policy (one-half the general fee, for auditing only, and one-half the activity fee). To be eligible under this fee policy, an employee-student must submit a completed Request for Faculty-Staff Fee Waiver form to the Office of the Registrar prior to the beginning of classes. If the form is not on file prior to the beginning of classes, the student will not be granted the waiver in fees.

Any individual 65 years or older may audit a class at no charge:

Fee Policy for Graduate Assistants

The University will waive the nonresident tuition for graduate assistants employed at least one-fourth time in instruction, research or extension. Such waiver will include the summer term immediately following employment as a graduate assistant for the spring semester, even though the student is not employed for that summer term.

Refunds

Refunds and deposits that may be due a student will be first applied to encumbrances owed to the University.

Drop Fee Policy

A student dropping a course prior to the end of the second week of a regular semester or the first week of a summer session will receive a 100 percent refund of fees. No refund of fees will be given for courses dropped after the second week of a regular semester or the first week of a summer session.

Withdrawal Fee Policy

A student withdrawing from the University during the first two weeks of a regular semester or during the first week of a summer session will receive a refund of fees. The percentage of fees to be refunded:

Prior to the third week of a semester or the second week of a summer session-100 percent
After the second week of a semester or the first week of a summer session-0 percent

A student withdrawing from a short session will receive a refund during the first one-eighth of the session. Title IV recipients follow federal refund guidelines.

Repayment Policy

Financial aid is considered to be used first for direct educational costs (tuition and fees) and, if the student is in University housing, for room and board. Therefore, if a student financial aid recipient withdraws and is eligible for a refund of tuition and fees and/or room and board, all or part of this refund will be used to reimburse the Title IV financial aid program(s) up to the amount of assistance that the student received from the program(s).

If a student receives cash from financial aid in excess of non-institutional costs, part of this aid may be required to be repaid; the amount of the repayment depends upon how many weeks the student was enrolled and the amount of aid received.
When there are multiple disbursements of aid; the assumption is made that the first disbursement(s) is used to pay institutional charges. Therefore, if cash is disbursed, the cash is derived from the last disbursement(s) prior to the disbursement of cash.

A detailed policy can be obtained from the Office of Student Financial Aid.

**Fee Refund Policy for Students Entering Military Service**

If a student enters military service during the term in which he or she is enrolled and has not completed sufficient work for receiving grades, but is in good standing academically, the University will waive enrollment fees for the student during the term in which he or she re-enrolls after military service has been completed. The amount of the fee waiver is equal to the amount of fees paid for the semester during which withdrawal occurred. If the University finds that it is not feasible to waive the enrollment fees, it will make a refund to the student of the full amount of fees paid.

If a student enters military service during the term and is not in good academic standing at the time, the regular fee refund policy of the University applies.

**Residence Hall Rates**

All rates are approved by the OSU Board of Regents and are subject to change. The rates listed below were effective for the academic year 1997-98.

**Residence Halls**

<table>
<thead>
<tr>
<th>Men's Halls</th>
<th>Women's Halls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bennett Apts.</td>
<td>Bennett Apts.</td>
</tr>
<tr>
<td>Kerr</td>
<td>Drummond</td>
</tr>
<tr>
<td>Iba</td>
<td>Iba</td>
</tr>
<tr>
<td>Parker</td>
<td>Parker</td>
</tr>
<tr>
<td>Stout</td>
<td>Stout</td>
</tr>
<tr>
<td>Wentz</td>
<td>Wentz</td>
</tr>
<tr>
<td>Willham South</td>
<td>Willham North</td>
</tr>
</tbody>
</table>

**Meal Plan Charges**

<table>
<thead>
<tr>
<th></th>
<th>Semester Charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>325 passes/semester</td>
<td>$1,184.00</td>
</tr>
<tr>
<td>250 passes/semester</td>
<td>$1,040.00</td>
</tr>
<tr>
<td>175 passes/semester</td>
<td>$904.00</td>
</tr>
<tr>
<td>100 passes/semester</td>
<td>$556.00</td>
</tr>
<tr>
<td>20 passes/week</td>
<td>$118.00</td>
</tr>
</tbody>
</table>

**Room Rent Charges.** All halls provide a telephone instrument and local phone service in each room, and cable TV in floor lounges. Single rooms are available in all halls, except the Bennett Apartment.

**Furnished Apartment**

<table>
<thead>
<tr>
<th>Bennett Apartments</th>
<th>(Air-conditioned, room cable TV, computer jack.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Semester Charge $1,107.00</td>
</tr>
</tbody>
</table>

**University Apartments**

(Rates include a telephone instrument and local phone service in each apartment.

<table>
<thead>
<tr>
<th></th>
<th>Semester Charge</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Double Room</td>
<td>$1,012.00</td>
</tr>
<tr>
<td>Willham North and South Halls</td>
<td>(Air-conditioned and room cable TV.)</td>
</tr>
<tr>
<td>Double Room</td>
<td>$988.00</td>
</tr>
<tr>
<td>Bennett Residence Hall</td>
<td>(Room cable TV.)</td>
</tr>
<tr>
<td>Single Room</td>
<td>Semester Charge $940.00</td>
</tr>
<tr>
<td>Iba Residence Hall (Iba is open only to students who are sophomores and above.)</td>
<td>Semester Charge $980.00</td>
</tr>
<tr>
<td>Stout Residence Hall (Stout is open only to students who are sophomores and above.)</td>
<td>Semester Charge $940.00</td>
</tr>
<tr>
<td>Wentz Hall (Wentz Hall follows these priorities: (1) students who need year-round housing, (2) students enrolled in the Graduate College, and (3) undergraduates, sophomore level or above. These rates cover charges for the academic year in Wentz from one week prior to the beginning of classes in August through one week after commencement in May, including all break periods. Wentz is also open for the period May through August at an additional charge.)</td>
<td>Semester Charge $1,107.00</td>
</tr>
</tbody>
</table>

**Estimated Total Expenses for Students**

An estimated budget (based on 1997-98 figures) for an undergraduate student at OSU is as follows:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident Tuition and Fees</td>
<td>$1,015.00</td>
</tr>
<tr>
<td>(Based on 14 credit hours)</td>
<td></td>
</tr>
<tr>
<td>University Housing and Board</td>
<td>$2,140.00</td>
</tr>
<tr>
<td>(Based on average, double occupancy, residence hall charges)</td>
<td></td>
</tr>
<tr>
<td>Textbooks and Supplies</td>
<td>$415.00</td>
</tr>
<tr>
<td>Ave. Misc. Personal Expenses</td>
<td>$1,315.00</td>
</tr>
<tr>
<td>Total Per Semester</td>
<td>$4,885.00</td>
</tr>
<tr>
<td>Nonresident Tuition and Fees</td>
<td>$2,730.00</td>
</tr>
<tr>
<td>(Based on 14 credit hours)</td>
<td></td>
</tr>
<tr>
<td>University Housing and Board</td>
<td>$2,140.00</td>
</tr>
<tr>
<td>(Based on average, double occupancy, residence hall charges)</td>
<td></td>
</tr>
<tr>
<td>Textbooks and Supplies</td>
<td>$415.00</td>
</tr>
<tr>
<td>Ave. Misc. Personal Expenses</td>
<td>$1,315.00</td>
</tr>
<tr>
<td>Total Per Semester</td>
<td>$6,600.00</td>
</tr>
</tbody>
</table>
Financial Obligation

Robert E. Dixon, Jr., Bursar
Laurie Beets, C.P.A., Assistant Bursar
John Smith, Manager, Bursar Systems
Jan Pratt, Assistant Director, Student Loans/Debt Management

Enrollment at Oklahoma State University incurs certain obligations and commitments on the part of an individual student, one of which is the student’s responsibility to pay in a timely manner all financial amounts owed to the University. In order to remain in good financial standing with the University, and thereby continue to participate in its educational programs, services and benefits, all students must meet all financial obligations incurred at the University on or before the due dates. Students with financial difficulties should immediately contact the Office of the Bursar for assistance.

All students are required to pay an advance fee payment of $40.00 toward their estimated fees at the time of enrollment. This advance payment will be credited to the student's account and applied to outstanding charges during the last semester of attendance. A student may request a refund of the advance payment at any time in which it is not required to hold an enrollment and there are no outstanding charges against the account.

Fees and tuition will appear on the regular monthly statement that is mailed to the student's local address or specified billing address. Students are responsible for ensuring that the address maintained and shared by the offices of the Registrar and the Bursar is current and accurate. For convenience, students may update their local or permanent addresses in either office. However, students wanting to change or add a billing address must do so at the Office of the Bursar. Failure to receive a bill does not relieve the student from the financial obligation, any finance charges, and other penalties that may occur if the account is not paid by the monthly due date.

All fees (required and optional) and tuition associated with the student's enrollment are due in the Office of the Bursar no later than 4:30 p.m. on the 15th day of each month following billing. Fall semester fees are due by September 15, spring semester fees are due by February 15, and summer session fees due dates vary depending on the session. All delinquent accounts in excess of $40 will accrue an interest penalty at the rate of 1.5 percent monthly (19.56 APR).

Accounts must be cleared before the student can obtain the release of any records, obtain a transcript, receive a diploma, or enroll at Oklahoma State University for subsequent semesters. Students having difficulty in meeting their financial obligations should contact the Office of the Bursar for assistance.

It is the policy of the University to apply all financial aid to the student's account, withheld an amount equal to all charges showing on the student's account for the semester (fees, tuition, housing, etc.) and then refund the balance. OSU complies with the U.S. Department of Education, rules and regulations in accordance with The Federal Student Financial Aid Handbook instructions.

Financial Aid

Charles W. Bruce, Director
Patrick Kennedy, Assistant Director, Administrative Services
Gary Garoffolo, Assistant Director, Programs
Beverly Morris, Coordinator, Federal Work Study Programs
Margaret Betts, Coordinator, Information Services
Cathy Bird, Coordinator, Records Management
April Collins, Coordinator, Reports
Bonnie Joerschke, Senior Counselor
Kim Bradley, Counselor
Robert Choate, Counselor
Gary Davidson, Counselor
Sandra Dearing, Counselor
Karen Finley, Counselor
Judith Finnegan, Counselor

Students who need financial assistance to attend college are encouraged to consider the many types of financial aid available through the OSU Office of Student Financial Aid. These programs include scholarships, grants, loans, and part-time jobs.

Financial aid at OSU is awarded on the basis of demonstrated financial need. Each student who wishes to be considered for need-based assistance should complete the Free Application for Federal Student Aid (FAFSA) and submit it to the processing center as soon after January 1 as possible to receive aid for the succeeding academic year. FAFSA packets are available at the Office of Student Financial Aid as well as at most colleges and high schools. Early application is encouraged due to the high demand for available money. Students can apply for assistance by submitting the paper FAFSA or they can file electronically by accessing the U.S. Department of Education's "FAFSA on the Web" application site (www.fafsa.ed.gov).

An analysis of the FAFSA is used to determine demonstrated need for federal, state, and institutional programs such as Federal Pell Grants, Federal Supplemental Educational Opportunity Grants (FSEOG), Oklahoma Tuition Aid Grants (OTAG), Federal Perkins Loans, William D. Ford Federal Direct Loans, Federal Work-Study (FWS), and tuition waivers.

There are also programs available for students who do not demonstrate financial need. A number of tuition waivers are awarded solely on the basis of academic achievement, for which standardized test scores and high school and college grade-point averages are used as awarding criteria.

The Federal Direct Parent Loan for Undergraduate Students (PLUS) Program and the William D. Ford Federal Direct Unsubsidized Loan allow graduate students and independent undergraduates, as well as parents of dependent undergraduates, to borrow funds to meet educational expenses.

To be considered for financial aid, a student must:

1. Demonstrate financial need, except for some loan and scholarship programs.
2. Be a U.S. citizen or eligible non-citizen.
3. Be enrolled as a degree or certificate-seeking candidate, including a program of study abroad.
4. Meet minimum satisfactory academic progress standards.
5. Have a high school diploma or GED.
Grants

Undergraduate students who have not completed their first undergraduate degree are eligible to apply for the Federal Pell Grant and Federal Supplemental Education Opportunity Grant. Undergraduate and graduate students who are Oklahoma residents are eligible to apply for the state grant program, the Oklahoma Tuition Aid Grant.

Federal Pell Grant eligibility is determined by the U.S. Department of Education by using a congressionally-approved formula. Federal Supplemental Education Opportunity Grants are awarded to students who demonstrate financial need as reflected in the FAFSA. Funding in this program is limited and is usually awarded to applicants who demonstrate the most financial need. Oklahoma Tuition Aid Grants are awarded to eligible Oklahoma residents who may apply by correctly completing the FAFSA. Grant amounts are determined by the applicant’s enrollment status, demonstrated need, and by the availability of funds. Students are notified of their eligibility and award amounts by the Oklahoma State Regents for Higher Education, not by OSU.

Federal Work-Study

This program is designed to help students meet their educational expenses through part-time employment. The Office of Student Financial Aid determines award amounts on the basis of financial need. While all Federal Work-Study student employees are paid at least the current federal minimum wage, the actual rate of pay depends on their qualifications and the types of jobs they hold. Eligible students may be employed by any participating office or department at OSU or at an off-campus, non-profit agency. The community service agencies must meet federal and OSU regulations, including being nonprofit or governmental agencies whose services are available to everyone, regardless of ability to pay. While working in positions directly related to their curricula, students form strong links with the community. By attempting to place students in areas in which they are interested, the Federal Work-Study Program helps to stimulate the development of worthwhile work experience for the student while attending college.

Student Loans

OSU has several loan funds for students who need financial assistance. These funds are available to students who meet the eligibility requirements of the various programs and are making satisfactory progress in their college work.

Institutional loans include short- and long-term loans. The short-term loan program provides up to a maximum of $300 per semester (less a $10 service charge) for the purpose of meeting educationally-related expenses which are not charged to a student’s University account. Students are billed for the loan through the Office of the Bursar on the billing statement of the month in which they apply. Applications must be made in person at the Office of Student Financial Aid.


The rate of interest on a Federal Perkins Loan during the period of repayment is five percent simple interest per annum on the unpaid balance. Funding in this program is limited and is awarded to applicants who demonstrate significant financial need.

The rate of interest on the William D. Ford Loan varies for first-time borrowers, but cannot exceed 8.25 percent. The rate of interest on a Federal Direct Parent Loan is variable but cannot exceed 10 percent.

University Scholarships

Bob Graalman, Director
Rebecca Cooper, Senior Staff Assistant
Gail Gillilan, Senior Unit Assistant
Laura Goodson, Senior Secretary

A large number of OSU undergraduate and graduate students receive tuition waivers. Numerous other cash scholarships are awarded through various OSU departments, colleges and other offices.

Tuition Waivers

Tuition waivers are awarded to undergraduate and graduate students on the basis of both demonstrated financial need and academic achievement. Awards range from approximately $750 to $1,500 per year for Oklahoma residents. Freshman waivers (single and multi-year) are awarded to entering students who have attained a high scholastic standing in high school. Transfer waivers are offered each year to outstanding students transferring from two- and four-year colleges to OSU. Applicants should apply by February 1 for priority consideration. Further information may be obtained from the offices of High School and College Relations and University Scholarships.

Tuition waivers for upperclass students are awarded each year to continuing OSU students who have completed at least 24 credit hours and who have outstanding academic records. Applications for these scholarships can be obtained from the offices of Student Financial Aid and University Scholarships, and must be received by March 1.

Graduate students should contact their academic departments and the Graduate College regarding application procedures and scholarship deadlines.

Nonresident students entering OSU should also inquire about policies for
waivers of out-of-state tuition. Such awards are possible based on the student's academic accomplishments, the student being the child or grandchild of an OSU alum, or the student being a member of a Native American tribe based in Oklahoma.

**Wentz Scholarships and Projects**

High-achieving, continuing OSU students should inquire at the Office of University Scholarships about opportunities through the Wentz Foundation. A qualified applicant may receive a scholarship ($2,500) or be selected to complete a mentor-directed project in an academic setting ($4,000).

**Leadership Awards**

Through the President's Distinguished Scholarship, the OSU Foundation provides awards ($8,000) for the high school graduates with superior academic and leadership skills.

The President's Leadership Council consists of approximately 100 freshman leaders who study a special curriculum in leadership seminars and receive scholarships ($1,500).

**Other OSU Scholarships**

Both undergraduate and graduate students are encouraged to explore other scholarship opportunities that may be offered by the various colleges and academic departments at OSU. The University Scholarships Office and the student academic services office of each college are excellent resources for specific scholarship information.

The student may wish to use the computerized scholarship search program, FINDS, to assist in locating other OSU scholarship sources. FINDS is located in the offices of Student Financial Aid and University Scholarships. The FundFinder scholarship search program, available in the Office of Student Financial Aid, can provide information for over 3,000 national and state sources of aid. Both FINDS and FundFinder are available free of charge on a first-come, first-served basis.

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**Student Services**

**Residential Life**

**Bob Huss**, Director of Residential Life
**Eddie Denman**, Assistant Director of Residential Life - Administrative and Business Services
**Carol Hackerott**, Assistant Director of Residential Life
**Dave Stoddart**, Assistant Director of Residential Life

The Department of Residential Life exists to aid its residents' academic pursuits. Students who live on campus graduate faster and maintain higher grades than their off-campus counterparts. The Department of Residential Life provides residence hall space for approximately 5,000 apartments for more than 700, and a food service program, available to all students and staff, that is nutritional, convenient and enjoyable. All freshmen live in residence halls. Exceptions can be made for one of the following reasons: being married; being 21 years of age or older; living with parents in Stillwater or the surrounding area; being a veteran; living in a fraternity or sorority house (sorority pledges generally live in residence halls due to limited sorority house space); or having completed 27 credit hours. Exceptions must be requested in writing, and approved by the Department of Residential Life.

All accommodations are rented on a contract date priority basis. Prospective students' applications and contracts are encouraged to be sent in 9 months before the desired occupancy in order to receive the preferred on-campus housing location.

**Residence Halls**

OSU Residence Halls offer a variety of living accommodations: apartments in Bennett, traditional non-air-conditioned space in Bennett and Stout, and contemporary air-conditioned space in Kerr-Drummond, Wentz, Parker, and Willham North and South. Wentz Hall provides year-round housing for graduate and undergraduate students who are 21 years of age or older. (Other students who need continuous housing should request Wentz.) Stout Hall and Bennett Apartments do not close for academic year breaks, but are closed for the summer. Stout and Iba halls are available for students of sophomore standing and above. Parker is open only to students active in the Honors Program.

The Department of Residential Life emphasizes the development of interpersonal skills by having the staff teach leadership skills, group development skills, personal interaction skills, and study skills in noncredit seminars and credit classes. These programs are the formal aspect of helping students become involved in the residence halls. Residence halls and dining centers offer numerous opportunities for student leadership. More than 500 students are involved in planning and leading educational, recreational and social activities within the residence halls.

Residence hall living is relatively inexpensive. Over $1,400 per year is saved by the average student living in residence halls versus living off campus. Residence hall rates include all utilities including telephone (cable TV and computer jacks in some halls). The 325 passes per semester meal plan costs approximately $3.50 per meal. The in-hall laundry facilities are convenient and economical as is the on-campus parking. Residence hall rates rarely increase during the academic year.

Students are offered several lifestyle options from which to choose. The Independent Living Centers of Stout, Iba and Wentz provide more student responsibility including a 24-hour visitation option.

In every residence hall there is a well-trained professional staff to coordinate the day-to-day operations of the building, as well as student staff whose primary function is to see that students benefit educationally from their residence hall living experience. Each floor or wing has a live-in student staff member (resident assistant) responsible for assisting and guiding the residents. Resident assistants are undergraduate students specially trained in all aspects of residence hall living with the experience and knowledge to answer questions and act as an adviser for student government and programs.

Students who live on campus enjoy the opportunity to participate in the on-campus meal plan. Students may choose from five different meal plans. (Freshmen are required to take at least 175 passes per semester) depending on their individual needs. Some non-freshman students choose not to be on the meal plan. A variety of offerings are available in the four dining centers (Bennett, Kerr-Drummond, Scott-Parker-Wentz, and Willham.) Any student may eat any meal in any of the four dining centers. Each dining center offers a unique menu. Specialty menus include delicatessen, health club, country cooking, Italian, fast food, Mexican, wok cooking, and others. These specialty plans vary as the students' needs change. A pizza restaurant
and a convenience store are housed in Kerr-Drummond, and a bakery in Scott-Parker Wentz. Dining is available more than 16 hours a day.

For more information, contact the Department of Residential Life, Oklahoma State University, Iba Hall, Stillwater, Oklahoma 74078.

Mobility Impaired Student Housing

All residence halls offer some housing for students who have impaired mobility. Upon notification, the Department of Residential Life routinely modifies rooms and apartments to meet an individual's special needs. This modification may take several months, so advance notification is critical.

University Apartments

More than 700 all-brick apartments are available within walking distance of all classrooms and the library. These apartments serve students in the following priority: families, single graduate students, and single, upperclass, undergraduate students. Priority for single students is given to those who have lived in the residence halls. All apartments are two-bedroom units with optional furnishings.

The apartments have attractive outdoor surroundings with sidewalks, off-street parking, play areas, and laundry facilities provided in the University laundry and Brumley Apartments.

School bus transportation is provided to the Stillwater Middle School and High School, and one of the elementary schools. All other schools are within one and one-half miles of the housing area.

The Family Resource Center, located in the University Apartments area, offers a variety of programs to meet the needs of University Apartment residents. These programs vary depending upon the needs of the clientele as determined by surveys and individual meetings with residents. Typical programs have included: car seat loans, toy library, adolescent sexuality, child care information, and pot luck dinners.

University Apartments provide an on-site staff member, an apartment assistant who is readily available to the residents. Each apartment assistant has responsibility for about 90 apartments. The assistant's duties include helping residents resolve inter-apartment conflicts, meet neighbors and find appropriate community services. They also provide information about the facilities and the University, and provide referrals to appropriate University offices for residents' needs. The apartment assistant can be a very helpful person for all residents.

For more information contact the University Apartments Office, 120 Brumley, Oklahoma State University, Stillwater, Oklahoma 74078.

Students with Children

Information on child care in the Stillwater community is available at the following locations on campus:

- Family Resource Center - 1207 W. McElroy
- Nontraditional Student Services - 060 Student Union, Marie Basler, Coordinator
- Adult Student Organization - 040 Student Union
- Student Government Association - 040 Student Union

Student Activities

Jan Carlson, Manager, Student Activities
Barbara Dunn, Program Coordinator, Allied Arts
Marie Basler, Coordinator, Nontraditional Student Services
Muhrizah Brunken, Program Coordinator, SUAB and Student Union Programs

The Department of Student Activities is located in the basement level of the Student Union. This office is responsible for the program development for student organizations and serves as the liaison with student groups. The staff of this unit advises the Student government Association, Off-Campus Students Association, Adult Student Organization, as well as other student leadership groups. This office also develops training programs for student leaders.

Included in Student Activities is the Office of Student Union Programs. The staff of this area advises the Student Union Activities Board and is responsible for program development within the Student Union. These programs include films, speakers, exhibits, Freshman Follies, as well as other special events within the Student Union.

Counseling Services

The University Counseling Services provides confidential professional counseling assistance to students.

Assistance can be provided with emotional problems, as they affect personal and academic goals, intellectual functioning or relationships with others. Services include a broad range of developmental, remedial and preventive activities.

Help is available with the selection of an academic major, when such selections are more complicated or difficult than usual.

The Counseling Services also assist students with problems, concerns, and experiences relating to educational difficulties; i.e. study habits, unusual test-taking stress, lack of motivation, or attitudes related to school.

Minimal fees are assessed for individual and group counseling, for certain tests and for specific programs or workshops. Depending upon the need, tests and other University services may be used in conjunction with counseling.

All information regarding appointments and content of meetings is confidential.

The University Counseling Services is an accredited member of the International Association of Counseling Services, Inc.

Personal Counseling Services

Suzanne M. Burks, Coordinator
Sherry Almquist, Senior Clinical Counselor
Jack Davis, Clinical Counselor
Rex Finnegan, Senior Clinical Counselor
Connie Fox, Senior Clinical Counselor

Personal counseling is offered in either an individual or group setting. Discussions between counselor and student in personal counseling can center on any situation which keeps the individual from fully realizing his or her personal or academic potential. Among the variety of concerns dealt with in personal counseling are stress, anxiety, depression, eating disorders, substance use/abuse and interpersonal relationships.

Additional services provided to the academic community are developmental programs and workshops and psychiatric consultation services.
Community; and be advocates for students throughout the University and the community.

The staff in the International Students and Scholars office is responsible for advisement to students and faculty on matters which are unique to international students and scholars. Personal consultation, financial planning, liaison with embassies and consulates, legal referrals, academic referrals, immigration matters, and orientation programs, are among the services offered. Non-immigrant students and scholars can apply for internal-employment clearances in the office.

Pre-arrival information is sent to new students. Orientation and assistance with housing, banking, enrollment, etc., are offered to newly-arrived students. A newsletter is published monthly. In collaboration with other OSU departments and community groups, a variety of programs are presented throughout the year. Interested student volunteers participate and assist with many activities.

The International Students and Scholars office encourages international and American students, faculty, staff and community members to use its services and participate in the programs.

**Student Disability Services**
Debra Swoboda, Coordinator

Student Disability Services is committed to providing support services to students with physical and learning disabilities. The underlying philosophy of the program is to provide support services that will facilitate the academic progress of each individual student. A plan for services is developed on an individualized basis and may include academic advisement, specialized testing, recorded textbooks, academic accommodations, technological assistance, and other services as requested. Students may initiate a request for services by contacting Student Disability Services.

**International Students and Scholars**
Regina Henry, International Student Counselor
Barbara Kirby, International Student Counselor

The International Students and Scholars (ISS) office provides assistance to more than 2,000 international students from countries as far away as Singapore and Zambia and as close as Canada and Mexico. The goals of the office are to assist international students to: learn about their new surroundings; use the resources of the University and community; and be advocates for students throughout the University and the community.

Good health will not guarantee academic success, but it will help; while poor health, either physical or emotional, can impair both the academic and the extracurricular career.

The OSU Student Health Center maintains a staff of full-time physicians, mental health professionals, nurses, laboratory, pharmacists and x-ray technicians, and other necessary supportive and ancillary personnel who make a specialty of providing the best possible care at the least possible expense for the student. Along with this full-time help, there are part-time specialists in psychiatry and radiology.

The Student Health Center is an ambulatory primary care, facility, designed to provide cost-effective, physician-directed health care to students. A fee is charged to cover direct costs on laboratory, x-ray, pharmacy and elective services. In the event a medical condition exists that is beyond the scope of the services offered, referrals can be made to a family physician, or a local physician in Stillwater. Emergency services are offered by Stillwater Medical Center 24 hours a day.

For more information contact the Student Health Center, 1202 West Farm Road, Oklahoma State University, Stillwater, Oklahoma, 74078.

**Student Health Center**
Steve Rogers, C.H.E., M.B.A., Director
Ronald R. Sanders, M.D., Chief of Staff
Phillip A. Nokes, D.O., Staff Physician and Assistant Clinical Professor, OSU-COM
Kenneth B. Smith, D.O., Staff Physician and Assistant Clinical Professor, OSU-COM
Bobby D. Anthony, M.D., Staff Physician
Thomas L. Hansen, M.D., Staff Physician

A student enrolling at Oklahoma State University for the first time is required to present a Health Risk Assessment or a record of a physical examination by his or her private physician, or present a recent equivalent record of physical examination, such as a record from a place of employment or school, or the Armed Forces. An immunization record is of utmost importance. This health report is for determination and evaluation of the condition of the student so that corrective measures may be taken.

Oklahoma State University is interested in the student's physical and emotional well-being as it is in his or her intellectual and cultural development.

**Multicultural Development and Assessment Center**
Howard Shipp, Director
Pete G. Coser, Coordinator
Liza Longoria, Coordinator
Teresa Newson, Coordinator

The Multicultural Development and Assessment Center (MDAC) is a comprehensive support service for African-American, Hispanic, Native American and Vietnamese-American students. The program provides educational and personal growth opportunities to enhance the university experience for minority students matriculating at Oklahoma State University. Support services are provided through one-to-one counseling, group counseling, outreach programs, academic skill development programs, and tutoring. The following areas of student development are emphasized: academic development, personal adjustment/development, motivation, and career goals.

The MDAC staff work closely with other offices of the University. These efforts include direct and indirect assistance in the following areas: recruitment and retention; financial assistance; and career development and employment opportunities.
To enhance the social and cultural opportunities for minority students, MDAC staff members serve as a resource to various minority student groups and organizations in an advisory or consultative capacity. These organizations include: Hispanic Student Association, Afro-American Student Association, Minority Women’s Association, Native American Student Association, Vietnamese-American Student Association, American Indian Science and Engineering Society, Burnin’ Black Choir, NAACP, Society of Black Engineers, Technicians and Architects, and the Black Greek organizations.

Special Programs, Services and Facilities

**The University Honors Program**

*Robert L. Spurrier, Jr., Director*

*K. Celeste Campbell, Coordinator, Honors Communication and Advisement*

*Marilyn C. Bisch, Honors Academic Counselor*

Oklahoma State University is an active member of the National Collegiate Honors Council and the Great Plains Honors Council. The University Honors Program is composed of a university-wide General Honors component and specialized upper-division components at the departmental or college levels. The Honors Program provides academically talented students with the opportunity to study, conduct research, and exchange ideas in an exciting and supportive academic environment. Honors sections are offered in many general education courses, and special honors seminars and interdisciplinary honors courses also are available. Honors classes are taught by outstanding faculty members, and the classes are small in size to facilitate active student involvement.

Completion of the requirements for the General Honors award leads to special designation on the student’s OSU transcript, as does completion of the requirements for the Departmental or College Honors award in the student’s academic major. Students who earn a minimum of 39 honors credit hours and complete the Departmental or College Honors award, as well as the General Honors award, with 3.50 OSU and cumulative grade-point averages at graduation, receive the bachelor’s degree with honors, including a special entry on their transcripts and special honors diplomas.

Additional advantages for active participants in the Honors Program (minimum of six honors credit hours per semester and 12 honors credit hours for each two consecutive semesters for freshmen and sophomores and three honors credit hours per semester for juniors and seniors) include use of the Honors Program Study Lounge in the Edmon Low Library (with Apple Macintosh computers), extended check-out privileges for library materials, priority enrollment for the following semester, and an honors housing option in the residence halls.

Admission of new freshmen to the University Honors Program is based on an ACT composite score of 27-29 with a high school grade-point average of 3.75 or higher (or ACT composite score of 30 or higher with a high school grade-point average of 3.50 or higher). Application forms are included in the OSU Application for Admission. Students other than new freshmen may be admitted to the program on the basis of their cumulative grade-point averages (1-59 hours earned: 3.25, 60-93 hours earned: 3.37, 94 or more hours earned: 3.50).

For additional information about the University Honors Program, interested students should consult the director of the University Honors Program, 509 Edmon Low Library.

**Pre-law, Premedicine and Other Preprofessional Programs**

Students planning to enter a professional school should visit with their advisers and consult professional school admission and course work requirements listed in the specific school catalog. Many professional schools select students with a variety of bachelor’s degrees, although others may require a minimum basic core curriculum of varying length and grade-point average. Preprofessional program information is available in such areas as law, medicine, dental hygiene, dentistry, engineering, library science, medical technology, nursing, occupational therapy, optometry, pharmacy, physical therapy, physician's associate, radiologic technology, social work, and veterinary medicine. For more information, students should consult their advisers or the director of student academic services of the appropriate college.

**Bachelor of University Studies**

Individualization and flexibility are the features of the program leading to the degree of Bachelor of University Studies. This program is designed for the goal-directed, motivated and mature student who finds that the present degree programs (majors) at the University will not enable the student to attain his or her educational objectives; it is not intended for students whose educational objectives are undetermined. The Bachelor of University Studies degree permits a student to utilize the total resources of the University, available in accomplishing unique educational objectives. The program may or may not prepare a student for a particular occupation or entry into a professional school.

A student who believes that his or her educational objectives can best be fulfilled through a Bachelor of University Studies degree program can obtain information on the program from the office of student academic services in the college in which the student is to be enrolled.

All students who intend to present a program for the Bachelor of University Studies degree must enroll in one of the colleges of the University. The Bachelor of University Studies degree program must meet requirements stated in the "University Academic Regulations" in the Catalog.

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Credit By Exam

Oklahoma State University Testing and Evaluation Service is a national test site for the College Board's College Level Examination Program (CLEP). National CLEP testing centers offer two kinds of examinations: general examinations and subject examinations. OSU only grants college credit for subject examinations. Credit earned through these examinations are normally recognized by other colleges and universities throughout the nation.

Oklahoma State University is a national test site for ACT’s Proficiency Examination Program (PEP). The University Testing and Evaluation Service administers PEP examinations in business, the arts and sciences and education.

OSU grants credit for acceptable scores in the Advanced Placement Program (AP) as administered by the College Entrance Examination Board in Princeton, New Jersey. The AP tests are taken by high school students while in high school. High school counselors can be of assistance in making testing arrangements.

Oklahoma State University recognizes credit earned through the International Baccalaureate (IB) Program in a limited number of subject areas. Credit will be awarded to students who have taken Higher Level courses through the International Baccalaureate Program and scored at least a 4 (on a seven point scale) on the Higher Level course examination. This credit will be awarded on a course-by-course basis.

Military personnel and veterans who wish to establish credit for military training should submit to the Office of Admissions a copy of their DD214, (Armed Forces of the United States Report of Transfer or Discharge) or their DD295 (Application for the Evaluation of Educational Experiences During Military Service), and any certificates of completion for military schools attended. OSU also accepts credits earned through the DANTES Subject Standardized tests for active military personnel.

Academic departments on campus at OSU may offer advanced standing examinations in subject areas not offered by the CLEP, PEP or AP. Any currently enrolled student whose travel, employment, extensive readings or educational experience appear to have given the student proficiency in a subject that is offered at OSU, equivalent to the proficiency ordinarily expected of those students who take the subject in a regular class, may apply for an examination on the subject.

A student may apply to take a validation examination for a course taken at an institution that OSU does not recognize as accredited. The dean of the college in which the course is offered appoints a committee of three to construct, administer and evaluate the examination.

Information pertaining to these examinations may be obtained from the Office of Admissions. See also the “Academic Regulations” section of the Catalog.

Gerontology Institute

The Gerontology Institute is housed in the College of Human Environmental Sciences. The Gerontology Institute’s mission is to serve the growing demand for instruction, outreach and research excellence in the field of aging. It functions as a multidisciplinary program allowing students an opportunity to study in the field of aging. The Institute provides a university-wide focus in coordinating departmental curriculum in gerontology.

The Gerontology Institute was created in response to a widespread interest in course offerings in gerontology. Students can receive an M.S. in gerontology through the natural and applied sciences major and a graduate certificate in gerontology. There is also a bachelor’s program in gerontology through the departments of Sociology and Family Relations and Child Development. Doctoral students can include gerontology as an area of specialization in their programs.

The Institute sponsors an annual Ethics and Aging Conference in the Tulsa area for professionals and students in the field of aging.

The headquarters for the Southwest Society on Aging, the largest regional gerontological association in the U.S., is located at the Institute. This partnership allows students an opportunity to network with professionals in the field of aging.

The Gerontology Institute serves as a link between the University and the community in the field of aging, and sponsors student internships in community agencies. The future holds limitless opportunities for continuing innovative partnerships and shared programming between the Gerontology Institute and the community.

Independent and Correspondence Study

Charles E. Feasley, Director

Independent and Correspondence Study (I&CS) provides independent study opportunities to learners whose work, family responsibilities, physical isolation, or closed course sections may preclude participation in regularly scheduled class meetings. I&CS offers over 150 courses for college credit and continuing education units.

Students may enroll in correspondence study courses at any time without being admitted to OSU and take up to a year to complete course work. Some courses are also offered as video-assisted telecourses or standardized independent study. For these courses, students must be admitted to OSU, enroll through regular campus registration, and complete these courses during one campus semester. Some of these courses also have three campus meetings.

For more information or enrollment, contact OSU Independent and Correspondence Study, 001 Classroom Building or electronic mail to ICS-INF@okway.okstate.edu.

National Student Exchange

The National Student Exchange (NSE) program provides OSU students the opportunity to spend a semester or a year at one of over 120 colleges and universities, including Alaska, Guam, Hawaii, Puerto Rico, and the Virgin Islands. Students may also gain access to designated study abroad programs offered by participating universities without paying the higher cost of nonresident tuition. The NSE also enables students from other member college and universities to attend OSU at nonresident tuition rates. For additional information and application material contact the study abroad coordinator, Office of International Programs, 307 Center for International Trade Development or by electronic mail at auel@okway.okstate.edu.

Oklahoma Scholar-Leadership Enrichment Program

The Oklahoma Scholar-Leadership Enrichment Program (OSLEP) is a statewide academic program designed to develop scholarship and leadership abilities of outstanding students. Students study in intensive, five-day seminars with a distinguished scholar and are selected from Oklahoma’s 21 four-year colleges and universities. OSU’s upper-division and graduate students with a 3.00 GPA are eligible to apply. Freshmen and sophomores who have demonstrated exceptional academic achievement are also considered. OSLEP seminars carry two credit hours, and the only cost to students is the tuition for two credit hours and a transcript fee. The seminars are graded on a satisfactory/unsatisfactory basis and are transferred to OSU as Pass/Fail. Application should be made as early in the academic year as possible.
Further information and application materials may be obtained from OSU’s OSLEP coordinator, University Honors Program, 509 Edmon Low Library.

Semester at Sea

Semester at Sea is an opportunity for OSU undergraduates in good academic standing to earn a semester of credit in a wide range of academic areas while traveling around the world on the S.S. Universe. Approximately 50 percent of the semester is spent at sea and 50 percent in various ports allowing students to travel and relate experiences directly to the academic program aboard. Specific information may be obtained by contacting the associate director, Student Union.

Study Abroad

Students at OSU are encouraged to enhance their education by adding an international dimension through study abroad. Students may earn OSU credit through reciprocal exchange programs in many European countries including Turkey, and also in Japan: Students may also earn OSU credit by participating in short term professor-led programs offered by OSU departments and extension units in countries such as the Bahamas, England, France, Italy, Japan, Mexico, and Peru. Students may earn transfer credit through participation in study abroad programs offered by other U.S. universities or through direct enrollment in a university abroad. Work, internship and volunteer opportunities are also available.

OSU offers outstanding undergraduate and graduate students the opportunity to apply for the Bailey Trust Memorial Scholarship for study abroad in the liberal arts. Information and applications are available at the College of Arts and Sciences Student Academic Services Office, 202 Life Sciences East. Students interested specifically in modern language study abroad may also apply for the Dutreau Scholarship through the Department of Foreign Languages and Literatures, 303 Gunderson Hall. National and regional scholarships for study abroad are also available, and federal financial aid can often be used to offset the cost of an academic program abroad.

Information on study, work or volunteer projects abroad is available from the study abroad coordinator, by appointment in 307 Center for International Trade Development or by electronic mail at auel@okway.okstate.edu. Students are invited to visit the Study Abroad Office and Library without appointment to visit the study abroad web site (http://www2.okstate.edu/01P/study_abroad.OIP.html). The Study Abroad Library is located in the Office of International Programs at 307 Center for International Trade Development. Application deadlines for most fall and summer study abroad programs and scholarships are at the end of January or the beginning of February. Deadlines for spring study abroad is usually in October or November.

University Center at Tulsa

The University Center at Tulsa (UCT) was established in 1982 to provide the third and fourth years of undergraduate study and master’s degree programs for the Tulsa metropolitan area. The Board of Regents exercises governmental control of the Center, contracts with participating universities for courses and degree programs, and provides state-appropriate funds for delivery of those programs.

Programs of study are offered by four participating universities—Oklahoma State University, Langston, Northeastern State, and the University of Oklahoma. The four universities are not permitted to duplicate programs. Oklahoma State University is approved to offer courses leading to 18 graduate degrees, two certification programs, and two undergraduate degrees.

Faculty from the participating universities provide instruction. UCT is not authorized to hire its own faculty. To ensure programs at UCT are comparable to those on the Stillwater campus, Oklahoma State University assigns UCT classes as part of the regular teaching load of OSU faculty when possible.

Courses taken through the University Center at Tulsa are treated as residence credit at the university teaching the course. Courses taken at UCT that are offered by Langston, Northeastern State, or the University of Oklahoma are accepted at Oklahoma State University as transfer credits. For information on transfer credits, refer to the section “Transfer of Credits” elsewhere in the Catalog.

Students wishing to take courses at UCT enroll and pay tuition and fees at the Center. Tuition and fee rates for courses offered at UCT are set by the Oklahoma State Regents for Higher Education and are published in the UCT class schedule each semester.

Admission requirements for students seeking admission to programs offered by Oklahoma State University through the University Center at Tulsa are the same as if they were pursuing the degree program on the Stillwater campus. Students pursuing a degree from OSU through UCT are also eligible to apply for financial aid.

Degrees are granted by each of the participating universities. UCT is not authorized to grant degrees under its own auspices. Graduates may participate in their home university’s graduation ceremonies and in commencement sponsored by UCT and held in Tulsa.

Special Services

Academic Advising

Academic advising is considered a major function within the University and is student-centered in that it serves the student first and foremost and not a particular discipline, department or college. Academic advising is designed to assist students in developing their intellectual potential through effective use of all resources available at the University—academic, cultural and social. Thus, the role of the student’s academic adviser is (1) to assist in educational planning, including clarification of career and educational goals, curriculum planning, and short-term course selection, (2) to become aware of and make appropriate referrals to campus support services, (3) to provide information to prospective majors, and (4) to prepare degree plans for graduating seniors and submit these to the respective college graduation certification office.

The advising function is performed within each of the undergraduate colleges and in the Office of University Academic Services. Each college structures its advising system based upon the college’s philosophy and perceived
student needs. In most colleges, freshmen and undeclared students are advised through the college's office of student academic services, whereas students who have declared majors are advised by an adviser in their major department.

Each academic dean has established an office of student academic services to represent him or her in matters concerning undergraduatestudents. Students are encouraged to contact their office of student academic services when questions arise regarding advising, academic programs and requirements, and academic support services.

The locations of the offices of student academic services are:

- Agricultural Sciences and Natural Resources-136 Agricultural Hall
- Arts and Sciences-202 Life Science East
- Business-201 L Business Building
- Education-106 Willard
- Engineering, Architecture and Technology-101 Engineering North
- Human Environmental Sciences-114
- Human Environmental Sciences
- University Academic Services-201M Whitehurst Hall

Students should keep in mind that while the University provides advising as a service and resource, the ultimate responsibility for identifying and completing degree requirements rests with the student.

University Academic Services

The Office of University Academic Services (UAS) is responsible for providing academic advising and other related academic services to students who are admitted provisionally to OSU through the Alternative Admission and Adult Admissions programs, as well as probationary students referred by the academic colleges. The Alternative Admission Program allows approximately eight percent of OSU's entering freshman class to be admitted without meeting all of the normal criteria for admission; the Adult Admission Program allows students who are 21 and older and those on active military duty an opportunity to seek admission to the University, provided they have never completed prior college work.

Students who enroll through UAS are assigned to advisers who monitor remediation of curricular deficiencies and progress toward meeting the University's General Education requirements. Advisers also help clarify University policies and assist students in exploring career goals. UAS advisers are knowledgeable about the degree programs in all six undergraduate academic colleges, and one primary goal of UAS is to provide personal attention and assistance to students as they develop successful study habits and explore the various academic options available to them at OSU.

Student Academic Mentor Program.

The Student Academic Mentor (SAM) Program is a campus-wide service that pairs each new freshman, transfer and adult student with an upper class student in an effort to ease the transition to OSU. These "SAMs" are carefully selected among continuing students at OSU to work with new students individually and in small groups during ALPHA, the week prior to the beginning of the fall semester, and sometimes through their freshman orientation classes to help them feel welcome and to assimilate into campus life.

University Academic Assessment Program.

UAS also provides academic advising and counseling to probationary students enrolled in the University Academic Assessment Program (UAAP). This program is designed for students who have experienced academic difficulty, many of whom are on probation or have been readmitted after suspension, as well as transfer students who are admitted on probation and those students who are denied enrollment through their academic colleges. UAAP gives students an opportunity to evaluate their career and educational goals in an attempt to develop a realistic and successful educational plan. In addition to meeting minimum grade-point averages required by the Oklahoma State Regents for Higher Education, students must enroll in and complete the Academic Assessment and Evaluation course. This course is designed to help students identify their reasons for experiencing academic difficulty and determine ways to overcome their academic weaknesses. It also assists students in exploring various career and educational alternatives.

In addition to the teaching, academic advising and counseling functions of UAS, the office serves as a central information center where referral to a variety of campus academic and non-academic support services is given.

Tutorial Service.

Qualified tutors for common general education courses are available free of charge for students enrolled through University Academic Services. Tutor applicants are thoroughly screened to guarantee quality tutors and are matched with students who need their services. Tutors are paid from UAS funding; however, students who fail to keep their appointments will be billed directly for the cost. SAM tutoring, as well as information regarding free departmental tutoring programs and other campus-wide academic support and resource centers, is made available to all OSU students through the Office of University Academic Services.

University Assessment Program

The University Assessment Program at OSU provides public assurance of program quality and accountability, and data for periodic reports documenting progress toward meeting institutional, institutional and programmatic objectives. The University Assessment Council consisting of faculty, staff and student members developed the following philosophy:

1. Determine student readiness based on multiple indicators including past academic performance, educational readiness, educational goals, study skills, self-concepts and motivation.
2. Ascertain student academic progress and learning competencies.
3. Ascertain student achievement of program goals and objectives.
4. Determine student and alumni satisfaction with academic and support services, curriculum, faculty and personnel.
5. Provide information to enhance academic and student service program design, development and management.
6. Evaluate results of the assessment information collection, feedback and integration process.

On July 1, 1994 the Office of University Assessment was created as an administrative unit. This office pursues the University Assessment Council philosophy by administering the two programs of assessment and tracking.

The program of assessment has four initiatives:

1. Entry level, composed of Entry Level Placement Analysis, computerized placement tests, ACT, SAT, high school GPA, and others.
2. Mid level, composed of departmental and university-wide measures of student achievement.
3. Outcomes, composed of departmental measures of student achievement.
4. Satisfaction, composed of the student satisfaction and alumni surveys.

The program of tracking has four functions:

1. Following selected student cohorts.
2. Providing an early warning system of student difficulties.
3. Integrating assessment data into longitudinal profiles of individual students.
4. Providing feedback to the institution.

The OSU Office of University Assessment submits a yearly report to the Oklahoma State Regents for Higher Education that summarizes the activities conducted at OSU in the above areas. Each activity is also reported separately with information regarding objectives or outcomes, methods used, student population involved, and results.

Career Services

Career Services assists OSU students and alumni with job search activities related to internships, part-time employment while attending college and full-time professional employment following graduation.

Some of the many services that Career Services provides are:

- Orientation workshops available at the beginning of each semester explaining the services extended to students through Career Services. Orientation participation mandatory in order to participate in on-campus interviews.
- Posting of job vacancy information as to available position vacancies for education and business, and industry and government. Available on World Wide Web (http://www2.okstate.edu/placement).
- Internship program and opportunities to explore internships in a variety of academic areas. Generally focused on the summer months but some for the spring and fall semesters.
- Career fairs held on campus each year to provide opportunities for interaction between registrants and employers. Employers’ information booths and distribution of literature about their companies and various job opportunities. Current career fairs: CEAT Career Fair; OSU Business Career Fair; Information and Telecommunications Technologies Career Fair; Graduate and Professional School Fair; Multicultural Career Expo; Summer Camp Jobs Day; OSU Hospitality Days; the OSU Career Fair; Teacher Placement Days; and Design Career Fair.

Interview Preparation Services include resume critiques; mock interviews; employer information; and individual counseling.

Credential service for students seeking employment in teaching, school personnel or higher education fields. Establishment of a credential file holding up to seven letters of recommendation with registration information. When requested by a student or employer, a copy of the file made and sent to the employer for consideration.

On-campus interview program available to all students registered with Career Services. Use of an automated software system, Resume Expert, to facilitate the process of bringing students and employers together for on-campus interviews. More than 150 employers and 1,600 students scheduled for these services each semester.

Career Services is located at 360 Student Union and is open from 8:00 a.m.-5:00 p.m., Monday through Friday and extended hours during recruiting season.

Computing and Information Services

Computing and Information Services (CIS) is the central provider of computing, data networking, and telephone services for Oklahoma State University. CIS also provides a variety of other important services to the campus including computer training, publications, programming support for institutional information systems, desktop computing support on site, and a comprehensive Help Desk.

The CIS Help Desk, serving more than 4,000 customers each month, provides diagnostic support and remedial assistance by phone, by electronic mail at helpdesk@okstate.edu, or in person at 113 Math Sciences.

All OSU students are given computer access and electronic mail upon enrollment. Students can also access some CIS computers from their homes via dial-up modem facilities. OSU’s extensive data communications network provides interfaces to OneNet, MIDnet, the Internet, and the World Wide Web.

CIS supports eight remote computing facilities in various locations around campus with more than 400 microcomputers. A SUN workstation cluster is located in 113 Engineering South.

The central mainframe computer at OSU is an IBM 9872-R32 Enterprise Server operating MVS/ESA and VM/ESA. Two time-sharing systems, TSO and CMS, are available on the mainframe. CIS also has a DEC System 3000-600 VMS and a DEC 2100A-4/275 RISC DIGITAL UNIX machine.

Additional information about CIS and computing at Oklahoma State University can be found at the World Wide Web site or the Internet (www.okstate.edu/cis_info). It is updated frequently with timely announcements.

The Center for Family Services

The Center for Family Services is sponsored by the Department of Family Relations and Child Development in the College of Human Environmental Sciences West building. This multipurpose facility also houses the OSU Child Development Laboratory.

The Center’s dual mission is to provide high-quality, low-cost marital and family therapy services to the public and to provide a training environment for master’s degree students specializing in marriage and family therapy. Because the Center for Family Services is a training facility, advanced graduate students in marriage and family therapy conduct the majority of the therapy. While conducting therapy, therapists-in-training are under the direct supervision of clinical faculty members who are all licensed marriage and family therapists. The Center’s state-of-the-art facility allows for observation of sessions by clinical supervisors and videotaping of sessions.

The Center for Family Services is open to any individual, couple or family that desires help with relationship issues, including marital concerns, parent-child relationships, or other family issues. Fees are determined on a sliding fee scale based on income and family size, ranging from $5 to $50. No one will be denied services because of inability to pay.

Appointments are available on request. While appointments are available during both day time and evening hours, most appointments are scheduled on Wednesday and Thursday evenings. When an individual contacts the Center...
to seek marital and family therapy services, a staff member will ask a few questions about the family and the reasons for seeking the services, in order to assign the most appropriate therapist. Usually within 24 hours, an initial appointment will be scheduled. If time allows, an information packet will be sent before the first appointment.

Mathematics Learning Resource Center

The Mathematics Learning Resource Center (MLRC) is intended to be the hub of undergraduate mathematics instruction at OSU. The MLRC is located in the basement of South Murray Hall and is open to students on a walk-in basis. The MLRC consists of a 40-station networked microcomputer lab, a 10-station video lab, and a tutoring room. Instructional software and several programming languages are available, as is a library of video cassettes that contain lessons on almost all levels of mathematics courses through calculus and differential equations.

Undergraduate students majoring in mathematics are available in the Center to tutor students and to assist students in the use of the equipment.

Psychological Services Center

The Psychological Services Center was established in 1971 as a training, service and research facility at Oklahoma State University. It is operated by the Department of Psychology through the College of Arts and Sciences, and the College of Education. It is located in 118 North Murray on the OSU campus. The building is accessible to the handicapped.

Services are provided to children, adolescents and adults and are available to residents of Stillwater and the surrounding community as well as OSU students, faculty and staff. The Center offers a variety of psychological services such as but not limited to: individual, group, family, and marital therapy; parent counseling and training; play therapy for children; treatment of phobias and anxiety disorders; biofeedback; relaxation training; assertiveness training; stress management; depression; intellectual, personality, and neuropsychological assessment; and school consultation.

The Center’s staff includes master’s, doctoral, and postdoctoral students in the clinical, counseling and school psychology training programs, that are accredited by the American Psychological Association. The staff also includes supervising clinical counseling, and school psychologists from the Department of Psychology. Although the exact composition of the staff may change from year to year, the staff is generally composed of individuals from diverse ethnic and cultural backgrounds.

There is a graduated fee structure ranging from $5 to $70 per session, depending on one’s financial situation.

The Center is open from 8:00 a.m. until 5:00 p.m. Monday, Tuesday and Thursday. On Wednesday and Friday, it is open from 8:00 a.m. until 5:00 p.m. Appointments can be made by contacting the Center.

Special Facilities

Bartlett Center for the Studio Arts and the Gardiner Art Gallery

Old Gardiner Hall, as the Bartlett Center was formerly known, was built in 1910 as a women’s residence hall and has served also as a classroom building for women’s physical education, speech, agriculture extension and the College of Business. The building was named to recognize Maude Gardiner, founder of the University’s home economics program. Gardiner Hall was renamed the Bartlett Center when Mr. and Mrs. F. M. “Pete” Bartlett gave Oklahoma State University a generous gift designated for the renovation of the hall.

The Bartlett Center has greatly enhanced the image of the visual arts at OSU. The Center provides activities which have brought regional and national recognition to OSU in the visual arts. The department contains eleven studios, and two computer laboratories all custom designed for specific activities. Special studios include oil painting, watercolor, graphic design, and drawing. In addition to studio space, the Center provides a 100 seat auditorium with complete multimedia capabilities, Department of Art faculty offices and the Gardiner Art Gallery;

The Gallery provides year-round exhibitions of regional and national importance to which the public is invited. Exhibitions have included the work of Manuel Neri, Deborah Butterfield, Lucas Saramas, and traveling exhibitions such as "American Works on Paper: 100 years of American Art," and "Watercolor U.S.A." Since 1987, the Gallery has hosted an annual juried show, "The Cimarron National Works on Paper." Faculty and student work is also exhibited on a regular basis.

Bartlett Independent Living Center

The F.M. "Pete" Bartlett family, with a vision of independent living for all, funded the renovation of a residential home on campus. This concept of a research and demonstration center illustrates universal design, that is, design for the life span of all people regardless of age, sex or ability.

A partnership between the College of Human Environmental Sciences (HES) and Integris Mental Health System was established by housing the Reflections Senior Day Treatment Program in the Bartlett Independent Living Center. Integris Mental Health provides clinical services for the elderly and works with OSU/HES to establish educational and research opportunities.

This program was recently named the 1997 Most Innovative Program by the Association for Ambulatory and Behavioral Healthcare. OSU students interested in the field of aging have an exciting opportunity to learn and interact with older adults. Reflections provides students with research and practicum opportunities, internships and assistantships.

The special features of the center include computerized environmental control systems, motorized windows, blinds, and draperies; adjustable-height work centers and other devices related to everyday functioning. The center provides a base of knowledge for students, builders, architects, interior designers, and other professionals who work with clients experiencing life span changes.
Colvin Center

The Colvin Center, one of the finest facilities in the nation, encompasses a wide variety of organized and informal recreation activities for all University students. Campus recreation programs include intramurals, sports clubs, non-credit activity classes and outdoor recreation programs. Activity areas available include racquetball, indoor and outdoor swimming, gymnastics, fencing, billiards, dance, golf, table tennis, wrestling, weight-lifting, basketball, volleyball, badminton, squash and indoor climbing wall. Over 50 intramural activities are conducted for women, men and co-rec (coed) teams.

Outdoor facilities available for student recreational use include tennis courts, basketball courts, archery range, golf driving range, jogging track and fields for soccer, rugby, football and softball. Facilities are also available at Lake Carl Blackwell and Camp Redlands for a challenge course, sailing, canoeing and crew. Additional information about recreation programs may be found in the "Student Life" section, and on the World Wide Web (http://home.okstate.edu/homes. nsf/toc/osurechome.htm).

Oklahoma Museum of Higher Education-Old Central

Historic Old Central, dedicated June 15, 1894, was the first permanent building on campus. Classes began in the new "ultra-modern" structure September 12, 1894. Originally referred to as "The College," this building housed both academics and administration for six years. In 1900, the Department of Chemistry moved from the basement of the College to a new building; in 1906 administration moved into the new Morrill Hall.

The Friends of the Oklahoma Museum of Higher Education (OMHE) is a group composed of influential Oklahomans interested in raising funds to complete development of the museum. In 1994 the Oklahoma Higher Education Hall of Fame, created by the Friends, inducted the first members. The Hall of Fame currently displays 40 prominent educators, administrators and supporters from all areas of Oklahoma. Inductions occur annually each October from nominations made by alumni, colleagues, friends and family; nomination forms are available at the museum.

When fully developed, OMHE will represent all higher education institutions in Oklahoma. Current exhibits center on OAMC/OSU's well documented history. One room contains an exhibit on Bacone College, at Muskogee, the oldest continuously operating school in the state (1880). Rotating exhibits feature selected educational institutions in Oklahoma.

Major structural restoration has been completed to present Old Central as it was in 1894. Interior photos published in the 1894-95 Catalog are being used as guides for re-creating five period rooms.

Tour groups, orientation classes and group use of Old Central can be arranged at the museum office, or by calling (405) 744-2828. (Classes are not charged and education related groups are given preferential rates.) Museum hours are 9:00 a.m. to 5:00 p.m. Tuesday through Friday, and 11:00 a.m. to 4:00 p.m. Saturday; closed Sunday, Monday, and state holidays. (Home football game day hours are adjusted according to game time.) Donations of $1.00 per adult and 50 cents per child are requested, but not mandatory; any amount helps keep the museum open. Larger donations are always appreciated; tax verification provided on request.

OSU Library

The OSU Library is a premier electronic library, with four branch libraries and a combined collection of 1.7 million volumes, 17,550 serials, more than 2.7 million microforms and 240,000 maps and aerial photographs.

The Edmon Low Library, is open 102 hours per week when classes are in session. Librarians provide reference assistance from three service points--General Reference (second floor), Science and Engineering (first floor) and Government Documents (fifth floor). With few exceptions, books and periodicals are shelved in open stacks and are available to all faculty members and students.

The Library's online information system, PETE, provides access to the library's catalog, various databases and online indexes. PETE is accessible through personal computers connected to the Computing and Information Services mainframe.

Request for new books or journal subscriptions may be submitted by phone, campus mail, electronic mail or by the liaison librarian for each department. The Library honors book requests to the extent that the budget permits. Most decisions regarding journal subscriptions are made in consultation with academic departments.

Interlibrary Services (first floor, southeast) is responsible for the borrowing and lending of materials between libraries. OSU faculty and students may request materials, which are not available at the OSU Library, to carry out research. Requests for photocopied materials are usually filled within a week; however, delivery of books may take longer. This office also operates the Document Delivery Services for OSU students enrolled in courses away from the Stillwater campus. These students may submit requests for photocopies of articles or for books. Once Interlibrary Services finds the requested materials, they will fax or send it via Federal Express.

Government Documents. Many consider the OSU Library's Documents Department to be the best regional depository for U.S. Government publications in the Southwest. Non-depository materials as well as publications of the state of Oklahoma, foreign governments, and international organizations are obtained to support fields of interest to OSU. The Documents Department has a growing collection of indexes and data files issued by the United States and commercial companies. These files include the 1990 Census, the 1992 Economic Census, and indexes to congressional publications and international trade information. Whenever possible, the department provides Internet access to U.S. government information via the OSU Library's web site.

Photocopy services are available in the Edmon Low Library and in all four branch libraries: Architecture, 201A School of Architecture; Mary L. Williams Curriculum Materials Library, 101 Willard; Patent and Trademark Library, 206 Center for International Trade Development; Veterinary Medicine, 102 Veterinary Medicine.

All librarians and library departments can be found on the World Wide Web (http://www.library.okstate.edu).

Library departments are located by floors:

- Circulation 1st floor center
- Documents Ref. 5th floor center
- General References 2nd floor center
- Interlibrary Services 1st floor southwest
- Map Room basement northeast
- Microform & Media 1st floor southeast
- Reserve 1st floor center
- Science & Engr. 1st floor north
- Special Collections 2nd floor east

M. B. Seretean Center for the Performing Arts

The M.B. Seretean Center for the Performing Arts provides a modern and well-equipped home for the departments of Music and Theater. Constructed in 1970 at a cost of three million dollars and named in honor of its principal benefactor, M.B. "Bud" Seretean, a 1947 OSU graduate, the Center is the focal point of all major dramatic and musical events on the OSU campus. The center's 75,000 square feet include the 900-seat Concert Hall and the 600-seat Vivia Locke
Theatre which attract a myriad of fine arts activities such as ballet, concerts, mime, opera, plays, faculty and student recitals, and a host of summer conventions.

In addition to the auditorium and theatre, the Seretean Center houses teaching studios for music, a variety of classroom, a specially-designed choral room, a rehearsal hall for band and orchestra, costume and scene shops, and a well-equipped audio center, all designed to provide an excellent atmosphere in Oklahoma for the teaching of the fine arts.

Student Union

The primary purpose of the Oklahoma State University Student Union is to serve the members of the University community through an organization that provides a myriad of necessary and convenient goods and services; offers programs to enhance the educational, social, cultural, and recreational development of individuals; and fosters an atmosphere conducive to open interaction and exchange among all students, faculty, staff, alumni and guests.

Dating back to 1815, college unions have always been thought of as "places where all may meet on common ground." In their early years, the college unions were debating halls for university students. Through the years, student unions have added to these halls such facilities as recreation centers, dining halls and meeting rooms. Today student unions bring together students, faculty, staff, alumni and guests in a friendly, casual atmosphere. They are not merely buildings, but serve as the community center "the heart of the campus."

The OSU Student Union is certainly no exception to this tradition as it has been serving the University community and state since opening in 1950. With a facility consisting of 543,441 square feet, it stands as one of the largest and most comprehensive unions in the world. It provides the University with such services as an 81-room hotel, the Bookstore, a variety of lounges, a theater, extensive food services, a shopping mall, a recreation center, a post office, a travel agency and many University offices.

The Student Union is the center of student activities as it houses the offices for major student organizations. Many activities such as movies, dances and speakers are provided for students by the Union's student programming organization, the Student Union Activities Board.

As Oklahoma State University's conference center, the Student Union hosts many continuing education conferences throughout the year. The variety of meeting rooms located throughout the Union are also available for OSU student organizations and faculty meetings, normally at no charge.

Although the OSU Student Union's annual budget exceeds $1 million, less than 10 percent of the total cost of operating the Union is funded from student fees. As the Union receives no state funds for its operations, the remainder of its budget is generated from the sale of goods and services, thereby making it virtually a self-supporting University facility.

Telecommunications Center

The Telecommunications Center is a visible commitment to the University's desire to keep pace with the communications revolution. Educational Television Services (ETS) occupies the facility and is equipped with two independent, fully operational studios with a capacity of eight cameras. A third studio is a self-contained, instructor-controlled, classroom-style studio for videotaping courses and live two-way presentations via compressed video fiber optic lines. There are two off-line and one on-line editing suites and two remote camera units.

ETS has the ability to transmit or receive on either the C-band or Ku-band satellite format, including using a Ku-band satellite truck from remote locations. ETS produces over 1400 live and taped programs per year consisting of video, teleconferences, educational programs, documentaries, video training tapes, and public service announcements for the University, state agencies and for state and federal grants.

ETS employs a full-time staff of 35 in the areas of production, engineering and art. Each of these areas is also staffed with students working to earn practical experience under the guidance of professionals. For those students who meet the prerequisites, who are conscientious and who are willing to work, there are three methods of entry into employment at ETS. One method is through an internship which allows the student to earn college credit. Another method is through part-time employment at ETS, usually reserved for those students who have completed an internship, and the third is through the University's work-study program.

Wellness Center

The OSU Wellness Center offers a variety of health-related programs for all OSU students. These programs include free wellness screening (cholesterol, blood pressure, body composition, and computerized health risk appraisal), nutrition counseling, wellness education classes, certification of aerobics and weight training instructors, and campus-wide health promotion activities.

The Wellness Center offers opportunities to undergraduate and graduate students to participate in practicum and internship programs in the disciplines of computer science, counseling and psychology, exercise science, health education, marketing, nutrition, pre-physical therapy, and wellness.

The Wellness Center houses a 140-seat theater, demonstration kitchen and dining room, aerobic area, weight room, computer lab, resource center, a full-service wellness laboratory, and physical therapy clinic. These rooms are available to OSU student groups for OSU-sponsored events, in cooperation with the Wellness Center.

Student Life

Allied Arts

Allied Arts, a unit of the Office of Student Activities, is responsible for presenting professional, touring, live performing arts events for the university community. Selection of these events is the function of a committee composed of students, faculty, staff and representatives from the local community. Events are selected from a broad range of performing arts, and include orchestras and choral groups, chamber ensembles, theatrical productions, mime, jazz, opera, ballet and dance, international and traditional ethnic performing arts, and vocal and instrumental soloists. The goal of the Allied Arts program is to provide the university community with the opportunity to experience quality, live performing arts in the university setting. Each academic year Allied Arts presents five to six performances, and persons attending do so either through the purchase of a season subscription or by purchasing individual tickets to specific events. OSU students can attend with either a student-discount season subscription or reduced-price individual tickets to specific events.

Allied Arts is the oldest continuously functioning university-related performing arts series in the state and has maintained a tradition of quality and variety in its presentations for more than 70 years.
Greek Life
Marlon Morgan, Manager, Greek Life
Darin Behara, Coordinator, Greek Life
Karen Smith Woods, Program Assistant

Since 1917, fraternities and sororities have not only enriched and influenced campus life programs at Oklahoma State University, but the lives of their members as well. There are approximately 2300 students who are members of the 23 national fraternities for men and 13 national sororities for women. The majority of these Greek letter organizations provide housing for their membership that is University recognized, allowing fraternities and sororities to house freshmen. The primary goals of fraternities and sororities are to enhance and promote brotherhood/sisterhood, academic achievement, community service, leadership and social awareness. Fraternities recruit informally by contacting potential members throughout the year. Sororities sponsor a formal recruitment period, traditionally held in August, followed by informal recruitment periods in the fall and spring. For additional information about fraternities and sororities, write to Greek Life, 050 Student Union, OSU, Stillwater, Oklahoma, 74078.

Honor and Service Organizations

OSU offers opportunities for personal and professional development through many nationally-affiliated honor and service organizations. These organizations provide opportunities for leadership and program development, new friendships and recognition of achievement. University-wide organizations include:

- Blue Key (junior and senior honor society)
- Golden Key (junior and senior honor society)
- Mortar Board (junior and senior honor society)
- Orange and Black Quill (honor society for sophomore women)
- Order of Omega (honor society for sorority and fraternity members)
- Phi Eta Sigma (freshman and sophomore honor society)
- Phi Kappa Psi (national honor society for seniors and graduate students)

(See college sections for organizations within each college.)

Lectures

Oklahoma State University, through its academic organizations and student groups, has a significant number of speakers each year, enriching the intellectual life on campus. Individuals, from both off-campus and on-campus, share their expertise with faculty, students, staff, and town's people on a wide variety of topics.

Many of the academic units as well as student groups invite speakers to their meetings in order to enhance the educational component of the University. These lectures are generally of interest to specific academic areas, rather than to the general campus. The Student Government Association, through its Forum Committee, brings major figures in politics, entertainment, and business to the campus. The Student Union Activities Board also has a speaker's program related to topics of general student interest. Other student organizations conduct active lecture programs concerning their interest areas.

Allied Arts conducts lecture-demonstrations in conjunction with a number of its classical arts performances. In this manner, students can gain additional knowledge of classical arts and artists.

Campus Recreation

Campus recreation programs are designed to provide equipment, space and professional assistance in helping University students, staff members, and their families pursue individual recreation interests. Located in the Colvin Center and Annex are facilities for 32 activities including racquetball, climbing walls, basketball and swimming. In addition, areas for soccer, football, rugby softball, archery, tennis, jogging, sailing, canoeing and hiking are made available for student and staff use.

Personal Enhancement Program. The staff of the Colvin Center offers a variety of noncredit classes each semester to students, faculty and staff. All land aerobic classes are free of charge to students. Other instructional programs for adults include CPR, first aid, lifeguarding, scuba, swimming, tennis, ballet and country western dance, martial arts, water aerobics, weight training, yoga. A summer day camp for children, ages 6-12, emphasizes physical activity. Swim lessons are also available to children during the summer session.

Intramural Sports. The vision of the intramural sports program is to improve the quality of life at OSU, and the mission is to develop students mentally and physically, provide quality programs and services, and to encourage all participants to value recreation. These programs are important for all students attending OSU because they provide an opportunity to meet new people, cultivate present relationships by participating with friends, and stimulate personal physical fitness through sports. Programs are available at differing skill levels, as well as opportunities to compete in specific divisions for men, women and co-recreational leagues. With over 50 activities to choose from, intramural sports offers something for every student.

Sports Clubs. The campus recreation program advises and helps organize the active sport clubs on campus, which are governed by the Sports Club Council. The Council is chartered by the University and its officers are elected students. This Council develops sports club policies, sets priorities, and functions as the official representative for all sports clubs. The campus recreation program provides the adviser for this Council. Membership in all sports clubs is open to all students. If a group of students is interested in starting a sports club, the coordinator will assist them.

Active sports clubs are Auto Club, Bowling, Crew, Cycling, Fencing, Karate, Lacrosse, Rugby, Sailing, Scuba, Soccer, Snow Skiing, Volleyball, Waterskiing, Weightlifting, Wheelchair Sports and Wilderness Pursuits.

Outdoor Adventure. The goal of Outdoor Adventure is to provide opportunities for fun, adventure, education and excitement. Through trip and workshop programs emphasis is on adventure, environmental awareness, personal development, safety training, wilderness travel and fun. With a variety of national and international trips as well as workshops at all skill levels, opportunities are provided for enrichment for the whole community.

In conjunction with trips and workshops, an extensive low-and high-elements challenge course is offered at Camp Redlands, and a state-of-the-art indoor climbing facility is in the Colvin Recreation Center. To support the courses and the local community, the Outdoor Equipment Rental Shop in the Colvin Recreation Center provides access to everything from in-line skates to sleeping bags.

Whether it is sea kayaking in the Baja, a day at the challenge course, or the annual climbing competition, the common elements in all programs are quality leadership and lots of fun.

Outdoor Adventure is challenge course, adventure trips, climbing wall, Camp Redlands, rental shop for everything from tents to in-line skates, outdoor skill workshops (climbing, canoeing,
Religious Life

Campus religious centers, supported by state and national church bodies specifically to serve the University community, provide opportunity for worship in both traditional and contemporary services; religious education commensurate with higher learning for the development of the whole person; counseling that maintains a spiritual basis for the cohesion and meaning of life; and social activities which allow relationships and life views to deepen. The 18 religious centers have strategic locations close to campus and, in addition to their own ministry, coordinate many of their efforts with each other and the University administration through the Association of University Ministries.

Residence Hall Organizations

Residence halls are popular places to live on the OSU campus. The housing and food service programs have a proud tradition of excellence recognized nationally. Much of the success of the residence halls is the strong and vital student government system consisting of floor governments, councils for each hall or complex and the Residence Halls Association, which represents all halls on campus.

The Residence Halls Association acts as the voice of residence hall students to the University administration concerning policies and regulations, and coordinates campus-wide activities for the enrichment of residence hall living. All residence halls on campus combine to form the Residence Halls Association (RHA). Each hall has its own elected officers and constitution, and is a part of the RHA system of representative government. There are numerous opportunities for involvement in the hall, such as floor officer, social committees, food committee, and sports and athletic activities.

Theater

The four to six plays produced each year range from classical to contemporary; from sublime to ridiculous; from high seriousness to low comedy. So too, variety in casting is assured by a policy of choosing actors from the entire range of the OSU student body, regardless of major. While one play may be of greatest interest to students of history or philosophy, the next may appeal most to those who need escape for an evening’s light entertainment.

OSU Theater extends beyond OSU student productions in the Seretean Center. In recent years the local department has hosted statewide versions of the American College Theater Festival, displaying outstanding theater from other Oklahoma colleges and universities enroute to regional and national festivals.

Alumni Programs and Services

The Alumni Association serves as a liaison between OSU and its former students, and provides members immediate and direct contact with the University. The mission of the OSU Alumni Association is to serve its members and alumni and to support and serve the needs of Oklahoma State University, its students, faculty, staff and friends.

All graduates, former students, and friends of OSU are eligible for membership in the Alumni Association by paying an annual or life membership fee.

The OSU Alumni Association is governed by a board of directors. Alumni programs are directed by an executive director and six professional staff members. The Alumni Association promotes involvement of alumni and friends in many ways.

Chapters. There are approximately fifty alumni chapters in the state of Oklahoma. Other chapters are located across the United States. Chapter activities include membership drives, social functions, and other programs to support OSU.

Student Recruitment. The Alumni Association helps the alumni clubs to sponsor programs for the top academic achievers in Oklahoma high schools. Key alumni clubs outside of Oklahoma are trained by Alumni Association staff to recruit out-of-state students. Expanded activities include organizing alumni across the state to personally contact students and to raise scholarships for students in their areas.

Homecoming and Reunions. Alumni are invited to return to campus to renew friendships and participate in a series of informative and social activities:

Travel. The Alumni Association organizes travel packages designed to meet educational and social objectives of alumni and friends.

Awards and Recognition. Each year students and alumni are honored for outstanding service to OSU or for outstanding personal achievement.

Publications. The Oklahoma State Magazine is the featured publication that is sent to all Association members. The OSU Spirit is sent to over 80,000 alumni, both active and inactive members. Both publications provide information about the University and alumni programs.

The Alumni Office is located in Room 212 of the Student Union. Opinions and suggestions are welcome and will receive the full attention of the professional staff.

OSU Foundation

The OSU Foundation was created in 1961 with the basic mission of finding private donors who were interested in providing additional scholarships for the best minds and finest leaders of Oklahoma's high schools had to offer. The OSU Foundation is the only agency designated to solicit, receive and administer all private gifts on behalf of OSU. Although it is a separate corporation, the OSU Foundation maintains a close and cooperative working relationship with the University.

The mission of the OSU Foundation is to encourage the commitment of personal and financial resources from the private sector toward the priority objectives of Oklahoma State University, balancing the interests of the donor with the needs of the University, and to manage those resources efficiently and effectively. The Foundation exists to support Oklahoma State University in its mission to provide its students with exceptional academic experiences, to conduct...
OSU-Oklahoma City

Jerry Carroll, Provost and Vice-President of Oklahoma State University
Jerrilee K. Mosier, Vice-Provost for Academic Affairs
Jerry Brooks, Vice-Provost for Fiscal Affairs
Pamela J. Davenport, Vice-Provost for Student Affairs

Oklahoma State University-Oklahoma City (OSU-OKC) is a North Central Association accredited, state-assisted public two-year college serving one of the fastest growing metropolitan cities in the country. Located in the heart of Oklahoma City at the crossroads of Interstate 44 and Interstate 40, this campus enrolls approximately 4,500 full- and part-time students each semester. OSU-OKC has grown from a campus of one building with fewer than 100 students in 1961 to a campus that today consists of 80 acres, nine modern buildings, 227 faculty members, and a staff of 157 caring and committed people.

Offering 24 associate in applied science degree programs, a variety of certificate programs, and developmental education courses, the Oklahoma City campus takes pride in its student-centered approach to collegiate education. Curriculum is designed in response to local employment needs and input from professionals who serve on OSU-OKC advisory committees. All energies are directed toward one goal: blending both academic and student support services to create a collegiate educational experience that addresses the needs of the individual student. Degrees awarded at OSU-OKC are listed below.

Associate In Applied Science. The Associate in Applied Science degree signifies the completion of at least 60 semester credit hours of collegiate course work, that will place the graduate on a career path. Oklahoma State University-Oklahoma City offers 24 Associate in Applied Science degree programs in five divisional areas.

- Agriculture Technology
- Business Technology
- General Education
  - Division of Arts and Sciences
  - English and Language Arts
  - Humanities
  - Laboratory Technology
  - Life Science
  - Mathematics
  - Physical Science
  - Social Sciences

- Engineering Technology
  - Architectural Technology
  - Avionics Electronics Technology
  - Civil Engineering Technology
  - Construction Technology
  - Electronics Engineering Technology
  - General Engineering Technology
  - Heating, Ventilation and Air Conditioning Technology (HVAC)
  - HVAC Environmental Systems Technology
  - Industrial Drafting and Design Technology
  - Quality Assurance
  - Surveying Technology

- Engineering Technology Specializations:
  - HVAC Environmental Systems Technology
  - HVAC Heating, Ventilation, and Air Conditioning Technology

- Interdisciplinary Programs:
  - Automotive Technology
  - Aviation Technology
  - Business Technology
  - Computer Information Systems
  - Construction Technology
  - Civil Engineering Technology
  - Criminal Justice Technology
  - Fire Protection Technology
  - Horticulture Technology
  - Industrial Drafting and Design Technology
  - Management Information Systems
  - Occupational Safety and Environmental Technology
  - Physical Science
  - Quality Assurance
  - Surveying Technology
  - Technical Communications
  - Veterinary Technology
  - Veterinary Technology (HVAC)

Programs of Study:

- Associate of Applied Science
- Associate of Arts
- Associate of Science
- Bachelor of Applied Science
- Bachelor of Science

OSU-OKC provides students the opportunity to acquire the knowledge and skills that enable them to accomplish specified career or personal educational goals. It provides a developmental studies program to enable students to be successful at the college level. It provides a complete student services program, including academic advisement, career planning and placement, enrollment management, counseling services, judicial programs and services, admissions and records, minority student programs and services, veterans services, student activities, financial aid, assessment, student support services and child care.

OSU-OKC conducts workshops, seminars and conferences to accommodate the needs of local business, industry and community groups on a noncredit basis. It engages in a broad campus-wide outreach.
program of assessment and improvement, including regular and systematic review of program and funding sources, in order to conduct long- and short-range planning, and to provide and encourage faculty and staff development activities to meet stated goals and to improve efficiency and effectiveness.

OSU-Okmulgee

Robert Klabenes, Provost and Vice-President of Oklahoma State University
Linda Avant, Assistant Provost
Ken Morris, Vice-Provost
Tobie Titsworth, Interim Vice-Provost
Larry Williams, Executive Vice-Provost

Oklahoma State University-Okmulgee offers collegiate advancing technology programs of study that culminate in an associate in applied science degree. This branch campus is a residential one, noted for the quality of its facilities and equipment, as well as its benchmark quality of technological and academic education.

OSU-Okmulgee's core curriculum is as diverse and innovative as its student body. Individuals receive the comprehensive education required to prepare them as competitive members of a world-class workforce and to be contributing members of society.

OSU-Okmulgee is divided into 11 departments offering a total of 34 degrees and six diplomas in addition to the General Education department for students who are undecided about their majors. Included in the diversified instructional departments are the following fields of study: air conditioning and refrigeration technology; automotive technology; business technology; computer systems technology; construction technology; diesel and heavy equipment technology; electrical and electronics technology; engineering graphics technology; hospitality services technology; manufacturing technology; small business occupations; and visual communications.

OSU-Okmulgee's college credit courses are unique in Oklahoma. The Okmulgee campus blends the best of emerging technologies, enhanced computer applications and general education to prepare students for rewarding careers in business and industry. The comprehensive higher education received by students at OSU-Okmulgee makes those students highly marketable. Graduates from the college usually go directly from graduation to a waiting job and a bright future in terms of potential advancement. Today, there are OSU-Okmulgee graduates with outstanding skills and professional ethics working in jobs in virtually every corner of the world. Their well-honed skills run the gamut from manual arts and computer wizardry to business and high technology. The educational experience at OSU-Okmulgee is "hands on" from the day the student enters college.

OSU-Okmulgee operates on a year-round, three semester basis. New semesters begin in early January, late April and late August, each lasting for 15 weeks. The academic programs offered each semester are complemented by contemporary facilities and state-of-the-art instructional equipment.

The first college in the state to issue a warranty for its graduates, and the developer of the model adopted throughout Oklahoma, OSU-Okmulgee awards a Graduate Performance Guarantee. This guarantee assures the student and first employer that the graduate will enter the workplace with a set of pre-determined skills and competencies. The Graduate Performance Guarantee from OSU-Okmulgee is a "win-win" situation for the student, the campus, business and industry. The Graduate Performance Guarantee is tangible evidence of the confidence in the quality of the comprehensive high technology education offered to students at OSU-Okmulgee.

Oklahoma State University-Okmulgee is located at 1801 E. 4th Street, Okmulgee, Oklahoma 74447-3901. The toll-free phone number at OSU-Okmulgee is 1-800-722-4471. Information can also be found on the Internet (www.osu-okmulgee.edu).
Regents' Resolution on Disruption of the Educational Process

A resolution of the Board of Regents for Oklahoma State University to further clarify existing student regulations. Section 1, "Legal Obligation of the Student," as it pertains to the disruption of the educational process, was adopted in the regular monthly meeting at Stillwater, Oklahoma, on July 11, 1970:

Be it resolved by the Board of Regents of Oklahoma State University:

1. That this statement known as "Emergency Disciplinary Procedure in Cases of Disruption to the University's Educational Process" containing the following provisions be enacted:

A. Definition of Disruptive Conduct

Oklahoma State University has long honored the right of the individual to free discussion and expression, of peaceful demonstration, and of petition and peaceful assembly. That these rights are a part of the fabric of this institution and of the nation as stated in the Bill of Rights is not questioned. They must remain secure. It is equally clear, however, that in a community of learning, willful disruption of the educational process, destruction of property, and interference with the rights of other members of the community cannot be tolerated.

B. Responsibility of the Student

Any student, who willfully by use of violence, force, coercion, threat, intimidation or fear, obstructs, disrupts or attempts to obstruct disrupt, the normal operations or functions of the University, or who orally or in writing advises, procures, or incites others to do so, shall be subject to dismissal from the University.

The following, while not intended to be exclusive, illustrates the offenses encompassed herein: occupation of any University building or part thereof with intent to deprive others of its use; blocking the entrance or exit of any University building or corridor or room therein; setting fire to or by any other means substantially damaging any University building or property, or the property of others on University premises; any possession or display of or attempt or threat to use or use of firearms, explosives, other weapons or destructive means or devices, except as necessary for law enforcement, in any University building or on the University campus; prevention of the convening, continuation or orderly conduct of any University class or activity or of any lawful meeting or assembly in any University building or on the University campus; inciting or organizing attempts to prevent student attendance at classes; and, interfering with or blocking normal pedestrian or vehicular traffic on the University campus.

C. Responsibility of the President

When it appears that there is a violation of Section I-A or I-B, it shall be the duty of the president (and he or she is fully authorized to act) to take all steps which the president deems advisable to protect the assumed and designated interests of Oklahoma State University and to see that its rules, regulations and policies are enforced. The president shall ensure that any person or persons found guilty after proper hearing shall be disciplined in accordance with the existing Oklahoma State University student disciplinary regulations.

In carrying out these duties, the president may call upon any member of the University administration, or any member of the faculty, and the president may call upon any agency of the University created to deal with cases arising under Section A. Action by any state or federal court shall not preclude the University from exercising its disciplinary authority.

D. Responsibility of the Board of Regents

The Board of Regents recognizes that by the Constitution and Statutes it has the power to make such rules and regulations for the management of the University as it may deem necessary and expedient, not inconsistent with the Constitution and laws of the state. While the Regents fully appreciate their obligations in this respect, they further recognize that in dealing with those offenses against the University defined in Section A hereof, they must impose the duty and authority of enforcing the policies set forth herein in the principal executive officer of the University-the president. It will be the responsibility of the Board of Regents to furnish all possible assistance to the president when requested by the president.

II. Subject to the provisions of Sections I-A through I-D, it shall be the duty of the president to exercise full authority in the regulation of student conduct and in matters of student discipline. In the discharge of this duty, delegation of such authority may be made by the president to administrative or other officers of the institution, in such manner and to such extent as may by the president be deemed necessary and expedient; provided, that in the discharge of this duty it shall be the duty of the president to secure to every student the right of due process.

III. Text of this resolution shall be printed in the "Student Regulations" section of the Student Handbook of the University and in the University Catalog.

Student Rights and Responsibilities

By enrolling at OSU, students accept the responsibility for complying with all applicable laws and University policies, while retaining the rights guaranteed under the Constitution of the United States. OSU expects students to show respect for the rights of others and for lawful authority, to represent themselves truthfully and accurately at all times, to respect private and public property, to fulfill contractual obligations including those that are financially made with the University, and to take responsibility for their own actions and the actions of their guests.

In order to help ensure that students understand their rights and responsibilities, the OSU "Student Rights and Responsibilities Governing Student Behavior" policy statement codifies and clarifies major areas of student rights and responsibilities. The University makes this document available on the World Wide Web (www.okstate.edu). Additionally, printed copies may be obtained by students on request in the offices of the Executive Vice-President, the Vice-Presidents for Student Affairs, the Associate Vice-President for Multicultural Affairs, Director of Affirmative Action, student academic services office of each college, Student Conduct Office, University Residential Life, Student Activities, the Student Union Information Desk and the Edmon Low Library Reserve Desk.
University Police Services

Public Safety

Philosophy and Service

The Oklahoma State University Police Department is dedicated to enhancing the opportunity for students, faculty and staff to participate in the educational experience by providing a safe, protected and orderly environment. As a service organization, the department offers a full range of police resources, including area patrols, criminal investigations, crime prevention, facilities security analysis, event planning, and parking management and enforcement. In addition, members of the department serve on University and community committees, provide training and specialized presentations to campus organizations and living groups, participate in the design and installation of safety and traffic control devices, and act as special advisers to all campus departments and administration. The professional police men and women, full-time staff members, and part-time employees are all handpicked to meet the high standards and multidimensional mission of a public safety department.

The OSU Police Department was recently the recipient of Community Policing grants allowing for an increase of sworn officers to a total of 32. Six officers are assigned community policing responsibilities, and one is assigned to traffic and alcohol safety. The department employs a number of part-time employees (student employees) to perform low-threat duties such as parking enforcement, entrance and motorist assists, and selected assignments dealing with traffic and crowd control. Even though the department has been successful in gaining personnel funding from outside sources, there have been efforts to be more efficient in the management of resources.

Operational cuts and position losses have been compensated by more efficient management of resources. Policies have been implemented that address conservation of equipment and supplies. A grant was used to computerize the department's records for statistic compilation, data analysis, and retrieval of information, aiding in the successful garnering of over three hundred thousand dollars in grants and awards from outside sources.

### Actual Reported Part I Crimes At OSU

<table>
<thead>
<tr>
<th>Year</th>
<th>1995</th>
<th>1996</th>
<th>1997</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part 1 Crimes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Criminal Homicide</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Rape (Sex Offense)</td>
<td>0</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Forcible</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Non-forcible</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Robbery</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Aggravated Assault</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Breaking &amp; Entering</td>
<td>67</td>
<td>84</td>
<td>79</td>
</tr>
<tr>
<td>Forcible Entry</td>
<td>21</td>
<td>24</td>
<td>34</td>
</tr>
<tr>
<td>No Force</td>
<td>42</td>
<td>52</td>
<td>39</td>
</tr>
<tr>
<td>Attempt Force Entry</td>
<td>4</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Larceny</td>
<td>197</td>
<td>236</td>
<td>151</td>
</tr>
<tr>
<td>Motor Vehicle Theft</td>
<td>7</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>Autos</td>
<td>5</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Trucks</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other Vehicles</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Arson</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Total (Part 1)</td>
<td>275</td>
<td>332</td>
<td>241</td>
</tr>
<tr>
<td>Other Sexual Offenses</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Hate Crimes</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total Stolen Property</td>
<td>$181,899</td>
<td>$218,960</td>
<td>$137,579</td>
</tr>
<tr>
<td>Alcohol Violations Arrests</td>
<td>160</td>
<td>90</td>
<td>35</td>
</tr>
<tr>
<td>Drug Violations Arrests</td>
<td>17</td>
<td>22</td>
<td>23</td>
</tr>
<tr>
<td>Weapon Law Violation Arrests</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>All Other Arrests</td>
<td>192</td>
<td>173</td>
<td>149</td>
</tr>
<tr>
<td>Total Arrests</td>
<td>371</td>
<td>287</td>
<td>209</td>
</tr>
<tr>
<td>Adults (All Offenses)</td>
<td>360</td>
<td>264</td>
<td>197</td>
</tr>
<tr>
<td>Juveniles (All Offenses)</td>
<td>11</td>
<td>23</td>
<td>12</td>
</tr>
<tr>
<td>Cases Cleared (Part 1)</td>
<td>32</td>
<td>47</td>
<td>53</td>
</tr>
<tr>
<td>Clearance Rate</td>
<td>12%</td>
<td>14%</td>
<td>22%</td>
</tr>
</tbody>
</table>

*Base Year 1996. Larceny is reported here even though not required in the Crime Awareness Act of 1990.*
Actual Reported Part I Crimes At Fraternities/Sororities

<table>
<thead>
<tr>
<th>Year</th>
<th>1995</th>
<th>1996</th>
<th>1997</th>
<th>+/-%*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part 1 Crimes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Criminal Homicide</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Forcible Rape</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Attempt to Rape</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Robbery</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Aggravated Assault</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breaking &amp; Entering</td>
<td>9</td>
<td>6</td>
<td>3</td>
<td>-50%</td>
</tr>
<tr>
<td>Forcible Entry</td>
<td>3</td>
<td>6</td>
<td>1</td>
<td>-83%</td>
</tr>
<tr>
<td>No Force</td>
<td>6</td>
<td>0</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Attempt Force Entry</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Larceny</td>
<td>22</td>
<td>28</td>
<td>13</td>
<td>-54%</td>
</tr>
<tr>
<td>Motor Vehicle Theft</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Autos</td>
<td>0</td>
<td>2</td>
<td></td>
<td>-50%</td>
</tr>
<tr>
<td>Trucks</td>
<td>()</td>
<td>0</td>
<td>'0'</td>
<td></td>
</tr>
<tr>
<td>Other Vehicles</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Arson</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (Part 1)</td>
<td>31</td>
<td>36</td>
<td>18</td>
<td>-50%</td>
</tr>
<tr>
<td>Other Sexual Offense</td>
<td>1</td>
<td></td>
<td></td>
<td>0%</td>
</tr>
<tr>
<td>Hate Crimes</td>
<td>0</td>
<td></td>
<td></td>
<td>0%</td>
</tr>
<tr>
<td>Total Stolen Property</td>
<td>$8,676</td>
<td>$27,893</td>
<td>$9,530</td>
<td>-66%</td>
</tr>
<tr>
<td>Alcohol Violations Arrests</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>100%</td>
</tr>
<tr>
<td>Drug Violations Arrests</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Weapon Law Violation Arrests</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>All Other Arrests</td>
<td>7</td>
<td>5</td>
<td>11</td>
<td>120%</td>
</tr>
<tr>
<td>Total Arrests</td>
<td>19</td>
<td>6</td>
<td>13</td>
<td>117%</td>
</tr>
<tr>
<td>Adults</td>
<td>13</td>
<td>11</td>
<td>13</td>
<td>18%</td>
</tr>
<tr>
<td>Juveniles</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>-100%</td>
</tr>
</tbody>
</table>

*Base Year 1996.

OSU Police and cadet officers provide a positive image to visitors and members of the campus community, whether it is providing directions, parking information, or just a friendly welcome. Officers represent the University as a group of caring and professional people, intent upon enhancing a friendly community atmosphere. Necessary enforcement includes using alternatives to arrest when reasonable, and full cooperation with administrative services and functions that have an impact on student conduct. Enforcement efforts are geared toward providing a safe community.

OSU Police participation in athletic and special event staging and planning ensures that all aspects of safety and security of participants are considered. OSU Police officers provide professional crowd control and traffic regulation before, during, and after such events. As first responders to emergency situations, OSU Police are often cited by citizens for decisiveness and professionalism.

Students and staff find the OSU Police willing to share statistics, insights, and experiences as a basis for class reports or vocational interest. OSU Police managers seek proactive means to avoid problems and situations, whether it is suggesting added security measures, providing insight on planned activities, or using investigative analysis to assign a deterrent force.

For the OSU Police, “service” is not just a word or a part of a catchy slogan, but a way of life. People programs, such as motorist assistance, money escorts, and emergency notifications are a part of the department’s efforts to be involved in the community. OSU’s emergency phone system was expanded, and there are currently 46 such phones strategically located on campus. These phones, with immediate response from the police, have been in operation for 17 years and are still being copied by other universities. The department employs 16 cadet officers for largely parking enforcement, but campus organizations needing reliable and professional-appearing drivers often arrange to use members of the cadet corps.

Operating under a 1989 grant from the Oklahoma Highway Safety Office, the OSU Police launched the program Campus Community Alcohol Safety Effort (C-CASE), aimed at promoting seatbelt use and educating citizens, primarily students, about the effects and penalties of alcohol use and abuse. A second positive effect of the C-CASE effort was the strict enforcement of alcohol-related laws, that has shown dramatic results in getting the drunk driver off campus streets and consequently preventing accidents. This program continues in part, with emphasis on traffic enforcement.
Crime Awareness

Security, Prevention, Statistics, Intervention

Crime

It is an unfortunate fact that criminal incidents of all types occur on college campuses. Many campuses around the country investigate and make public the nature of crimes, the number, and how they are investigated. Oklahoma State University subscribes to that approach and further believes that the public should know how active the OSU Police are in crime prevention and detection.

Reporting Crimes

Crime victims, regardless how seemingly insignificant the crime, are encouraged to promptly report the incident to the OSU Police or the appropriate police agency. To report a crime, a victim or witness need only call the police phone number, and a police officer will meet the person to gather the information. An official report is made with copies available to the victim. Each day the incidents from the previous day, excluding names, are summarized and made available to the OSU president, key OSU staff, other law enforcement agencies, and the media. Each month the number of incidents in each category of crime are counted and reported to the Oklahoma State Bureau of Investigation, who in turn provides the information to the Federal Bureau of Investigation. Each year, the FBI publishes a book of crime statistics called Crime in the United States, that includes accurate accounting of the criminal incidents that occurred on the OSU campus. OSU has reported crime statistics in this manner since the FBI began publishing campus crime statistics in 1971.

Crimes in Progress

To report a crime in progress, a person, victim or witness, can dial 911 or use one of the outside emergency telephones, or call one of the police phone numbers. Either reporting method will stimulate the response of police, fire, ambulance, or other first responders. In addition, the victim of serious crimes can request support personnel, such as ministers, rape crisis or domestic violence counseling, during or after reporting.

Additionally, crime victims may be eligible for funds through victim compensation laws administered by the Office of the District Attorney.

Actual Crime at OSU

When comparing crime at OSU to other institutions of similar size, OSU's crime statistics are one of the lowest. While a part of the former Big Eight athletic conference, OSU boasted having fewer crimes than any of the other Big Eight universities. As members of the Big Twelve conference, OSU ranked 11 in crime statistics in the 1997 year.

The crime and arrest statistics reported are those which occurred within the jurisdictional boundaries of campus. They do not include "off campus" organizations or "off campus" private housing; these are within the city's police jurisdiction. It is the responsibility of the Stillwater Police Department to monitor and record criminal activities at "off campus" organizations or "off campus" private housing. Crime statistics concerning these locations or areas are available at the Stillwater Police Department.

Future

Although it is believed that the low incidence of crime will continue, this report is not intended to give a false sense of security. Crime will occur, but prevention efforts can be effective in reducing the opportunities for criminal activity. Citizens play a key role in crime prevention efforts by being cautious, careful, alert to personal safety and protective of personal and University possessions. The crime prevention tips noted below should be followed.

Security and Access Control

It is OSU’s policy to lock the doors of buildings that are not in use. However, when working or studying in buildings after normal working hours, it is suggested that individual offices be locked, based upon an assumption that unrestricted access to the building is possible. Some buildings on campus are rarely locked, at the department’s request, since students study and work on projects all hours of the day and night.

Again, individual offices should be locked by the user on a presumption that the building is accessible. Residence halls have open access between the hours of 6 a.m. to midnight, Sunday through Thursday, and 6 a.m. to 2 a.m. on Friday and Saturday. During non-open access hours, all residence hall doors are locked except the front desk entrance. Instances of propped open doors have occurred, and residents are encouraged to take security precautions in the halls and rooms. Individual rooms should be locked at all times for safety.

Crime Prevention

OSU has experienced success at reducing and preventing crime. Some of the more notable efforts are:

- Emergency telephone
- Emergency 911 dialing
- 24-hour preventive patrols
- Campus foot patrol by uniformed officers
- Police officer bicycle patrol
- Burglar alarms in key areas
- 24-hour staff in Residence Halls
- Custodial staff in academic buildings after hours
- Crime prevention seminar presentations to groups
- Crime prevention pamphlets for students and employees
- Monitoring of some parking lots by surveillance cameras
- Crime stopper telephone line - 744-TIPS (744-8477)

In addition to preventing crime, considerable effort is devoted to crime intervention. All reported crimes are investigated immediately. Follow-up investigation occurs to identify the offenders. Where multiple incidents occur, surveillance techniques are implemented to help apprehend violators. When caught, offenders are processed through the county court system and OSU when appropriate.

Police Protection

The OSU campus is protected by a campus police agency consisting of 32 sworn officers, 10 support persons, and 14 part-time persons. The agency is operated and available 24 hours a day, 365 days a year. Authority of the sworn officers is derived from state statutes; these allow for full police powers on OSU property. In addition by agreement with the City of Stillwater, campus police and city police enjoy an excellent working relationship. All campus police officers undergo an extensive selection process and meet state-mandated training requirements.
Community Policing

The department subscribes to the concepts of community policing. The officers have been practicing problem-solving concepts for years. The department now employs six officers through federal funding for community policing. A satellite office has been established in Willingham Hall to facilitate contact with residence hall students. A police officer bicycle patrol was established to provide an opportunity for the officers to have closer contact with students.

Avoiding Victimization

Tips for personal safety and property security:
Be cautious of strangers.
Avoid getting into vulnerable no-exit places.
Do not hesitate to call police when confronted by unknown persons.
Keep house or residence hall room locked.
At night, walk in groups of at least two.
Walk with confidence, and avoid walking near bushes and parked cars.
Become familiar with the location of emergency telephones.
When parking, remove valuables from plain view and lock the vehicle.
Engrave valuables with driver’s license number and record serial numbers.
Make copies of credit cards and lists of other valuables carried on person.
Write name and ID number in several places in textbooks.
Lock bicycle in a bicycle rack.
Report all incidents and losses to police immediately.

When serious crimes occur on or off campus that are considered to be a threat to the campus community, that information will be provided to faculty, staff and students. The medium for this information dissemination will be the campus newspaper, faculty/staff newsletters, or in special instances, specific notices to on-campus residences. Such notices may be posted on residence hall entrance doors, in residents’ mail boxes, or placed on electronic voice mail.

Persons may dial the campus phone number 744-6063 and have voice mail access to crime tip information, crime update, crime prevention tips, and parking information.

Alcoholic Beverages and Other Drugs

As set forth in local, state and federal laws, and the rules and regulations of the University, Oklahoma State University prohibits the unlawful possession, use, or distribution of illicit drugs and alcohol by students and employees in buildings, facilities, grounds, or other property owned and/or controlled by the University or as part of University activities.

Under OSU regulations, no low-point beer or other alcoholic beverage is allowed in OSU housing, including fraternities and sororities, except for married student housing, regardless of age. Furthermore, under the same regulations, the possession/consumption of low-point beer or alcohol by those of legal age (over 21) is allowed only in certain designated, non-public places on the OSU campus, properties and facilities.

For further explanation, see the pamphlet “OSU Dangers of Drugs and Alcohol Abuse.”

Drug and alcohol laws are vigorously enforced on the OSU campus. Violators are subject to criminal prosecution in the District Court of Payne County. The enforcement techniques range from plain view violation to long-term undercover investigations by local, state, or federal agents and agencies.

University Counseling Services and the Employee Assistance Program have counseling and rehabilitation programs for students and employees, respectively. Should these programs not meet an individual’s needs, there are other programs in the community or nearby that may be better suited. A number of such programs are listed in the “OSU Dangers of Drugs and Alcohol Abuse” pamphlet.

Sexual Assault

What To Do If Victimized

Oklahoma State University’s prevention efforts in the area of sexual assault (including rape) involve the entire community. Many groups are involved in sexual assault prevention. These groups include the OSU Police Department, Residential Life, University Counseling, OSU faculty, Greek Life, University Conduct Office, OSU Student Health Center, OSU Mental Health, PaNOK (students who are peer educators), and OSU staff personnel. They provide training programs, presentations, and workshops to any interested individuals or groups.

Program topics generally include stranger rape, date and acquaintance rape, rapist characteristics, rape trauma syndrome, and victim recovery. An increasing number of presentations, explaining the male’s role in sexual as-
saults, are directed to all male audiences, such as fraternities and athletic teams.

Procedures to Follow

A victim of sexual assault should follow certain procedures and consider several options. These procedures and options are clearly outlined in the rape avoidance seminars mentioned previously and “Rape Prevention” pamphlets made available to the OSU community. These educational programs and pamphlets also outline techniques and strategies that help people recognize and avoid sexual assault threats.

Evidence. Preserving evidence is of paramount importance after a sexual assault. Victims should be careful not to bathe, douche, wash clothing, or tamper with other potential evidence after a sexual assault. The first inclination may be to do one or more of these; however, the temptation should be resisted. Evidence is critical in a criminal prosecution.

Contacting the Police Department.

When a sexual assault is reported to the OSU Police Department or to the Stillwater Police Department, an officer is dispatched. Determining the extent of physical and emotional trauma that the victim has suffered will be the officer’s first concern. If the attack just occurred, the officer will want a brief review of the events, a description of the assailant, the direction of travel, and a description of the vehicle used by the assailant, if any. This information is necessary in order to apprehend the assailantas soon as possible. After the initial interview, the officer or whomever is designated by the victim, will assist in getting a complete change of clothes.

Agreeing to have a Sexual Assault Examination. An officer or designee will take the victim to the Student Health Clinic or the Stillwater Medical Center to be examined by a physician. A complete physical examination will be given as well as treatment for any injuries. A friend or relative may be permitted to accompany the victim. In addition, the victim may be examined for the purpose of obtaining evidence that would be needed in court. Appropriate antibiotic therapy can be given to decrease the chances of developing venereal disease. After the examination at the hospital, the officer may bring the victim back to the police headquarters or another location to complete the interview. Again, a counselor is encouraged to be present.

Oklahoma State University 43
The victim of a rape is not responsible for legal expenses related to the criminal prosecution. The case is prosecuted by the Office of the District Attorney. The victim only has to contribute time. The Stillwater Medical Center can provide initial medical services for rape victims. The Crime Victims Compensation Board can provide payment for medical services and counseling, even if charges are not filed. The victim need only file an application with the Office of the District Attorney.

Police Investigation. Later, at police headquarters, the victim will be asked to be more specific about the events of the attack. A person of the victim's choosing may accompany the victim during this period. This questioning is done to help the investigation and to help arrange the events firmly in mind. The victim's comments will probably be tape recorded for future reference. This will make testifying in court much easier and less frightening. It will be handled considerately and courteously. Only the investigating officer will ask questions. Based on conversations with the officer, the victim can then decide whether or not to file charges. Threats or harassment of a rape victim after charges have been filed are rare. When finished at police headquarters, the victim can go to a place of their choice. SU and Stillwater Police officers have been trained to deal with sexual assault victims. However, if the victim should feel uncomfortable speaking to a male officer, every effort will be made to notify a female officer, female counselor, or female volunteer.

A rape or sexual assault may be reported to the hall director, a university counselor, or health worker at the Student Health Center. Charges do not have to be filed against the attacker if a rape is reported. However, it is wise to give information to the police anyway. The information and suspect description may help locate a suspect in other offenses and possibly prevent another person from becoming the victim of a rape. The police will not know that there is a rapist on campus unless they are told. The police will not pressure the victim to file charges.

Victims of sexual assault can elect to have personal information eliminated from police reports.

Support Services

University Conduct Office. If the victim does not want the case to be addressed through the criminal justice system, another alternative is available. Cases involving students who are accused of non-academic misconduct might be assigned to the Office of Student Conduct. Persons found guilty of sexual assault, forcible or non-forcible, could be placed on probation or suspended from OSU. Both the accuser and the accused are entitled to the same opportunities to have others present during a campus disciplinary hearing, and both are entitled to be informed of the outcome of any disciplinary proceeding. Further information can be obtained by contacting the Office of Student Conduct at 744-5470. Also, a copy of the "Student's Rights and Responsibilities" can be obtained at various locations on campus.

Role of Housing. The hall directors and resident assistants who work in the residence halls continually attend sexual assault training programs, and they learn how to respond to a student who has been victimized by a sexual or physical attack. They have been informed about the resources available; in fact, some have been trained to conduct sexual assault presentations and workshops. A victim of a sexual assault may request assistance from the University administration in changing academic and/or living situations where a continued threat may be reasonably assumed.

Role of Counseling Services. The OSU Student Health Center and University Counseling Services provide individual and group counseling services for those victimized by sexual or physical assault. Services are available to all Oklahoma State University students, regardless of gender, and their significant others.

The psychological and emotional trauma after a sexual assault can be painful. Possible symptoms include: eating disorders, sleep disturbances, lack of trust, guilt feelings, depression, mood swings, and relationship and communication problems. Sexual assault incidents can only be greatly reduced when men and women understand the dynamics involved in sexual assaults and are willing to participate in educational programming and ongoing communication.
University Academic Regulations

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In addition to these minimal regulations, additional college, department or program requirements may apply. Students are advised to review all steps of their academic progress with their academic adviser.

1. Admission-Withdrawal

1.1 Admission of Freshmen. Policies and procedures governing the admission of new freshmen are detailed in another section of the Catalog. (See "Admission" section.)

1.2 Admission of Transfer Students. Policies and procedures governing the admission of transfer students are detailed in another section of the Catalog. (See "Admission" section.)
A senior, with 90 or more hours in a specified degree program, who has failed to meet the retention grade-point average of 2.00 or the semester GPA of 2.00, may enroll, at the discretion of the institution, in an additional 15 semester hours in a further attempt to achieve the requirements for retention. Such students will be afforded this extension one time only.

Seniors must achieve a 2.00 GPA or above for each semester of course work comprising this one-time exception. To continue beyond the 15-hour exception, the senior must raise the retention GPA to 2.00. A part-time senior would be permitted to take up to 15 additional hours if the student achieves a minimum 2.00 GPA each semester.

A student enrolling on probation should seek help from an academic adviser and a counselor in the University Counseling Services when deciding on an academic load and extracurricular activities. A student whose poor grades may have been caused by health problems should seek the help of a physician.

1.7 Academic Suspension. A student on probation will be suspended when he or she earns a semester GPA of less than a 2.00 regularly-graded course work not including activity, performance or remedial courses, and the retention grade-point average for all hours attempted falls below the following:

<table>
<thead>
<tr>
<th>Total hours attempted</th>
<th>Minimum retention grade-point average required</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 through 30</td>
<td>1.70</td>
</tr>
<tr>
<td>31 or more</td>
<td>2.00</td>
</tr>
</tbody>
</table>

Freshman students, (30 or fewer credit hours, as defined by OSRHE policy), with a retention GPA of 1.70 to less than 2.00 will be placed on academic notice. These students should remain in contact with their student academic service offices regarding special academic support services and procedures.

All courses in which a student has a recorded grade will be counted in the calculation of the grade-point average for retention purposes excluding any courses repeated or reprinted and excluding remedial courses and physical education activity courses. These calculations are made three times per year, to coincide with the conclusion of the fall and spring semesters, and the collective summer term. Grades submitted after these calculations are carried forward to the next calculation. (See also "Grade-point Average Calculating" and "Academic Forgiveness.")

A senior, with 90 or more hours in a specified degree program, who has failed to meet the retention grade-point average of 2.00 or the semester GPA of 2.00, may enroll, at the discretion of the institution, in an additional 15 semester hours in a further attempt to achieve the requirements for retention. Such students will be afforded this extension one time only.

Seniors must achieve a 2.00 GPA or above for each semester of course work comprising this one-time exception. To continue beyond the 15-hour exception, the senior must raise the retention GPA to 2.00. A part-time senior would be permitted to take up to 15 additional hours if the student achieves a minimum 2.00 GPA each semester.

1.8 Reinstatement after Academic Suspension. A student who has been suspended from the University for academic reasons may not be readmitted until one regular semester (fall or spring) has elapsed (unless the faculty appeals committee grants immediate reinstatement). Students who wish to appeal suspension status should inquire about procedures and deadlines from the Office of the Executive Vice President.

Beginning with the Spring and Summer semesters of 1998, a student suspended from OSU at the end of the spring semester may continue in the summer semester at OSU if this spring suspension was the student's first suspension. The student must complete a minimum of six hours and must achieve a 2.00 summer semester GPA, or raise the graduation/retention GPA to the OSRHE standard, in order to continue in the subsequent fall semester. The student should contact his or her dean's office for additional information and restrictions. (See also "Academic Suspension.")

1.9 Readmission. A student who has attended OSU but was not enrolled during the immediate past semester (except the summer session) must submit an Application for Readmission. A student who has enrolled in another college or university since last attending OSU, must submit a transcript from each school. Admission status will be determined after an evaluation of the previous work has been made.

1.10 Withdrawing from the University. Withdrawing refers to withdrawing from all courses for which a student is enrolled for a given semester. The withdrawal process is initiated in the student's dean's office.

A student who withdraws prior to the end of the sixth week of a regular semester or the third week of a summer session will receive a grade of "W" (withdrawn) on the student's academic record. A student who withdraws after the sixth week of a regular semester or the third week of a summer session but prior to "Pre-finals Week," will receive a grade of "W" (withdrawn) or "F" (failing) as assigned by the instructor of each course. The grade of "W" or "F" will be recorded on the student's academic record and the grade of "F" will be calculated in the grade-point average.

After the beginning of "Pre-finals Week" a student may not withdraw from the University and will be assigned only the grade of "A," "B," "C," "D," or "F" or (when appropriate) "I," "NP," "P," "S," "U," or "X" by the instructor of each course at the end of the semester or summer session.

2. Student Status

2.1 Classification of Students. Undergraduate classification is determined by the criteria below:

<table>
<thead>
<tr>
<th>Classification</th>
<th>Hours Required</th>
<th>Credit Hours Passed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td>fewer than 28</td>
<td>credit hours passed</td>
</tr>
<tr>
<td>Sophomore</td>
<td>28 to 59</td>
<td>credit hours passed</td>
</tr>
<tr>
<td>Junior</td>
<td>60 to 93</td>
<td>credit hours passed</td>
</tr>
<tr>
<td>Senior</td>
<td>94 or more</td>
<td>credit hours passed</td>
</tr>
</tbody>
</table>

2.2 Full-time Students. Regular students: undergraduate students who are enrolled in 12 or more semester credit hours are classified as "full-time" students. Graduate students enrolled in nine or more semester credit hours are classified as "full-time." Summer session: undergraduate students who are enrolled in six or more semester credit hours, or graduate students who are enrolled in four or more semester credit hours, are classified as "full-time." Credit hours enrolled in correspondence study are not counted toward full-time status, unless the course is independent study taken through regular enrollment.

Students engaged in an internship or cooperative education program assignment that requires full-time work on the assignment are regarded as full-time students when they are enrolled in the number of credit hours deemed appropriate for the academic credit they receive for the assignment.

A student holding a 0.50 FTE graduate assistant appointment, and enrolled in a minimum of six hours during the fall or spring semester, and three hours during the summer semester will be certified as a full-time graduate student. Any FTE appointment less than 0.50 requires nine hours of enrollment for the fall or spring semester, and four hours of enrollment for the summer semester in order for the student to be classified as a full-time student.
A student enrolled for the final semester of a bachelor’s degree program may be classified as a full-time student if enrolled in fewer than 12 hours during that semester.

A student in the terminal phase of the plan of study leading to a master’s or doctoral degree, may be classified as a full-time student if enrolled in fewer than 12 hours during the semester in which the degree will be conferred. If the dissertation, thesis, report, or creative component is the only item left to complete the plan of study, the student is designated as being enrolled full-time upon the approval of the department head and dean of the Graduate College.

2.3 Part-time Students. Students who are enrolled but not meeting the definition of full-time students are classified as "part-time." Undergraduate students are classified as "half-time" if they are enrolled in six hours in a regular semester (or three hours in a summer session). Graduate students are classified as "half-time" if they are enrolled in four hours in a regular semester (or two hours in a summer session). OSU does not use "three-quarter time status" for academic purposes.

2.4 Special Students. A student who does not have immediate plans to enter a degree program but wants to take courses, may be classified as a "special student." A student on an F-1 visa may not enroll as a special student since he or she must be admitted to a degree program.

3. Requirements

3.1 Date of Matriculation. Matriculation occurs when a student first enrolls in an accredited institution of higher education. That date will be used in calculating the time limit for the use of a given plan of study.

3.2 Changes in Degree Requirements. When a student first enrolls at OSU, the degree requirements are made available. Although the curriculum may be revised before a student graduates, a student who makes normal progress toward graduation (completing a four-year degree in not more than six years) will be held responsible for the degree requirements in effect at the time of matriculation, and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation. A student has the option of adopting the new requirements that have been established since matriculation.

3.3 Honors Programs. (See "Honors Programs" in the Catalog.)

3.4 General Education Requirements. Although the University has a general education program, each college determines and publishes the general education requirements for its degree programs. College requirements may exceed the minimum for general education established by the University, which are:

a. 40 semester credit hours, including six semester credit hours of English composition; (by OSRHE policy, these 40 hours are exclusive of physical education activity courses);
b. three semester credit hours of American history (HIST 1103), and three semester credit hours of American government (POLSC 1113);
c. at least six semester credit hours in approved general education designated areas of: Analytical and Quantitative Thought, Humanities, Natural Sciences, and Social and Behavioral Sciences (at least one course in each of these four areas must come from the approved general education lower-division course list, and at least three hours of (A) must be a general education MATH course);
d. at least one course designated as International Dimension and one course in Scientific Investigation.

Substitution of general education courses is allowed when background for the major demands greater depth in an area in which a general education requirement is stated. Only in the Analytical and Quantitative Thought (A) and Natural Sciences (N) areas is substitution of the more advanced lower-division course permitted. Such a substitution requires the recommendation of the student's academic adviser and dean and the approval of the Office of the Executive Vice-President.

Courses used to fulfill general education requirements are identified by code letters which appear preceding the course titles listed in the back of the Catalog and in the class schedule book. The code letters designate the general education category for which the course may be used:

- A Analytical and Quantitative Thought
- H Humanities
- L International Dimension
- N Natural Sciences
- S Social and Behavioral Sciences
- T Scientific Investigation

3.5 English Composition Requirement. The University requires a minimum of six semester credit hours in English composition for a baccalaureate degree. The required sequence of courses is ENGL 1113 and ENGL 1213. For those who qualify, ENGL 1013 or 1313 may be substituted for ENGL 1113. Students who earn an "A" or "B" in ENGL 1113 (or ENGL 1013 or 1313) or who earn three semester credit hours in English composition through credit by exam, and who have the consent of their college, may substitute ENGL 3323 for ENGL 1213. Students who qualify may substitute ENGL 1033 or 1413 for ENGL 1213. A third course may be required by the student's college to satisfy either an additional composition or oral communication requirement.

3.6 English Proficiency Examination. Effective October, 1993, the English Proficiency Examination was waived for students who had matriculated since Fall 1988 through Spring 1994.

3.7 Substitution of Required Courses. In meeting degree requirements a lower-division course may not be substituted for an upper-division course requirement. Substitution policy is governed by the individual colleges.

3.8 Waiving of Required Courses. A maximum of six semester credit hours may be waived. Required courses in English, American history and American government cannot be waived, and the total number of semester credit hours required for the degree cannot be reduced. Waiver cards must be signed by the student's adviser, the head of the student's major department and the dean of the college.

3.9 Changing Majors. Students are advised to select a specific major no later than the end of the sophomore year. Students on probation, or not making satisfactory progress toward a degree, may change majors only with the approval of the dean of the college in which they wish to pursue a different degree.

3.10 Deadline for Completion of Requirements. Degrees are conferred only on specific commencement dates. If a student completes requirements for a degree after a commencement date, the degree will be granted at the next scheduled commencement after the student files a diploma application. (See "Diploma Application." The student may request a certified statement of completion of graduation requirements at the Office of the Registrar. All candidates for degrees must have their names listed in the commencement program.

3.11 Second Baccalaureate Degree. A student who receives a baccalaureate degree from OSU may use all applicable courses toward a second baccalaureate degree. A minimum of 30 semester credit hours of additional work, including all requirements of the second baccalaureate degree, is required. The Bachelor of University Studies degree has separate requirements.

4. Credits

4.1 Residence Credit. Residence credit is awarded for work taken on campus...
(not through correspondence or credit earned by examination) or at a location officially designated as a residence center by the governing board of the institution (e.g., in-state military bases and OSU courses at the University Center at Tulsa.)

4.2 Extension and Correspondence Credit. Academic credit is awarded for courses offered through the extension offices of the six colleges, by the Independent and Correspondence Study Center of OSU, or by transfer of work certified as extension or correspondence credit by another fully accredited institution.

Extension Credit. OSU will accept, toward a degree, a maximum of eight semester credit hours earned through extension at another institution if that institution is fully accredited.

Correspondence Credit. OSU will accept, toward a degree, a maximum of eight semester credit hours earned through correspondence at another institution (e.g., in-state military bases and OSU Advanced Standing Examinations.

4.3 Transfer Credit from Other Accredited Four-Year Institutions. Except as excluded in the section on "Transfer of Credits from Junior Colleges" and "Residence Requirements," credits transferred from accredited senior colleges will apply toward baccalaureate degrees in the same way that they would apply had they been earned in residence at OSU. Students may not use transfer credits to satisfy more than one-half the major course requirements for a department unless they have the approval of the head of that department and the academic dean.

4.4 Transfer Credit from Junior Colleges. Credits will be accepted by transfer from a junior college to meet lower-division (i.e., 1000- and 2000-level courses) requirements only. A minimum of 60 semester credit hours must be earned at a senior college. Within these guidelines, transfer credits are subject to satisfy individual college's degree requirements.

4.5 Transfer Students with Less than a "C" Grade-point Average. Students who are accepted as transfer students with GPAs below OSU's retention standards will be placed on academic probation.

4.6 Credit by Exam. The academic regulations listed below apply to the following examinations: Advanced Placement Program (AP), International Baccalaureate Program (IB), College Level Examination Program (CLEP), Proficiency Examination Program (PEP) and OSU Advanced Standing Examinations.

a. credit earned by examination will not be placed on a student's transcript until he or she has successfully completed 12 or more semester credit hours of academic work at OSU;
b. credit will be recorded with a neutral grade of "P" (Pass) if the student earns the equivalent of a "C" or better on the examination. No grade is recorded if the student fails the exam;
c. the amount of credit by exam which may be applied to a degree program is subject only to meeting the residence requirements of OSU (see "Residence Requirements");
d. a native speaker of a foreign language (one whose high-school level instruction was conducted principally in that language) cannot earn credit toward graduation in lower-division (1000-2000 level) courses in that language (see "Foreign Language Credit for Native Speakers");
e. the student must need the course to meet some requirement for a certificate or degree being pursued at OSU;
f. be enrolled at OSU;

OSU Advanced Standing Examinations may be offered by academic departments on campus in subject areas not offered through the examination programs listed above. Any currently enrolled student whose travel, employment, extensive readings or educational experience appear to have given the student proficiency in a subject that is offered at OSU, equivalent to the proficiency ordinarily expected of those students who take the subject in a regular class, may apply for an examination on the subject.

In addition to the regulations listed above, to qualify for an OSU Advanced Standing Examination the student must:

g. not have taken an exam over the course within the preceding six months;
h. receive the recommendation of the Office of Admissions, the approval of the head of the department in which the course is offered and the dean of the student's college;
i. present a valid student I.D. at the examination.

Information and application forms pertaining to OSU Advanced Standing Examinations may be obtained from the Office of Admissions.

4.7 Validation Examination Credit. A student may apply to take a validation examination for a course taken at an institution that OSU does not recognize as accredited. To qualify for a validation examination, a student must:
a. be enrolled at OSU at the time the student takes the examination;
b. present the necessary evidence to prove that the student has taken the course;
c. obtain the recommendation of the Office of Admissions and the approval of the dean and head of the department in which the course is offered;
d. take the examination within the first semester after entering OSU;
e. take only one such examination in each subject.
f. present a valid student I.D. upon examination.

The student obtains the examination form at the Office of Admissions. The dean of the college in which the course is offered appoints a committee of three to construct, administer and evaluate the examination. The result is reported to the Office of Admissions and the Office of the Registrar where a "P" grade is recorded if the examination result is "C" or better. No fee is required.

4.8 Graduate Credit Hours for a Senior. A senior who is graduating from OSU at the end of a semester or summer session may take a limited number of courses for graduate credit during the last two semesters or summer sessions. The written request to receive graduate credit must be made before the end of the fifth week of class instruction of a regular semester or the second week of a summer session. Such credit may be earned under the following conditions:

a. the student must meet the same admission requirements and be subject to the same possible probationary or provisional restrictions as students admitted in graduate status. The student must achieve an overall 3.00 grade-point average in all courses and make no less than a "B" in those courses for which he or she wants graduate credit;
b. the credits must not be required or needed for the baccalaureate degree;
c. the total registration must not exceed 18 credit hours for a semester or nine credit hours for a summer session;
d. the student must either complete the requirements for the baccalaureate degree at the end of the semester or summer session or be within 12 semester credit hours of completing such requirements at the beginning of the semester or summer session in which graduate credit is requested;
e. admission to courses taken for graduate credit must have the approval of the course instructor, the head of the department in which the courses are offered and the dean of the Graduate College;
f. not more than 15 semester credit hours taken while a senior may be
5. Enrollment

5.1 Course Numbering System. All courses are identified by numbers composed of four digits. The first digit indicates the class year in which the subject is ordinarily taken, although enrollment is not exclusive as to student classification; the second and third digits identify the course within the field; and the last digit indicates the number of semester credit hours the course carries. For example, a course numbered 1123 should be interpreted as a freshman, or beginning, level course carrying three hours of credit. A course number beginning with zero indicates that the course does not carry University credit. A course number ending in zero indicates that the course carries variable credit.

5.2 Maximum Semester Credit Hour Load. All semester credit hours above 19 (nine during a summer session) are excessive and require written approval in advance of enrollment by the student's adviser and the dean of the college. Excessive hours will be limited to the number of semester credit hours 50 percent greater than the number of weeks in the applicable academic semester or summer session.

5.3 Adding Courses. Approval of the student's academic adviser is required for adding a course. The end of the first week of a regular semester or the third class day of a summer session is the last day a course may be added (nonrestrictive). A short course may be added no later than the first day of the short course. With instructor approval, a course may be added during the second week of classes of a regular semester or the fourth or fifth day of a summer session (restrictive).

5.4 Dropping Courses. Dropping refers to the dropping of one or more courses while remaining enrolled in at least one course for a given semester. At any time prior to the end of the second week of a regular semester or the first week of a summer session, or during the proportionate period for block or short courses, a student may drop a course and, no record of the course will appear on the student's academic record.

After the deadline for dropping with no record, but prior to the end of the sixth week of a regular semester or the third week of a summer session, or proportionate periods for block or short courses, a student may drop a course and the grade of "W" (dropped) will be recorded on the student's academic record.

After the sixth week of a regular semester or the third week of a summer session but prior to the end of the tenth week of a regular semester or the fifth week of a summer session, a student may drop a course with the grade of "W" (dropped) or "F" (failing) as assigned by the instructor. The grade of "W" or "F" will be recorded on the student's academic record and the grade of "F" will be calculated in the grade-point average.

After the tenth week of a regular semester, or the fifth week of a summer session, or proportionate periods for block or short courses, a student may not drop a course and will be assigned only the grade of "A," "B," "C," "D" or "F," or (when appropriate) "I," "NP," "P," "S," "U," or "X" by the instructor at the end of the semester. (Exceptions to this policy may be allowed by petition due to extraordinary circumstances. A petition requires the signatures of the student's instructor, adviser and dean with the grade of "W" or "F" assigned by the instructor.)

No course may be dropped without the approval of the student's academic adviser.

A student may not drop any course in which a formal charge of academic dishonesty is pending against the student. If the student is absolved of the formal charge, he or she may drop the course with either a "W" or "F" (according to the drop grade policy), appearing on the academic record. If the student is found guilty, the instructor may take appropriate disciplinary action, including assigning the grade "F" for the assignment or the course.

5.5 Concurrent Enrollment. A student who desires to earn credits concurrently at another institution or through correspondence, extension, advanced standing examinations, or DANTES (Defense Activity for Non-traditional Education Support) examinations while enrolled for residence credit at OSU, must secure approval in advance from his or her dean if he or she expects this institution to accept those credits. Armed Forces personnel will be granted 60 days from the date of their first enrollment to establish, through DANTES examinations, advanced standing in subject matter that they mastered while in the Armed Forces.

5.6 Prerequisite to Upper-division and Graduate-division Courses. When no prerequisites are listed for courses numbered 3000 or 4000, it is understood that the prerequisite is 60 credit hours of work completed, or 45 credit hours of work completed with an overall grade-point average of 3.25. The prerequisite for courses at the 5000 or 6000 level is graduate standing in addition to any other prerequisites listed. Instructors may waive prerequisites when the student's background justifies this action. Prior approval of the instructor may be required in problems courses, independent study, internships, thesis and dissertation courses, and courses taught in a professional school.

5.7 Class Enrollment Maxima. The maximum numbers of students permitted to be enrolled in each section of a course is determined by the department head and can be increased or decreased only by the department head or dean.

5.8 Priority Enrollment. Certain groups of students are extended the option of enrolling prior to the time continuing students begin enrolling. Physically handicapped students are extended the option of priority enrollment. Those students actively participating in the University Honors Program are extended the option of priority enrollment. Current OSU students who accept University scholarships will be given priority in enrolling. Scholarships that qualify students for priority in turning in trial schedules are University band, athletic, and graduate teaching assistantships for teaching or research assignments. Weren scholars, President's Distinguished Scholars (PDS), President's Leadership Council (PLC) recipients, and participants in the OSRHE Academic Scholars program are
also extended the option of priority enrollment. (These are not to be considered inclusive, but the scholarship must require that the student perform a service for the University at a regular time specified by the University.) Full-time employees of the University who have approval for enrollment may turn in their Trial Schedule forms to the Office of the Registrar any time after the class schedule book is available. An effort will be made to schedule classes of full-time employees to minimize conflict with their University employment. Working part-time for the University or outside the University does not qualify the student for priority in turning in a trial schedule.

5.9 Late Enrollment. A student is permitted to enroll during the first week of a semester or through the third day of a summer session or on the first day of a summer short course. A student enrolling late will pay a late enrollment fee. The late enrollment fee will not be charged on or prior to the first day of a summer short course.

5.10 Payment of Tuition and Fees. Each student is provided an estimate of their tuition and fees at the point of registration. All fees (required and optional) and tuition associated with the student's enrollment are due in the Office of the Bursar no later than 4:30 p.m. on the 15th day of each month following billing. Failure to receive a bill, which is mailed to the student's local address or specified billing address, does not relieve the student from the financial obligation, any finance charges, and other penalties that may occur if the account is not paid by the monthly due date. Fall semester fees are due by September 15, spring semester fees are due by February 15, and summer session fee due dates vary depending on the session. All accounts not paid in full by the due date will accrue an interest penalty at the rate of 1.5 percent monthly (19.56 APR). Accounts must be cleared before the student can obtain the release of any records, obtain a transcript, receive a diploma; or enroll at OSU for subsequent semesters.

5.11 Audit. A student who does not wish to receive credit in a course may, with the approvals of the student's advisor and the instructor of the course concerned, attend the class strictly as a visitor. A student who applies to audit a course promises that he or she will not use the audit to avoid the rule against excessive hours, and that he or she will not petition or ask in any way for the privilege of taking an examination to obtain credit after he or she has audited the course. The audit form is available in the Office of the Registrar. (Laboratory courses, private music lessons and art courses are not open for audit.)

If a student is already enrolled for credit in a course, but wishes to change to auditing that course, the student must officially drop the course (or, if appropriate, withdraw) at the time the student changes to audit.

A student who has established a permanent record at OSU may have the audited course recorded on his or her transcript with "AU" appearing in place of the grade. Not later than one week after the close of that semester, the student must present to the Office of the Registrar the instructor's copy of the audit form with a signed statement from the instructor, on the reverse side, that it is appropriate for the course to be recorded on the student's transcript.

Any individual 65 years or older may audit a class at no charge.

6.12 Minimum Class Size. The minimum number of students required in order for a class to meet is as follows: 20 students for lower-division classes, 12 students for upper-division classes, and eight students for graduate-level classes.

6. Grades and Grading

6.1 Official Transcripts. All official transcripts of the student's academic record at OSU are prepared and released by the Office of the Registrar. Copies of transcripts from other institutions cannot be furnished.

6.2 Grade Interpretation. The quality of student performance in all classes is indicated by the following letter grades: "A," "B," "C," "D," "F," "I," "NP," "P," "S," "U," "W," or "X." Descriptions of the grades are:

- Grade "A" - Excellent
- Grade "B" - Good
- Grade "C" - Average
- Grade "D" - Below average
- Grade "F" - Failure

Grade "I." This grade is given to a student who satisfactorily completed the majority of the course work and whose work averaged "D" or better, but who has been unavoidably prevented from completing the remaining work of the course. The conditions, including appropriate time limits, for the removal of the "I" are indicated on the official class roll by the instructor. A condition that the student must repeat the course in order to remove the "I" is not permitted. The maximum time allowed for a student to remove an "I" is one calendar year. The dean of the student's college may recommend to the Office of the Registrar the adjustment of this period in exceptional circumstances. It is the responsibility of the student to satisfy the requirements stipulated by the instructor at the time the "I" is assigned; it is the responsibility of the instructor to initiate action to have the new grade entered as soon as possible after the student fulfills the requirement.

The new grade does not result in the deletion of the "I" symbol from the transcript. Upon completion of the course requirements, a second entry is posted beside the original "I" on the transcript to show the final grade for the course. The incomplete grade which is not removed within the allotted period becomes a permanent incomplete.

Grade "NP." This grade is given for unsatisfactory work (including that evaluated as "D") in courses on the pass-no pass grading system. Both credit hours and grade-points are ignored in calculating grade-point averages.

Grade "P." This grade is given for passing work in OSU courses approved for pass-no pass and pass-fail grading systems. Both credit hours and grade-points are ignored in calculating grade-point averages.

Grade "S" or "U." This grade is given for satisfactory (equivalent to a "C" or better) or unsatisfactory work in remedial courses in English, mathematics, reading, and science. Both credit hours and grade points are ignored in calculating grade-point averages, and neither grade is counted in total hours. Effective Fall 1995, these courses were CIED 0123, ENGL 0001, 0123, MATH 0123, and UNIV 0111.

Grade "W." This grade indicates that the student dropped the course.

Grade "X." This grade is given to a student in a thesis or dissertation course (5000 or 6000) or a master's degree creative component course, when course work is still in progress. It is the responsibility of the instructor to initiate action to have the grade entered as soon as possible after the student completes the course work. The new grade does not result in the deletion of the "X" symbol from the transcript, but a second entry is posted beside the original "X" on the transcript to show the final grade.

Mark of "AU." An "AU" indicates that the student audited the course, and requested that it be recorded on the academic record. An "AU" is not a grade and is not used in calculating grade-point averages.

Mark of "N." An "N" indicates that at the time grades were due in the Office of the Registrar, a final grade was not reported by the student's instructor. An "N" is not a grade and will be changed to the grade earned within a reasonable time. It is not used in calculating grade-point averages.

6.3 Grade-point System. The following grade-point system is used in calculating the grade-point average.
Grade "A" yields 4 grade points per semester credit hour.
Grade "B" yields 3 grade points per semester credit hour.
Grade "C" yields 2 grade points per semester credit hour.
Grade "D" yields 1 grade point per semester credit hour.
Grade "F" yields 0 grade points per semester credit hour.

6.4 Grade-point Average Calculating. In calculating grade-point averages, the total number of grade points earned is divided by the total number of hours attempted. The grade of "I," "NP," "P," "S," "U," "W," "X" or the mark of "AU" or "N" will not affect the grade-point average.

Semester Grade-point Average. For purposes other than retention, all grades are included in the calculation. For retention purposes, activity, performance and remedial courses are excluded from the calculation. These courses remain on the transcript identified with an ampersand (&).

Graduation and Retention Grade-point Averages. All courses in which a student has a recorded grade are included in the calculation, excluding any courses repeated (with an original grade of "D" or "F") or reprinted and excluding remedial courses and physical education activity courses. (See "Academic Forgiveness.")

Cumulative Grade-point Average. All courses in which a student has a recorded grade are included in the calculation.

6.5 Freshman Progress Reports. The faculty will report grades for all freshmen on the dates specified in the official University calendar. The date will normally be Friday of the eighth week of classes. Progress reports are made available to freshman students shortly after mid-semester. Copies are made available to the students' advisers and the students' deans.

6.6 Pass-No Pass Grading System. An undergraduate student may elect to take no more than four courses or 15 hours (whichever is greater) during his or her academic career with the pass-no pass grading option. The option is restricted to those students who:
- have passed 28 or more semester credit hours;
- have at least a 2.50 grade-point average in all hours attempted;
- have met all of the prerequisites for enrollment in the course in question;
- do not need the course in question for meeting any requirements for graduation or certification other than as a general (unrestricted) elective;
- have approval of the academic adviser.

A student who chooses the pass-no pass option must do so by the last date on which a course may be added. Once the deadline has passed, a student may not change the choice of grading system. The pass-no pass option is not identified on the official class roll and thus is not known to the instructor. The instructor assigns a normal grade based on the quality of the work performed. The grades of "A," "B" and "C" are recorded on the transcript as "P"; the grades of "D" and "F" are recorded as "NP." "W" and "I" grades are recorded without change. The pass-no pass grade will not affect the grade-point average.

Graduate students should refer to the "Graduate College" section of the Catalog.

6.7 Pass-Fail Grading System. Some courses are taught only on a pass-fail basis. Such courses are so designated in the "Course listings" section of the Catalog. Students who pass the course are awarded the grade of "P"; those who fail the course are awarded the grade of "F."

Graduate students should refer to the "Graduate College" section of the Catalog.

6.8 Grade Reports. Reports of the grades of all students are compiled and released shortly after the end of each semester by the Office of the Registrar. These reports are made available to the students, the students' advisers and the students' deans.

6.9 Correcting Grades Reported in Error. An instructor who reports an incorrect grade to the Office of the Registrar may request that Office to correct the grade. The request must be in writing and must have both the department head's and the dean's approvals. In no case will a grade be lowered after the student has been graduated.

6.10 Grade Appeals. A student may appeal a grade given by an instructor in cases in which he or she believes the grade awarded is inconsistent with announced grading policy. (See "Student Rights and Responsibilities" or contact the Office of the Provost and Vice-President for Academic Affairs.)

6.11 Honor Rolls. Full-time Students. Full-time undergraduate students (12 or more semester credit hours in a regular semester or six or more in a summer session) who complete all enrolled hours with a semester (not cumulative) grade-point average of 4.00 (i.e., all "A"s) and with no grade of "I" in any course are placed on the President's List of Distinguished Students. The grade of "P," "S" or "W" or grades earned through correspondence may not be included in meeting the minimum enrollment required or grade-point average required for an honor roll. Students who have completed their courses under the same requirements as outlined above, with a combined grade-point average of 3.50 or higher and no grade below "C," are placed on the Dean's List of Distinguished Students. (See also "Grade-point Average Calculating.")

Part-time Students. Part-time undergraduate students (11 or fewer semester credit hours in a regular semester or five or fewer in a summer session) who have accumulated at least 12 semester credit hours of "A" during the most recent consecutive enrollment at OSU, and who complete all enrolled hours with a combined grade-point average of 4.00 (i.e., all "A"s) and with no grade of "I" in any course, are placed on the President's List of Distinguished Students. The grade of "P" or "S," or grades earned through correspondence may not be included in meeting the minimum enrollment required or grade-point average required for an honor roll. Dropping a course prohibits a part-time student from being listed on an honor roll. Special (non-degree-seeking) students are not included on an honor roll. Students who have completed their courses under the same requirements as outlined above, with a combined grade-point average of 3.50 or higher and no grade below "C," are placed on the Dean's List of Distinguished Students. (See also "Grade-point Average Calculating.")

Once a part-time student is placed on an honor roll, the student must complete an additional 12 credit hours, before the student is considered again for an honor roll. The student must meet all the above criteria at the time of subsequent consideration.

(Beginning Spring 1995, and retroactive to include Fall 1994, the Dean's List grade-point average was 3.50.)

6.12 Academic Dishonesty or Misconduct. Academic dishonesty or misconduct is neither condoned nor tolerated at Oklahoma State University. Academic dishonesty is behavior in which a deliberately fraudulent misrepresentation is employed in an attempt to gain undeserved intellectual credit, either for oneself or for another. Academic misconduct is behavior that results in intellectual advantage obtained by violating specific directions, rules, or accepted academic standards, but without deliberate intent or use of fraudulent means. (See also Policy and Procedure Letters.)

6.13 Academic Forgiveness (Undergraduates). Repeated Courses. A student may repeat a course and have only the second grade, even if it is lower than the first grade, included in the calculation of the graduation and retention grade-point averages up to a maximum of four courses but not to exceed 18 credit
hours in which the original grade was a "D" or "F." If a course is repeated more than once, all grades except the first attempt are included in the grade-point averages. The original course and grade remain on the transcript identified with an asterisk (*). All other repeated courses, those in excess of the 18-hour, four-course maximum and those with a grade of "C" or better in the original course, are included in the grade-point averages and identified with an "at" sign (@) on the transcript.

Academic Reprieve. A student may request an academic reprieve for all courses in one semester or two consecutive semesters if the following conditions are met: (a) at least three years must have elapsed between the period in which the grades being requested were earned and the reprieve request; (b) the student must have earned a GPA of 2.00 or higher with no grade lower than a "C" in all regularly graded course work (a minimum of 12 hours) excluding activity, performance and remedial courses since the semester requested to be reprieved; (c) the student has not previously been granted an academic reprieve for a semester; (d) there were extenuating circumstances which caused the student to perform poorly during the semester.

The request for an academic reprieve must be submitted on the appropriate form to the Office of the Executive Vice-President. A faculty committee appointed by that office reviews each request and either approves or denies a request based on whether or not the student meets the conditions stated above and the committee’s judgement concerning the extenuating circumstances reported by the student. The courses for a semester that is reprieved are excluded from the graduation requirements and mention grade-point averages and identified with a pound (#) sign on the transcript.

7. Graduation

7.1 Graduation Requirements. The responsibility for satisfying all requirements for a degree rests with the student. Advisers, faculty members and administrators offer help to the student in meeting this requirement. In the College of Business Administration the last 30 hours must be earned in residence.

7.2 Residence Requirements. A minimum of one-half of the upper-division requirements in a student's major field must be earned in residence at OSU. (See "College Enrollment Requirement.") Including the last 18 semester credit hours the student must have earned a total of not less than 30 semester credit hours at OSU taken in not less than two semesters, or one semester and one summer session, or three summer sessions. Courses taken as part of a re-

quired internship, such as in medical technology, may not be used in meeting this requirement. In the College of Business Administration the last 30 hours must be earned in residence.

7.3 College Enrollment Requirement. A candidate for graduation must be enrolled in the college from which he or she wishes to receive the degree for at least two semesters, or one semester and one summer session, or three summer sessions immediately preceding graduation. For the award of a second baccalaureate degree, this requirement may be waived by the dean of the college awarding the second degree. (See "Residence Requirements" and "Second Baccalaureate Degree.")

7.4 Residence Waiver for Certain Pre-medical Students. Students who complete at least 94 semester credit hours in a recognized premedical science program and then transfer to a professional program leading to the doctoral degree at an accredited professional school of medicine, osteopathic medicine, veterinary medicine, dentistry or optometry will be awarded the appropriate baccalaureate degree upon the successful completion of 30 semester credit hours in basic medical science courses applicable to the OSU major. This option is available only to students who have completed all other degree requirements for the major and have taken at least the last 30 semester credit hours of work at OSU prior to transferring to a professional school. (See "Residence Requirements.")

7.5 Minimum Hours for Graduation. Each degree program requires a specific minimum number of semester credit hours for graduation, as indicated in the Catalog. No degree program shall require fewer than 120 semester credit hours for graduation. (By OSRHE policy, these 120 hours are exclusive of physical education activity courses.) No student shall be permitted to graduate having completed fewer total hours than the requirement specified for that degree. At least 40 hours of upper-division course work shall be required in every baccalaureate degree program. (By OSRHE policy, these 40 hours are exclusive of physical education activity courses.) Hours of "S" or "U" earned in remedial courses may not count toward total hours.

7.6 Grade-point Average for Graduation. A graduation grade-point average of 2.00 or higher is required for all courses in which a student has a recorded grade, excluding any courses repeated or rephrased and excluding remedial courses and physical education activity courses. (See "Academic Forgiveness.") This is in addition to the 2.00 or higher grade-point average required by

the department in the major or minor fields.

7.7 Payment of Graduation Fees. Beginning Fall 1996, the basic graduation cost is included in the records maintenance fee. Information on procedures and deadlines is given to students at the time they complete their enrollment.

7.8 Requirements for Honors Degrees. The individual colleges have specific requirements for degrees with honors. Students should consult the office of their academic dean for information. (See "Honors Programs" in the Catalog.)

7.9 Diploma Application. Each candidate for graduation shall file a diploma application in the Office of the Registrar within two weeks following enrollment in a regular semester or one week in a summer session in which the student wishes to be graduated.

7.10 Presence at Commencement Exercises. The University will hold one Commencement each year at the close of the spring semester. Students who meet the graduation requirements preceding fall semester and students who plan to meet the graduation requirements at the close of the following summer session are invited and encouraged to participate in the Commencement exercises. Students who plan to meet requirements during the summer session (whether they are currently enrolled or not) should contact the Office of the Registrar to participate in Commencement.

The University encourages all candidates for degrees to be present at the Commencement exercises. Attendance is not compulsory. However, candidates who cannot be present should notify the Office of the Registrar of the addresses to which diplomas can be mailed.

7.11 Graduation with Distinction. Beginning with the Fall 1997 semester, students who earn an OSU undergraduate degree can also earn a level of distinction based upon the final graduation/retention grade-point average. (See also "Grade-point Average Calculating.") The level of distinction added to the diploma and transcript is:

<table>
<thead>
<tr>
<th>Graduation/retention grade-point average</th>
<th>Distinction</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.90 to 4.00</td>
<td>Summa cum laude</td>
</tr>
<tr>
<td>3.80 to 3.89</td>
<td>Magna cum laude</td>
</tr>
<tr>
<td>3.70 to 3.79</td>
<td>Cum laude</td>
</tr>
</tbody>
</table>

This grade-point average calculation is two decimal places only, e.g., 3.69. In actuality, this GPA may be 3.69785 if additional digits were to be added. However, the value used to determine distinction is 3.69 which does not qualify for a level of distinction.
**Degree Programs Offered**

The type of degree offered in each major is listed along with an indication of the college(s) in which each may be earned. (Some majors are offered with more than one type of degree, e.g., Bachelor of Arts and Bachelor of Science. Many have options within the major. See the department narrative for details.)

<table>
<thead>
<tr>
<th>Degree Type</th>
<th>Program Name</th>
<th>College(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor's</td>
<td>Accounting</td>
<td>Bus/Gr</td>
</tr>
<tr>
<td>Bachelor's</td>
<td>Agribusiness</td>
<td>Ag/Bus</td>
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<tr>
<td>Bachelor's</td>
<td>Agricultural Communications</td>
<td>Ag</td>
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<tr>
<td>Bachelor's</td>
<td>Agricultural Economics</td>
<td>Ag/Gr</td>
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<tr>
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<td>Agricultural Education</td>
<td>Ag/Gr</td>
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<td>Bachelor's</td>
<td>Agronomy</td>
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<tr>
<td>Bachelor's</td>
<td>Animal Science</td>
<td>Gr</td>
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<tr>
<td>Bachelor's</td>
<td>Animal Breeding and Reproduction</td>
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<tr>
<td>Bachelor's</td>
<td>Animal Nutrition</td>
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<td>Applied Behavioral Studies</td>
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<td>Bachelor's</td>
<td>Applied Educational Studies</td>
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<td>Bachelor's</td>
<td>Architectural Engineering</td>
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<td>Art</td>
<td>A&amp;S/Gr</td>
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<td>Biochemistry and Molecular Biology</td>
<td>Ag/Gr</td>
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<td>Bachelor's</td>
<td>Biosystems Engineering</td>
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<td>Botany</td>
<td>A&amp;S/Gr</td>
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<tr>
<td>Bachelor's</td>
<td>Business Administration</td>
<td>Gr</td>
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<tr>
<td>Bachelor's</td>
<td>Cell and Molecular Biology</td>
<td>A&amp;S/Gr</td>
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<tr>
<td>Bachelor's</td>
<td>Chemical Engineering</td>
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<td>Chemistry</td>
<td>A&amp;S/Gr</td>
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<td>Communication Sciences and Disorders</td>
<td>A&amp;S/Gr</td>
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<tr>
<td>Bachelor's</td>
<td>Computer Science</td>
<td>A&amp;S/Gr</td>
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<td>Bachelor's</td>
<td>Counseling and Student Personnel</td>
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<td>Bachelor's</td>
<td>Curriculum and Instruction</td>
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<tr>
<td>Bachelor's</td>
<td>Design, Housing and Merchandising</td>
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<td>Economics</td>
<td>A&amp;S/Bus/Gr</td>
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<td>Education</td>
<td>Gr/G</td>
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<td>Educational Administration</td>
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<td>En/Gr</td>
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<td>Bachelor's</td>
<td>Electronics Technology</td>
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<td>Bachelor's</td>
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<td>Family Relations and Child Development</td>
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<td>Higher Education</td>
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<td>Premedical Science</td>
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<td>Bachelor's</td>
<td>Wildlife and Fisheries Ecology</td>
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<td>Bachelor's</td>
<td>Zoology</td>
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**Summary of degrees offered:**

- Bachelor's 79
- Master's 62
- Doctor's 44
- Specialist 1

Oklahoma State University 53
College of Agricultural Sciences and Natural Resources

Samuel E. Curl, Ph.D., Dean
Paul D. Hummer, Ph.D., Associate Dean for Academic Programs
C. Wesley Holley, Ed.D., Assistant Dean for Academic Programs
James E. Osborn, Ph.D., Assistant Dean for International Programs

Science, technology, business, education, research, production and environment are key elements in America’s largest industry. In order to feed and clothe the five billion people of the world, the agricultural industry needs human capital—scientists and specialists with needed skills in molecular genetics, human nutrition, soil and water sciences, international marketing, systems analysis, biosystems and agricultural engineering and other specialties.

The diverse careers available in agriculture offer many choices, and college graduates are needed to fill a wide variety of jobs in American agriculture. Graduates are needed in scientific research, marketing, financial services, and the processing of information, as well as production. OSU graduates can be a part of the modern agricultural technology that will bring new discoveries and techniques to the world.

The College of Agricultural Sciences and Natural Resources prepares students to analyze information, explore opportunities and solve problems. Students are prepared in the science and technology of agriculture, and they also receive a solid general education in communications, humanities and social sciences. In the new agriculture, the graduate will have a rewarding career that will last as long as food is consumed and fiber is grown on this earth.

Academic Programs

Undergraduate Programs. The Bachelor of Science in Agricultural Sciences and Natural Resources degree is offered in the following major fields of study: agriculture, agricultural economics, agricultural education, agronomy, animal science, biochemistry and molecular biology, entomology, environmental science, forestry, horticulture and landscape architecture, and pre-veterinary science. The Bachelor of Landscape Architecture is also offered in the College of Agricultural Sciences and Natural Resources.

Graduate Programs. Graduate study is available in all academic departments in the College. In addition to the Master of Agriculture and Master of Science degrees that may be obtained through several departments, the Doctor of Philosophy degree (Ph.D.) may be earned in the following areas: agricultural economics, agricultural education, biosystems engineering, animal breeding, animal nutrition, biochemistry and molecular biology, crop science, entomology, food science, plant pathology, soil science, and forestry and horticulture through crop science, environmental science, and plant science.

High School Preparation and Admission Requirements

The high school preparation and admission requirements for the College are the same as the general University requirements. A solid background in English, algebra, and natural science is important preparation for the many academic programs in the various agricultural disciplines.

Transfer Students

Students who transfer from an accredited college or junior college must meet the general University admission requirements. All transferred courses are recorded on the OSU transcript; however, no more than 65 hours from a two-year college will be used to meet the College’s degree requirements. Specific departmental requirements needed for graduation are determined by the department in which the student plans to earn his or her degree.

Scholarships

Students enrolled and entering the College of Agricultural Sciences and Natural Resources are annually awarded more than $300,000 in scholarships from the College and its departments. The following areas will be considered in the awarding of scholarships: scholastic standing in high school or college; leadership qualities which have been shown in school, church, community or youth groups; financial need; sincere interest in agriculture.

Applications and additional information may be obtained from the Office of the Associate Dean, College of Agricultural Sciences and Natural Resources, Oklahoma State University, 136 Agricultural Hall, Stillwater, OK 74078. Applications for new students may also be obtained from local high schools. Applications are available beginning November 15.

Academic Advising

All students in the College have the advantage of being advised by a faculty member working in the individual student’s academic discipline. Such advisers are readily available to students and work closely with the students throughout their academic careers.
Special Academic Programs

Honors Program. The Honors Program in the College of Agricultural Sciences and Natural Resources is designed to provide outstanding students with opportunities to pursue new challenges and academic excellence. Honors courses, seminars, and special honors contracts provide for discussions and independent thought by students who have the desire and ability to explore academic subjects beyond the normal class work material. Honors awards available in the College are:

1. General Education Honors.
2. Departmental Honors.
3. The bachelor's degree, with honors. Awards (1) and (2) may each be earned independently of the others. Award (3) is earned by satisfying the requirements of both (1) and (2). The completion of each award is noted on the student's transcript. Students who complete all three receive the bachelor's degree with honors diploma.

All entering freshmen who have ACT composite scores of 27-29 and a high school GPA of 3.75 or better, or an ACT composite score of 30 or higher and a high school GPA of 3.50, are eligible to become a part of the Honors Program. Sophomores, juniors, and seniors, with minimum cumulative grade-point averages of 3.25, 3.37, and 3.50, respectively, may enroll in the Honors Program.

Additional information may be obtained from the director of the University Honors Program, 510 Library.

Pre-veterinary medicine Curriculum. The program in pre-veterinary medicine as offered in the College of Agricultural Sciences and Natural Resources includes all courses required for admission to the College of Veterinary Medicine. A minimum grade-point average of 2.80 is required in the courses listed below:

- English composition (6 hours minimum): ENGL 1113 and 1213; or 1313 and 1413.
- Technical/Professional writing or English elective (2 hours minimum).
- Chemistry (17 hours minimum):
  1. General chemistry (8 hours minimum): CHEM 1314 and 1515; (or 1215 and 1225).
  2. Organic chemistry (5 hours minimum): CHEM 3015 (or 3053, 3153, and 3112).
- Physics (8 hours minimum): PHYS 1114 and 1214.
- Mathematics (3 hours minimum): MATH 1513 (or any higher level mathematics).

Biological science (14 hours minimum. Courses must cover botany, genetics, microbiology and zoology. Each course, except genetics, must include laboratory work).

3. Genetics: (ANSI 3423 or AGRON 3554 or BIOL 3024.)

Although these course requirements may be completed within two years, most pre-veterinary medicine students complete at least three years of preparatory course work or a bachelor's degree. For information as to required tests and application procedures, refer to the "College of Veterinary Medicine" section in the Catalog and the current Veterinary Medicine at Oklahoma State University brochure. Students are also encouraged to contact the Office of the Assistant Dean for Academic Programs in the College of Agricultural Sciences and Natural Resources.

Pre-veterinary Science Degree. A Bachelor of Science in Agricultural Sciences and Natural Resources degree with a minor in pre-veterinary medicine may be obtained after the completion of one year in the College of Veterinary Medicine. General education and other requirements for graduation in the College of Agricultural Sciences and Natural Resources must be met. Specific plans of study may be obtained from the Office of the Assistant Dean for Academic Programs, 136 Agricultural Hall.

General Education Requirements

The College of Agricultural Sciences and Natural Resources is committed to providing graduates both a depth of knowledge in their chosen field of study as well as breadth of knowledge outside their major. General education requirements are the same as those of the general University. Specific course offerings are given in the respective plans of study.

Graduation Requirements

General University requirements for graduation are stated elsewhere in the Catalog. In addition, specific requirements must be met for the Bachelor of Science in Agricultural Sciences and Natural Resources and Bachelor of Landscape Architecture degrees. For the B.S. degree, the required total semester credit hours varies by department, major and option. The Bachelor of Landscape Architecture is a five-year program requiring 160 credit hours. A minimum of 40 semester credit hours and 100 grade-points must be earned in courses numbered 3000 or above.

Departmental Clubs and Honor Societies

- Ag Communicators of Tomorrow
- Aggie-X Club (agricultural economics)
- Agriculture Ambassadors
- Agriculture Student Council
- Agronomy Club
- Alpha Zeta (college honor society)
- American Society of Landscape Architects
- Associated Landscape Contractors of America
- Block and Bridle Club (animal science)
- Collegiate Cattlewomen
- Collegiate 4-H
- Collegiate FFA/Alpha Tau Alpha (agricultural education)
- Cowboys for Christ
- Dairy Science Club
- Environmental Science Club
- Food Industry Club
- Forestry Club
- Horticulture Club
- National Agri-marketing Association
- OSU Collegiate Cattlewomen
- OSU Horseman's Association
- Pre-veterinary Medicine Club
- Rodeo Association
- Sanborn Entomology Club
- Sigma Lambda Alpha (horticulture and landscape architecture)
- Society of American Foresters
- Society of Range Management
- Soil and Water Conservation Society
- Xi Sigma Pi (forestry honor society)

Agricultural Communications

Professor and Head James G. Leising, Ph.D.

Modern agriculture, with its diversity and specialization, requires accurate communication between the industry's segments and with the general public. Education in agriculture and journalism trains the agricultural communications student to provide the necessary communications link.

By majoring in agricultural communications, a student may choose a special-interest area such as advertising, public relations, radio and television broadcasting, photography, reporting and newswriting, or research report writing.
Agricultural Economics

Professor and Head Alan D. Barkema, Ph.D.

The Department of Agricultural Economics provides professional training at the undergraduate and graduate level. Agricultural economics is concerned with the science and art of understanding the economic relationships that affect individuals, firms or service agencies in agriculture. Agricultural economics also examines the interrelationships between the agricultural sector and the other sectors of the economy. The courses place emphasis on the economic problems associated with producing, processing, marketing and consuming the goods and services used by agriculture.

Agricultural economics combines instruction in the technical agricultural sciences with education in the application of economic and business management principles and tools. Agricultural economists draw upon the physical and social sciences to define, understand and solve economic problems created by the changing environment in which modern agriculture operates. The Department of Agricultural Economics places emphasis upon the decision-making and problem-solving skills used in the management of agricultural production and marketing firms.

Studies in agricultural economics prepare students to excel in many challenging careers. Many agricultural economics graduates work to improve food production and processing throughout the world. Other graduates work with government policies that have an impact on the food and fiber sector. Because rural communities are directly tied to agriculture, some graduates work to help these communities thrive in the ever-changing world. Graduates also help protect and maintain our natural resources and the environment for the greatest benefit of society. Many graduates take career paths removed from the farm.

An undergraduate may elect to specialize in an option in agricultural economics. The 10 options available to the student majoring in agricultural economics are: farm and ranch management, international agricultural marketing, marketing and business, natural resources and community development, pre-law, pre-veterinary business management, quantitative studies, with three additional options offering double majors in agricultural economics and accounting, agricultural economics and agricultural education, agricultural economics and computer science. If the student chooses not to specialize, the student may elect the agricultural economics major without a special option.

Agribusiness

The Department of Agricultural Economics offers the agribusiness major in cooperation with the College of Business Administration. Students pursuing this major may obtain a B.S. in Agricultural Sciences and Natural Resources, or B.S. in Business Administration. This major prepares students for decision making in agribusiness firms. Graduates of the agribusiness program work for organizations involved in the production, processing, distribution and marketing of food, food products or input used in the production of food and food products for human or animal consumption.

Graduate Programs

The department offers graduate work leading to the Master of Science, the Master of Agriculture and the Doctor of Philosophy degrees. Both thesis and non-thesis options are available at the M.S. level. Ph.D. students complete a teaching practicum in addition to the research thesis as a part of the degree requirements.

The graduate program stresses development of superior professional competence, suited to the demands of the modern business, academic, government and research environments. Advanced courses concentrate on economic analysis applied to problems of production, distribution and consumption of agricultural products. Courses in economic theory, econometrics, mathematical economics, statistics, and computer science are an integral part of the program. Problems of agricultural policy, natural resource use and rural area development and planning are also important topics. The faculty give direction and individual-guidance to student research in marketing, production, management of agricultural enterprises, price analysis, land and water use and development, rural development, planning, agricultural finance, international trade, farm appraisal and agricultural policy. Specialization is achieved through courses electives and research topics. Each student is guided in the preparation of the program of study by an advisory committee to assure that background or prerequisite work and the graduate plan will lead to the desired depth and breadth of proficiency.

Admission Requirements. Prerequisites to advanced training in agricultural economics are (1) the desire to understand and solve the complex and changing economic problems faced by agriculture and rural society, and (2) the desire and ability to learn methods of rigorous logical analysis. In addition, differential calculus, three semester hours of statistical methods, and 15 semester hours of agricultural economics and economics, including intermediate micro- and macroeconomic theory, constitute a minimum background for advanced study in agricultural economics. In certain cases, a part of this work can be taken after admission but will not count toward a graduate degree.

Acceptance by an adviser in the department is not required prior to official admittance to the departmental graduate program.

Agricultural Education

Professor and Head James G. Leising, Ph.D.

The programs of study offered in agricultural education are designed to provide both comprehensive and specialized training to prepare graduates for careers in a wide range of fields of agriculture. In addition to being prepared for licensure as teachers, graduates are professionally prepared for work in cooperative extension and other federal and state programs and services, as well as international education endeavors. Graduates also may find employment as educational directors and consultants with agribusiness firms and organizations. Studies may culminate in the B.S., M.Ag., M.S. or Ph.D. degrees.

The undergraduate teaching option is designed to qualify the bachelor’s degree recipient for the Oklahoma Agricultural Education Teaching License. This license is recognized as meeting requirements for initial employment as a teacher in most states. The professional service option is designed to focus on careers relating to education or service in agricultural...
Graduate Programs

Graduate programs in agricultural education are designed to (1) prepare students for entry into or advancement in teaching careers and (2) provide for further development of professional leadership skills for other educational careers in agriculture, agribusiness, government service, extension, or adult education. An attempt is made to develop individual study programs to meet needs of both international and domestic students.

The Master of Agriculture is offered to provide educational experiences in general education, agriculture and professional education.

Character of Program. The program is designed to provide a program which will give additional specialization in technical fields, as well as increased breadth of training. Students who are interested in working toward the Ph.D. degree should follow the regular Master of Science degree program.

Graduate Programs

The Master of Agriculture degree is designed for students interested in graduate professional training with a strong applied research orientation. The degree is offered in the following areas of emphasis: agricultural economics, agricultural education, animal science, entomology, forestry, horticulture and landscape architecture, plant and soil sciences, and plant pathology.

Purpose. The purpose of this degree is to provide a program which will give

Agriculture

Professor and Assistant Dean
C. Wesley Holley, Ed.D.

Graduate Programs

The Master of Agriculture degree is designed for students interested in graduate professional training with a strong applied research orientation. The degree is offered in the following areas of emphasis: agricultural economics, agricultural education, animal science, entomology, forestry, horticulture and landscape architecture, plant and soil sciences, and plant pathology.

Purpose. The purpose of this degree is to provide a program which will give
Animal Science

Professor and Head Donald G. Wagner, Ph.D.

The Department of Animal Science offers professional training at both the undergraduate and graduate levels. The undergraduate program leads to the Bachelor of Science in Agricultural Sciences and Natural Resources degree. Graduate studies culminate in the Master of Science, Master of Agriculture (emphasis in animal science) or the Doctor of Philosophy in nutrition, animal breeding, animal reproduction or food science.

Animal science is concerned with the science, art and business of the production of beef cattle, dairy cattle, horses, poultry, sheep and swine. An animal scientist is concerned with the application of the principles of the biological, physical and social sciences to the problems associated with livestock production and management.

Animal science is also concerned with the products of food animals: meat, dairy foods and eggs. The food industry is one of the largest and most important industries in the United States. Students can gain expertise in the processing, quality control and marketing of meat, dairy and poultry products.

Undergraduate students may elect an option in the areas of animal biotechnology, business, food industry, food science, international, livestock merchandising, pre-veterinary animal science, production, and ranch operations, or a double major with agricultural communications or with agricultural education. In addition, students have the opportunity to concentrate their studies on one of the animal groups (meat animals, dairy, horses or poultry). Internship programs providing three to six months of off-campus work experience are available in all options. Participation in undergraduate clubs (Block and Bridle, Dairy Science, Horsemen's Association or Food Industry clubs) or judging teams (livestock, meat, horses, dairy cattle, or poultry) improves social, communication and leadership skills.

Students interested in veterinary medicine may complete the pre-veterinary medicine requirements at the same time they are working toward a B.S. degree in animal science. In addition, pre-vet students gain valuable insight into the care and management of animals throughout the animal science curriculum.

Undergraduate students follow a similar curriculum during the first two years which includes basic courses in the physical, biological and social sciences, and a series of introductory courses in agriculture and business. Upper-class students take a basic core of advanced animal science courses including genetics, physiology, nutrition or food science. As seniors, students complete a series of advanced animal science courses which are designed to apply knowledge obtained in previous courses to livestock or food production systems. Every opportunity is taken in teaching to utilize the excellent herds, flocks and processing facilities owned or operated by the department.

Students completing a degree with a major in animal science have a wide choice of challenging careers including ownership or management of farms, ranches, feedlots; employment with state and federal agencies concerned with inspection, grading or regulation; sales and service positions with companies involved with feeds, pharmaceuticals or other livestock products; opportunities in agricultural extension or teaching; and work in the processing, distributing and merchandising of dairy, poultry and meat products. Students who earn the master's or doctorate can look forward to careers in teaching, research or extension with universities, the U.S. Department of Agriculture or private industry.

Graduate Programs

The Department of Animal Science offers graduate work leading to the Master of Science degree in animal science or food science. Research work at the M.S. level is available in the areas of animal breeding (genetics), animal nutrition, animal physiology or food science (meat or milk products). A Master of Agriculture degree in the emphasis area of animal science is also available. The department offers programs leading to the Doctor of Philosophy degree in animal breeding and reproduction, animal nutrition, and food science.

Prerequisites. Admission to the graduate program requires an undergraduate major in animal science, dairy science or poultry science, or in closely-related biological sciences or biochemistry. In addition, students with a major in dairy manufacturing, microbiology, human nutrition, food science, or food technology can qualify for the program in food science. A student enrolling in a degree program must have been accepted by an adviser prior to official admission. In all cases, the student's graduate adviser or committee may recognize specific undergraduate deficiencies and require measures to attain proficiency.

Biochemistry and Molecular Biology

Professor and Head James B. Blair, Ph.D.

Biochemistry, the central scientific discipline linking the chemical, physical and biological sciences, exerts a profound influence on the progress of medicine and agriculture. By applying concepts and methods of chemistry and physics to the fundamental problems of biology, biochemists have made great progress in their effort to understand the chemistry of living organisms. Major discoveries concerning the biochemistry of genetic material provide the tools of molecular biology that are essential to contemporary life sciences research.

Biochemists and molecular biologists are concerned with living things. They must acquire some knowledge of the biological sciences. Since a biochemist's tools are the physical sciences, he or she must receive sound education in mathematics, physics and chemistry.

Challenging positions for well-trained biochemists and molecular biologists are available in colleges and universities, state and federal laboratories, research institutes, medical centers and in an increasing number of industrial organizations, particularly the pharmaceutical and food industries. Biochemists are involved with research on the chemistry of processes occurring in plants, animals, and various microorganisms, and with the discovery and development of antibiotics, vitamins, hormones, enzymes, insecticides and molecular genetic techniques.

At the undergraduate level a major in biochemistry and molecular biology is available through the College of Agricultural Sciences and Natural Resources. The department also offers a B.S. degree in biochemistry through the College of Arts and Sciences. An honors program is available. The curriculum provides a broad background in chemistry and biological science and permits flexibility in meeting particular interests of the student. Courses in biochemistry are based on general, organic and analytical chemistry. The biochemistry and molecular biology curriculum provides students with sufficient background in the basic sciences of mathematics, physics, chemistry and biology to meet the needs for graduate study in most fields of modern science related to agriculture or medicine. The curriculum is excellent for
Graduate Programs

Because many of the opportunities in biochemistry require advanced course work, a major part of the program in the Department of Biochemistry and Molecular Biology is concerned with its graduate program leading to the M.S. or Ph.D. degree. This graduate program is an integral part of extensive basic research activities in the Oklahoma Agricultural Experiment Station. These research activities provide opportunities for part-time employment of undergraduate majors to improve their professional competence.

Prerequisites. Although the B.S. in chemistry or biochemistry is preferred, students with strong backgrounds in other biological or physical science disciplines are eligible. Individuals not having at least eight semester credit hours in each of organic and physical chemistry and calculus must take appropriate undergraduate courses to make up deficiencies. The results of the three general GRE exams (verbal, quantitative, analytical) are required for entrance. An advanced GRE subject matter exam (biochemistry, chemistry or biology) is also recommended. A cumulative GRE score of 1500 is normally required.

Degree Requirements. A more detailed description of the graduate study program in biochemistry is available from the department upon request. The requirements listed below complement the general graduate requirements described in the "Graduate College" section of the Catalog. After the first semester, continuous attendance and participation in the departmental seminar is expected.

The Master of Science Degree. Twenty-four credit hours of formal graduate courses are required, including BIOCH 5753 (or 4113), 5853, and 5930. In addition, a student must present an acceptable research thesis (six hours) and pass a final oral examination covering it and related material. Research advisers are selected at the end of the first semester.

A non-thesis Master of Science degree is also available. It does not require a research thesis, but requires a report and extensive technical training in the laboratory. The non-thesis M.S. is not recommended for students wishing to pursue a Ph.D. program later.

The Doctor of Philosophy Degree. The course requirements are determined with the aid of the student's graduate advisory committee. Usually they follow these guidelines: total of 30-40 credit hours of formal graduate course work which includes all the courses listed for the M.S. degree, at least four of the advanced graduate courses in biochemistry (6000 level) and two offerings of Special Topics (6820). Additional course requirements, appropriate to the student's interests, are determined by the advisory committee. The advisory committee is selected at the end of the second semester. Each student will take a series of cumulative examinations beginning in September of his or her first year. A more comprehensive qualifying examination is also given, usually at the end of the fourth semester of graduate study.

One year of a foreign language at the college level is required. The student must present, and defend in a final oral examination, an acceptable research thesis which contains a substantial original contribution to the field of biochemistry. The department offers research experience in a variety of areas of biochemistry.

Biosystems and Agricultural Engineering

Professor and Head Billy J. Barfield, Ph.D., P.E.

The School of Biosystems and Agricultural Engineering is administered jointly by the College of Agricultural Sciences and Natural Resources and the College of Engineering, Architecture and Technology.

Biosystems engineers are professionals who create and adapt engineering knowledge and technologies for the efficient and effective production, processing, storage, handling and distribution of food, feed, fiber and other biological products, while at the same time providing for a quality environment and preserving natural resources. Specialization is provided in emphasis areas or options of food and bioprocessing, environmental and natural resources, biomechanical, and general agricultural engineering.

Biosystems engineering courses integrate the engineering sciences with biological sciences and teach students to design solutions to real problems of society. Students work both as individuals and in teams to solve real world design problems provided by industrial firms who hire biosystems engineers.

The goal of the biosystems degree programs is to produce graduates who possess broad-based knowledge, skills and judgment that prepare them to succeed in the profession of engineering or in further studies at the graduate level. To achieve this goal, the specific objectives listed below are integrated throughout the program.

In the preprofessional portion of the biosystems engineering program (usually equivalent to two years of study) the focus is on the underlying biological, physical, chemical and mathematical principles of engineering, supplemented by appropriate general education courses in English, social sciences and humanities. Students who demonstrate proficiency in this portion of the program are eligible for admission to the professional school in biosystems engineering.

The professional school of biosystems engineering curriculum (typically two years) builds systematically upon the scientific knowledge acquired in the preprofessional curriculum. In professional school, students have the opportunity to focus on the option areas given above. Regardless of the option area, the degree is accredited at the basic level by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology under agricultural engineering and similarly named programs.

Each professional school course builds upon preceding engineering courses to develop in the student the ability to identify and solve meaningful engineering problems. The course work is specifically sequenced and interrelated to provide design experience at each level, leading to progressively more complex, open-ended problems. The course work includes sensitizing students to socially related technical problems and their responsibilities as engineering professionals to behave ethically and protect occupational and public safety. The program culminates in senior year design courses in which students integrate the analysis, synthesis and other abilities they have developed throughout the earlier portions of their study into a capstone experience. At this point, they are able to design components, systems and processes that meet specific requirements, including such pertinent societal considerations as ethics, safety, environmental impact and aesthetics.

The students have also developed and displayed the ability to conduct experiments essential to specific studies and to analyze the experimental results and draw meaningful conclusions.

An integral part of this education continuum from basic science through comprehensive engineering design are learning experiences that facilitate the students' abilities to function effectively in both individual and team environments. Moreover, the program provides every
graduate with adequate learning experiences to develop effective written and oral communication skills. State-of-the-art computational tools are introduced and used as a part of their problem-solving experiences. Finally, the students' experiences in solving ever-more-challenging problems enables them to continue to learn independently throughout their professional careers.

A wide variety of employment opportunities are available for biosystems engineers in industry, public service and education. Some of these opportunities include positions in governmental agencies, consulting, machinery industry, manufacturing and installation, and electric power management industries. Biosystems engineers have careers in foreign countries as well.

Students interested in a degree in biosystems engineering may initially enroll in either the College of Agricultural Sciences and Natural Resources or the College of Engineering, Architecture and Technology. Students who enroll in the College of Agricultural Sciences and Natural Resources should request a biosystems engineering adviser and transfer to the College of Engineering, Architecture and Technology by the end of their first semester.

### Graduate Programs

The School of Biosystems and Agricultural Engineering offers three programs leading to post-baccalaureated degrees: Master of Biosystems Engineering, Master of Science and Doctor of Philosophy. The Master of Biosystems Engineering program places emphasis on design and internship in engineering experience. The Master of Science and Doctor of Philosophy degrees emphasize research and development.

Excellent facilities are available for students to explore research and design in bioprocessing and food engineering, physics of plant and animal environments, non-point-source pollution control, hydrology, water resources, water quality, air quality, wind erosion, machine development for biological systems, microelectronics, intelligent machines for biological production, irrigation design, and hydraulics.

Research projects are supported by the Agricultural Experiment Station and by state and federal grants. A well-trained faculty, many of them registered professional engineers with research, consulting, and design experience, guide the graduate students’ activities and plan programs to meet students’ needs. Graduate students design experiments and special equipment to conduct their work. They are expected to demonstrate, by supporting research or by designs, the ability to identify a problem, define alternatives, propose a solution, organize a design or an experimental investigation, carry it to completion and report the results.

**Admission Requirements.** Admission to the Master of Science or Doctor of Philosophy degree program requires graduation from an engineering curriculum accredited by the Accreditation Board for Engineering and Technology. Students without accredited degrees may be admitted provisionally and may be required to take additional courses.

Admission to the Master of Biosystems Engineering degree program is permitted for students who meet the prerequisites as stated in the "College of Engineering, Architecture and Technology" section of the Catalog, under "Master of Engineering." The departmental graduate committee evaluates the applicant’s credentials to determine equivalency and specify requirements to overcome deficiencies. A student must be accepted by an adviser in the department prior to official admission to the graduate program.

**Degree Requirements.** A candidate for any of the graduate degrees listed above follows an approved plan of study which must satisfy at least the minimum University requirements for that particular degree.

### Entomology

Professor and Head Russell E. Wright, Ph.D.

Entomology is the science and study of insects and related arthropods such as ticks, mites, and spiders. This discipline offers students opportunities to explore the diversity of nature through the study of arthropods. In addition, they may learn about the sophisticated biological and physiological phenomena associated with these organisms. Discovery of the importance of arthropods as competitors with human society for food and fiber is a central theme in entomology. Arthropods serve as vectors of human and animal diseases, biomedical research organisms and pollinators. These animals also form an intricate part of the food web; regulation of pest populations must be done in an environmentally safe manner.

A strong academic background in the physical and biological sciences is essential before enrolling in specialized subject matter in entomology. Specialized subject matter includes insect identification, biology, ecology, physiology, biochemistry, population dynamics, medical and veterinary entomology and pest management.

There are many diverse job and career prospects for graduates. Current under graduates are preparing for careers in veterinary medicine, medicine, law, and graduate school. Others gain employment with private industry, research laboratories, or county, state or federal agencies. Some develop their own businesses as consultants and entrepreneurs.

### Environmental Science

Professor and Assistant Dean C. Wesley Holley, Ed.D.

The College of Agricultural Sciences and Natural Resources offers an undergraduate major in environmental science. This program is an interdisciplinary study of the biological, chemical, and physical factors, coupled with human activities, that affect the environment. Such a science is designed to improve the current and future welfare of the human race with environmental policies based on sound scientific principles and in accordance with the true benefits and costs as evaluated by an informed society.

Since this major is interdisciplinary and science-oriented, the student will take basic courses in biology, chemistry,
A primary goal of this program of study is to enable graduates to solve environmental problems according to a solid science base and in accordance with society’s needs. Through successful completion of this major the student earns the Bachelor of Science in Agricultural Sciences and Natural Resources.

The environmental science under-graduate major is directly supported by faculty from the departments of Agricultural Economics, Biosystems and Agricultural Engineering, Animal Science, Entomology and Plant Pathology, Forestry, Horticulture and Landscape Architecture, and Plant and Soil Sciences. The major and its students also benefit from working in and out of the classroom and laboratory with faculty who are conducting cutting-edge research involving environmental problems.

Graduates work in such areas as land-use planning, environmental control, natural resources management, waste disposal, water and soil quality, and policy analysis. Industries associated with the extraction, utilization and manipulation of natural resources have increased the number of employees with environmental training to address regulation compliance, litigation, monitoring, public relations and management practices.

Graduates may also work with federal, state and local government agencies involved in regulation, resource management and policy development. Graduates, particularly those who have gone on to earn advanced graduate degrees, find employment with consulting firms that are involved with solving environmental problems. Many graduates go on to graduate school or pursue a degree from a professional school, such as law or medicine.

Forestry
Professor and Head Edwin L. Miller, Ph.D.

America's forests are an invaluable renewable natural resource. With proper decisions concerning management, forests can provide a bounty of uses and values for generations to come.

Professional foresters play a vital role in managing, sustaining and utilizing the forest and its diverse resources: timber, water, wildlife, range forage, recreation and wilderness. Foresters devote effort to protecting forests from the harmful effects of fire, disease and insects. Foresters today are problem-solvers using a blend of ecology, technology, economics and sociology to provide benefits and services desired by society. Foresters work with private landowners and city planners, teach and conduct research at universities, administer parks and recreation areas, manage the business of forest industry, and manage public forest lands.

Graduates may be employed by federal agencies, including the U.S. Forest Service, Bureau of Land Management, the Natural Resources Conservation Service, the Fish and Wildlife Service, and the Bureau of Indian Affairs. In addition, state, county and municipal governments employ foresters in a variety of resource management and service positions. Wood-using industries retain foresters for land management, land and timber acquisition and harvesting positions as well as in mill production and administrative work. Foresters work for associations promoting the use of forest products and in many other public relations jobs. Some foresters are self-employed as consultants, specializing in timber and land appraisals, management planning and a variety of special services. Recipients of advanced degrees, especially the doctorate, may conduct industrial research or may enter the teaching profession.

The Department of Forestry offers a major in forestry leading to a Bachelor of Science in Agricultural Sciences and Natural Resources degree. Considerable breadth exists in the forestry curriculum, affording the student and faculty adviser the opportunity to develop a specialized curriculum focused on a wide array of natural resource specialties, such as water, recreation, range or wildlife. For the student with a research career in mind, course work in basic and applied science is available. Requirements for a B.S. degree include the successful completion of a nine-week summer camp and a total of 140 credit hours of course work. The summer camp is scheduled to follow the sophomore year and is held annually in spectacular forest settings. Past summer camps have been held across the U.S. from Maine to Oregon, from Montana to Florida, and even in Brazil. Field forestry skills, forest ecology, and state-of-the-art operations are emphasized at camp.

The Department of Forestry maintains two research stations in southeastern Oklahoma in the midst of the Ouachita National Forest, and industrial timber holdings. Oklahoma has an active and progressive forest industry with one of the most modern highly mechanized timber harvesting systems in the world. One of the largest paper mills in the southern United States is located in the pine-oak forests of southeastern Oklahoma. Oklahoma forests are also prized for their clean water and recreational and wildlife benefits. Field trips to this area comprise part of the instruction in many forestry courses.

Graduate Programs
The Department of Forestry offers instruction leading to Master of Science degrees in forest resources and environmental science for students interested in graduate training with a research orientation. The Master of Agriculture degree with an emphasis in forestry is offered for students interested in non-research graduate work. Programs of instruction and research leading to a Doctor of Philosophy degree are available through cooperating departments, such as the Department of Agricultural Economics or Zoology, or interdisciplinary programs in environmental science, crop science, or plant science, with an adviser from the Department of Forestry.

Instructional programs are designed to serve the needs of individual students and allow concentration in the areas of: biometry, ecology, physiology, economics, genetics and tree improvement, silviculture; forest management, wildlife, and watershed management. The prerequisite for graduate study in the Department of Forestry is a bachelor's degree in an area aligned with the students' research interests with an overall undergraduate grade-point average of 3.00 ("B" average). Students without a bachelor's degree in a field of study aligned with their research interests may be required to complete a core of supporting courses as determined by the student's adviser and graduate committee. Applicants for graduate study who are also requesting financial assistance from the Department of Forestry are required to submit test results from the Graduate Record Examination for full consideration.

Students preparing for the Master of Science in forest resources are required to complete 30 credit hours of course work including six hours of Research and Thesis (FOR 5000) (Plan I). Students preparing for the Master of Agriculture degree may elect to meet the requirements of Options A, B or C. (See the "Graduate Programs" section of "General Agriculture.")
Horticulture and Landscape Architecture

Professor and Head Dale M. Maronek, Ph.D.

**Horticulture** is the science and art associated with the culture—production, preservation and processing of flowers, trees, shrubs, turfgrass, vegetables, fruits and nuts. It also includes the proper environmental use and maintenance of plants in the landscape. Thus, horticulture is involved with the production and processing of a significant part of the nation's food supply and provides a major source of the beauty in and around homes, cities, parks, highways, golf courses and other public areas.

Today, horticulture requires highly trained and capable people to help meet the food demands of society and to be involved in activities that lead to a better quality of life. The horticulture student must have a good understanding of plant biology and commercial production/maintenance and business practices.

Educational opportunities for study in horticulture cover a wide variety of plants and subjects and range from the cellular to the whole plant level. Factors such as nutrition, irrigation, genetics, propagation, control of flowering, and fruit and seed production are considered in their relationship to culture, production, harvesting, processing and storage. Students can prepare themselves for careers in public grounds administration (arboretums, parks and zoos), golf course management, horticulture business, sales and marketing, production, teaching, extension and research.

The training that the student obtains is related to the specific area of emphasis that is chosen. Regardless of one's interests, objectives, or area of emphasis, a good knowledge and understanding of horticulture is a necessity. A student can receive a B.S. degree and choose from the following two options:

Horticulture provides the training and expertise for production and preservation of fruits, nuts, vegetables, nursery crops, flower crops, etc. Training can be general, have a business or science orientation, or be chosen to emphasize a particular commodity area of horticulture.

**Turf Management** provides the training for turfgrass production and for management of turfgrass in golf courses, parks, athletic fields, home landscapes, and along highways.

After the B.S. degree is completed, a qualified student may choose to pursue a graduate degree, specializing in any option. Students from other departments may also choose to pursue a formal academic minor in horticulture.

**Landscape architecture** as a field deals with the planning and design or arrangement of natural and artificial elements on the land through preservation of existing natural and synthetic resources, and through application of cultural and scientific knowledge.

There are two options in the landscape area:

Landscape architecture is the study of design of outdoor spaces, with supporting courses in art, construction, ecology, horticulture and social science in a five-year professional program leading to the accredited Bachelor of Landscape Architecture (B.L.A.) degree. The B.L.A. degree is accredited by the American Society of Landscape Architects. Typical employers include landscape architecture firms, architectural engineering firms and government agencies dealing with land planning, urban planning, parks and recreation.

In an effort to maintain an effective balance between students, faculty, and facilities, enrollment in the fourth and fifth years of the program is limited to 15 students each. Students will be evaluated during their third year by the faculty in order to select the most qualified candidates based upon academic achievement and professional potential. Minimum requirements may vary each year; however, a student must have completed a minimum of 60 credit hours.

Landscape contracting is a four-year program leading to the Bachelor of Science in Agricultural Sciences and Natural Resources degree. It emphasizes the construction and management phases of landscape development. Course work includes basic landscape architectural design, construction technology, business and horticulture. The program is certified by the Associated Landscape Contractors of America. Graduates are employed by landscape nurseries, contracting companies, design and building firms, and landscape maintenance companies.

Graduate Programs

The department offers programs of study leading to the degrees of Master of Science in horticulture and Master of Agriculture with specialization in horticulture, and to the Ph.D. degree in crop science, environmental science, and plant science, each with a specialization in horticulture. Areas of study include flower crops, fruit and nut crops, vegetable crops, ornamental nursery crops, and turf. In addition to commodity-oriented specialties, students may emphasize postharvest or stress physiology disciplines. Applicants should indicate their interest area(s). Research opportunities range from whole plant production/management studies to fundamental cellular studies.

**Prerequisites**

Admission requires a bachelor's degree in horticulture or a related field with at least a 3.00 ("B") grade-point average. Students with course work deficiencies in fundamental areas may be required to take remedial courses to attain proficiency in accordance with the advisory committee's guidance.

Prior to admission to the program, all horticulture applicants for advanced degrees must be approved by the graduate committee and a faculty member who will serve as the adviser. The program of study and research will be directed by the student's graduate adviser and advisory committee.

Plant Pathology

Professor and Head Russell E. Wright, Ph.D.

Plant pathology is a broad discipline that ranges from basic studies of physiological and genetic aspects of plant diseases to the development of practical plant disease controls. It encompasses the science required to understand the causes of plant diseases as well as the art of preventing or controlling these diseases. Thus, the plant pathologist must have knowledge of plant biology as well as practical plant culture. Plant pathology, as a discipline, is actively involved in the newly emerging field of biotechnology.

Graduates in plant pathology (Ph.D.-level individuals) commonly find employment as research scientists in universities, the government (U.S. Department of Agriculture), industry or with various international development agencies. Graduates with the M.S. degree often work as research technicians in industries, universities or government laboratories or as sales or technical representatives in the agrichemical or plant breeding industries.

To qualify for graduate study in plant pathology an undergraduate student should obtain a solid background in the...
Plant and Soil Sciences

Professor and Head Robert L. Westerman, Ph.D.

The Department of Plant and Soil Sciences contains strong programs in the basic disciplines of plant breeding and genetics, biotechnology and physiology, crop production, range science, weed science, and soil science. The under-graduate major in agronomy includes options in agroecosystems, biotechnology, business, crop science, range management and soil science. Each of these options provides a thorough preparation in the sciences relating to its specialization and permits students of varying backgrounds and experiences to attain a level of preparation commensurate with their capabilities and motivation. There are no specific prerequisites.

Modern agricultural production requires a highly technical approach to emerging issues in soil and water conservation, introduction of genetically engineered crops, range land utilization and management, prevention and abatement of agricultural sources of environmental pollution, use of agricultural chemicals, and land application of biosolids. In the vast field of agribusiness, technical preparation in plant and soil sciences is essential in supplying agricultural producers with up-to-date information, as well as improved seed, fertilizer, pesticides and management systems. Processing, distribution and marketing of food, fiber and feed crops require an integration of production technology with economics at all levels. Plant and soil scientists are in demand for research and marketing positions in universities, industries and government. Concern for future food supplies creates an urgency for technological advancement in food production that cannot be ignored.

A major challenge facing plant and soil scientists is the concern for preserving environmental quality while maintaining efficient food production systems. Plant and soil scientists are involved with detailed evaluation of the impact of crop and soil management practices on land, water and air resources. Recent concerns for environmental quality and food safety have created a high demand for professional plant and soil scientists to assist farmers in proper utilization of production input such as fertilizers and agricultural chemicals. New technologies for precision application of crop production input using global positioning systems or remote sensing methods are creating many jobs for plant and soil scientists. Advancements in basic science fields such as genetics and molecular biology have created a need for plant and soil scientists to develop new plant varieties using biotechnology. Land application of municipal biosolids and animal wastes requires plant and soil scientists to ensure that proper rates and methods are used.

Typical careers in plant and soil sciences include farm or ranch operation or management; crop consulting; technical sales and service for seed, fertilizer or agricultural chemical supply companies; federal employment in soil and range conservation; research positions as plant and soil scientists, with federal agencies, state experiment stations or private industries; teaching and extension positions with colleges and universities; and a broad range of employment or ownership in retail businesses supplying feed, seed, grain, fertilizers, equipment, agricultural chemicals and other agricultural supplies and services.

In addition to a standard plant and soil sciences academic program, study for the B.S. degree provides a thorough understanding of biological and physical sciences and communications, with sufficient elective hours to permit flexibility.

Graduate Programs

The Department of Plant and Soil Sciences offers programs of course work and research leading to the Master of Science, Master of Agriculture in the emphasis area of plant pathology, and Doctor of Philosophy degrees. Programs are concerned with the cause, development, and management of plant diseases. Research problems are involved with on-going projects in the Oklahoma Agricultural Experiment Station, which include investigations on disease management (chemical, cultural, biological, and genetic) soil-borne diseases, virology, phytopathology, genetics, host-parasite physiology, and application of biotechnology and molecular genetics to basic plant disease research. Individual programs can be developed toward basic research or can be developed to provide a broad practical background in plant health and pest management.

Admission Requirements. It is desirable that applicants have a strong background in biological or agricultural sciences. All requirements of the Graduate College must be satisfied by each applicant. In addition, applicants for graduate programs in plant pathology are required to take the Graduate Record Examination and to submit their scores with their applications and transcripts. Approval for admittance will be determined by the departmental screening committee and the department head. During the first semester of enrollment, each student, after council with the department head, will select a faculty adviser. Each graduate program is under the direction of the major adviser and a selected faculty committee and is adapted to the needs of the graduate student. There is no graduate credit for courses below the 4000 level. Each student will follow a program of study and research approved by his or her committee and, except for the Master of Agriculture degree, must submit an approved thesis.
undergraduate majors. Deficiencies in fundamental course requirements will be met by the student with the direction of the student's advisory committee. Applicants must be accepted by an adviser in the department prior to official admission.

**Degree Requirements.** Students must follow approved plans of study that meet the minimum University and departmental requirements for the respective degrees they are pursuing.

The Master of Science degree in agronomy may be earned by utilizing one of two plans:

Plan I-Thesis, minimum of 30 credit hours of course work, including six credit hours of AGRON 5000, master's thesis.

Plan II-Formal report (non-thesis), minimum of 32 credit hours of course work, including two credit hours of AGRON 5000, master's thesis.

The Master of Agriculture degree may be earned by utilizing one of three options:

Option A-Formal report (non-thesis), minimum of 32 credit hours of course work, including two credit hours of AGRON 5000, master's thesis.

Option B-Minimum of 36 credit hours of course work and a creative component.

Option C-Minimum of 36 credit hours of course work including six hours of credit (AGRON 5230, Research) for a professional internship. The internship will consist of professional practice and an informal report. Internships for students with previously established vocations and career experience must be in areas other than the specific vocational field of the students.

The degree plans of study for the Doctor of Philosophy degree in crop science, environmental science, plant science, and soil science are developed individually for each candidate. Doctoral programs in crop science and soil science must include 10 credit hours of departmental courses at the 5000 level or above (excluding thesis), and meet certain requirements in basic disciplines such as statistics, mathematics, botany, and chemistry. Study of a foreign language is not required but can be incorporated if the student and advisory committee feel that it is desirable. Degree plans for doctoral students in plant science, that include molecular, organismal, or ecological programs of study, and in environmental sciences, that include a broad spectrum of soil, water, and waste management issues, are developed for candidates in conjunction with advisory committee approval.
High School Preparation

The College of Arts and Sciences strongly recommends that high school students have: four years of English; at least three years of mathematics; three years of laboratory science; three years of social studies including American history and world history; at least two years of foreign language; and one year of arts such as music, theater, or studio art, and some familiarity with computers.

Scholarships

A number of undergraduate scholarships are available through the College and through the departments and schools within the College. Interested students should inquire in the Office of Student Academic Services for a list of available scholarships. Arts and Sciences students are also encouraged to apply for the variety of scholarships available through the University, which are listed in the "Financial Aid" section of the Catalog.

Academic Advising

The Office of Student Academic Services. The academic advising process in Arts and Sciences is coordinated by the Office of Student Academic Services. The counseling staff in Student Academic Services advise freshman, undecided and pre-health profession students. Departmental advisers provide advising for students who have declared their majors.

The Student Academic Services staff also represent the College in the University's on-campus recruiting activities and represent the dean in such matters as petitions for extension and correspondence, change of major or college, and student withdrawals. Services also include graduation certification, information about college programs and requirements, and referral of A&S students to campus support services.

The general education program in the College of Arts and Sciences allows freshmen who enroll without having decided on a major to make progress toward most degrees for up to four semesters, while exploring possible fields of study with an academic counselor.

Responsibility and Assistance. The responsibility for satisfying all requirements for a degree, and for ensuring that a degree plan has been submitted, rests with the student. Advisers assist students in curriculum planning, and students are encouraged to consult fully with their advisers and not restrict their visits to the enrollment periods when only brief meetings may be possible.

Academic Programs

Undergraduate Programs. Requirements for all degree programs and options are detailed in the book Undergraduate Programs and Requirements, available in all Oklahoma colleges and high schools. Separate sheets, stating the requirements for any particular degree, may be obtained on request from the department or college in which the degree is offered.

Bachelor of Arts (B.A.): art, economics, English, French, geography, German, history, journalism and broadcasting, mathematics, music, philosophy, political science, psychology, Russian language and literature, sociology, Spanish, speech (communication consultancy), and theater.

Bachelor of Science (B.S.): biochemistry, biological sciences, botany, cell and molecular biology, chemistry, computer science, economics, geography, geology, journalism and broadcasting, mathematics, medical technology, microbiology, physics, physiology, political science, premedical science, psychology, sociology, speech (communication consultancy), speech pathology, statistics, wildlife and fisheries ecology and zoology.

Accreditation

Refer to appropriate pages under departmental listings for information on accreditation of specific programs.
Bachelor of Fine Arts (B. FA.): art (graphic design and studio).
Bachelor of Music (B.M.), music (elective studies in business; performance); music education (instrumental/vocal certification).

Second Bachelor’s Degree. To secure a second bachelor’s degree, a student must complete a minimum of 30 semester credit hours in addition to those required for the first degree. The number actually needed depends on what a student must do to satisfy all the requirements for the second degree.

A student seeking a second degree in the College of Arts and Sciences at OSU should ask his or her second adviser to submit a degree plan for the second degree, clearly headed “second degree,” and showing how all the requirements of the second degree are to be satisfied. The plan should also state the major, date of award and total credit hours of the first degree, and indicate those courses which represent the minimum of 30 additional hours. The second degree plan should be sent to the College of Arts and Sciences Office of Student Academic Services within two weeks after the student’s last enrollment.

Students wishing to complete degrees in two different colleges at OSU should consult with each office of student academic services. Concurrent enrollment in two colleges is possible, but a student must be enrolled in a college for at least two semesters before becoming eligible for a degree from that college.

Second Majors and Minors. A student majoring in one field may also complete the specified requirements for a “major” or a “minor” in other fields, the additional majors or minors may be noted on the student’s transcript. Such specified requirements may be obtained from the department in which the second major or minor is sought, or from the Office of Student Academic Services. The student should, at the end of his or her senior year, ask the adviser in the second major or minor to submit the request to the department head and then to the Office of Student Academic Services in the College of Arts and Sciences.

Graduate Programs. Master’s degrees are offered in most undergraduate subjects, with doctoral degrees available in some. (For details, see the departmental entries below or consult the “Graduate College” section in the Catalog.)

Special Academic Programs
Honors Program. The Arts and Sciences Honors Program is the oldest and largest program of its kind at Oklahoma State University. It provides outstanding students with the opportunity to study, conduct research, and interact with faculty and other honors students in a variety of settings designed to assist talented students who seek to make the most of their educational opportunities. Honors sections of many general education courses allow participating students the benefits of small classes taught by experienced members of the faculty, thus combining the extensive resources of a major comprehensive university with personal faculty attention to each student. Special honors seminars provide coverage of topical issues each semester in formats that encourage the exchange of ideas through discussion and writing. Honors seniors complete the requirements of the Honors Program by undertaking a senior honors thesis (or similar creative activity), and honors seniors also may earn honors credit by enrollment in graduate seminars.

Three Honors Program awards are available to A&S students—the General Honors award, the Departmental Honors award in the student’s major field, and the Honors Program degree (which is earned by completing both General and Departmental Honors Program requirements with a minimum of 39 honors hours with 3.50 OSU and cumulative grade-point averages). These awards are reflected on the student’s transcript, and a special honors diploma is awarded to students completing the requirements for the Honors Program degree.

Priority enrollment is provided for students who are active in the A&S Honors Program. This allows honors students to select honors courses and other courses taught by outstanding faculty at the earliest possible date each semester and facilitates the development of class schedules tailored to the special needs of honors students. Eligibility for admission to the A&S Honors Program as a first-year student is limited to applicants who: (1) an ACT composite score of 27-29 with a high school grade-point average of 3.75 or higher, or (2) an ACT composite score of 30 or higher with a high school GPA of 3.50 or higher. Later entry is permitted on the basis of OSU and cumulative grade-point averages. Transfer students are eligible on the basis of cumulative grade-point average.

Baylor University Studies (B.U.S.). The B.U.S. in the College of Arts and Sciences allows outstanding students with unique educational objectives that cannot be fulfilled by any of the regular degree programs to design an individual plan of study fitted to the student’s particular needs. B.U.S. plans must be approved by a faculty committee, the Office of the Dean of the College of Arts and Sciences, and the Office of the Executive Vice-President. At least 45 semester hours must be completed after the plan has been approved.

Area Studies Certificates. Area Studies certificates allow OSU students to pursue their cross-disciplinary interests and receive recognition for their efforts. An Area Studies certificate is granted upon successful completion of all requirements for a bachelor’s degree in the student’s major and the specific requirements for the certificate.

International Studies. Students at OSU are encouraged to add an international element to their education by earning an Area Studies certificate. Certificates are offered in Asian, Central Asian, Latin American, and Russian and Eastern European Studies. To receive a certificate, students must successfully complete five credit hours of second-year level instruction in a language of the area chosen and six upper-division courses (18 credit hours) pertinent to the area chosen.

American Studies. OSU students can complete Area Studies certificates in African-American, Native American, and Women’s Studies. These programs offer an interdisciplinary curriculum focusing on the topical areas. Each certificate requires a minimum of 18 hours of approved course work.

Ancient and Medieval Studies. To receive an Ancient and Medieval Studies certificate, students must successfully complete (1) a minimum of second semester classical or koine Greek, classical or medieval Latin, Anglo-Saxon, or middle English; and (2) six upper-division (18 credit hours) approved courses.

Further information on these certificate programs may be obtained from the Office of the Arts and Sciences Student Academic Services, 202 Life Science East or on the World Wide Web (http://www.okstate.edu/artsci/).

Geographic Information Systems Certificate. The Geographic Information Systems (GIS) certificate provides a specialized course of study for interested students. The flexible program provides students with a theoretical and applied foundation concerning the rapidly growing field of GIS. To begin work toward the certificate, a student must possess a bachelor’s degree from an accredited college or university, or be working toward a bachelor’s or higher degree at Oklahoma State University. For more information, contact the GIS Certificate coordinator in the Department of Geography, 225 Scott Hall.

High School Teaching Preparation. Students earning degrees in the College of Arts and Sciences may, by completing certain courses, receive state licensure
for teaching in the secondary schools. Full details may be obtained from departmental advisers or from the Office of Teacher Education in the College of Education.

Students who wish to qualify for teaching licensure should consult as early as possible with the adviser in their fields of interest and should apply for admission to teacher education as soon as possible, preferably before the end of their sophomore year.

It is possible to qualify for teaching licensure and the bachelor’s degree within the 127 semester credit hours required for graduation. When it is not possible, students may meet the requirements for the degree and then complete the licensure requirements by taking additional courses.

Full teaching certification is awarded by the State Department of Education when the licensed candidate has successfully completed a period of teaching in a school system.

Preprofessional Programs in the Health Professions. Premedicine, Pre-osteopathic Medicine, Pre-dentistry, and Pre-veterinary Medicine.

The preprofessional curricula for medical doctors, osteopaths, dentists, podiatrists, optometrists and veterinarians have the same basic core because they must prepare students for professional schools whose admission requirements are almost identical. These include a strong foundation in math, chemistry, physics, and biology, the disciplines on which major advances in the health field depend. Included also are courses to develop written and spoken communication skills, which are highly important for a good relationship with patients, the public and other professionals.

Beyond this required core, preprofessional students may choose courses and a major as freely as any other students in the College of Arts and Sciences. Most students concentrate on some aspect of biology or chemistry, but other subject areas are not only acceptable but welcomed. Medical schools encourage study in the social sciences and humanities that contributes to the understanding of human beings in their entirety—their history and environment, their attitudes and values, their emotions, motivations, interpersonal relationships and cultural heritage. All of these may affect sickness and health.

Although most students entering a professional school in one of the above fields have a bachelor’s degree, it is possible to apply for admission after three years of college work (two years for a few dental and veterinary schools). OSU permits preprofessional (health-related) students to choose between two alternative bachelor’s degree programs: (1) in a specific discipline that requires a minimum of 127 semester credit hours at OSU, or (2) a premedical science degree program which allows a “3 plus 1” approach, requiring at least 97 semester credit hours at OSU and up to 30 hours to be transferred from a medical, osteopathic, dental or veterinary school.

Some professional schools do not state a firm minimum grade-point average for admission, but a student should maintain better than a 3.00 grade-point average to be competitive. The specific admission requirements of medical, dental and veterinary schools are compiled in catalogs available in the offices of each preprofessional adviser and in the Office of Student Academic Services. The OSU premedical and pre-veterinary course requirements are listed in the "College of Veterinary Medicine" and "College of Osteopathic Medicine" sections of the Catalog.

All applicants for medical schools must take the Medical College Admissions Test (MCAT), dental applicants must take the Dental Admission Test (DAT), and optometry applicants must take the Optometry Admissions Test (OAT) prior to admission. The OSU College of Veterinary Medicine requires the General Test and the Advanced Biology Test of the Graduate Record Examination (GRE) taken within the previous four years.

Allied Health Professions. The allied health professions for which one can prepare at Oklahoma State University include athletic training, dental hygiene, nursing, occupational therapy, pharmacy, physical therapy, physician’s associate, and radiologic technology. Each of these programs requires that the final phase of the education and degree program (usually two to three years) be completed elsewhere in a professional program. The College of Arts and Sciences offers the general education and basic science courses which one must complete before he or she can be accepted into a professional program. Students whose goal is admission to a professional program in the allied health professions should consult with the counselor-coordinator of health professions advising for information regarding the specific requirements of particular programs and schools.

Medical Technology: See "Department of Microbiology and Molecular Genetics.

Pre-law Preparation. Law schools have no single preference for a specific undergraduate major. Admission to law school is primarily based upon a strong record achieved in a rigorous undergraduate program and a competitive score on the Law School Admission Test (LSAT). Other admission considerations include course of study and difficulty of curriculum, college activities, and applicant’s motivation and personality as revealed in a letter of application.

Law school admissions officers most frequently recommend that students include in their undergraduate programs courses in economics, literature and languages, psychology, history and government, mathematics, logic, philosophy, accounting and speech. Courses in these areas are especially helpful as one seeks to develop the verbal and analytical abilities that are particularly critical for success in law school.

Personal assistance in selecting an academic major, planning a solid pre-law curriculum, preparing and registering for the Law School Admissions Test, and applying to law school, is available through the pre-law adviser in the Office of Student Academic Services.

Graduation Requirements

General Education Requirements. The General Education Requirements for the degrees offered by the College are shown for each program in Undergraduate Programs and Requirements. At least 40 credit hours of General Education are required for all degrees.

All degrees include a common core of 12 credit hours. Three credit hours of American history and three hours of American government are required. These must be satisfied by HIST 1103, 1104, 1105, or 1106. Six credit hours of English composition is a University requirement, and this must be satisfied by ENGL 1113 or 1213 and 1214 or 1414. Students who obtain a grade of “A” or “B” in ENGL 1113 may substitute ENGL 2203 for ENGL 1213 with permission of their departments.

The remaining 28 credit hours must be distributed as follows: six credit hours of social sciences, six hours of humanities, eight hours of natural sciences, six hours of analytical and quantitative thought, and two hours of General Education elective.

College Requirements. In addition to the 40 hours of general education, the college requires one credit hour of orientation, (A&S 1111), for all degrees. For the B.S., nine additional hours of natural or mathematical sciences are required, as well as three additional hours from the humanities or arts. For the B.A., nine additional hours of humanities or arts are required, as well as three additional hours of natural or mathematical sciences and a course focused on non-Western culture. College requirements define the B.A. or B.S. degree in the College of Arts and Sciences.
Foreign Language Proficiency Requirement. The foreign language requirement for the B.A. and B.F.A. in Arts and Sciences may be satisfied by 10 hours of college credit in the same language, or equivalent proficiency demonstrated by passing an advanced standing exam or completing a second-year or higher college-level course in the language. FRNCH and GRMN 3013, 3023, FRNCH and SPAN 4113, RUSS 3123, 4113, and 4223 do not satisfy this requirement.

The foreign language requirement for the B.S. and B.M. degrees may be met by presenting a high school transcript that demonstrates successful completion of two years of study in a single foreign language. It may also be satisfied by any of the three options listed above for the B.A.

The foreign language requirement for the Bachelor of University Studies degree will be determined based on the student's objective, but will be the requirement for either the B.A. or B.S.

Non-Western Requirement (B.A. and B.F.A. only). One three-hour course in Non-Western studies from: A&S 3603 (Asian or African studies); ART 3633, 4603, 4633, 4653, 4663, 4673; ECON 4643; ENGL 3173; FLL 3500, 3503; GEG 3753, 3763; HIST 1713, 3013, 3203, 3403, 3413, 3423, 3433, 3980; JAPAN 2115, 2123, 2223; MUSIC 3583; PHILO 3943; POLSC 3213, 3223, 3313; REL 3613, 4113.

International Dimension Requirement (all degrees). One course which fosters understanding of, or the ability to communicate with, peoples and cultures of other countries. Courses satisfying this requirement are designated "I" in the Catalog and a list is available from any adviser or from the Office of the Dean of Arts and Sciences.

Scientific Investigation Requirement (all degrees). One course including an investigative laboratory that provides experience with scientific method. Courses satisfying this requirement are designated "L" in the Catalog and a list is available from any adviser or from the Office of the Dean of Arts and Sciences.

The Non-Western, International Dimension, and Scientific Investigation requirements may be satisfied by courses used also to satisfy any other part of a student's degree program (i.e., in General Education, College, Major, or Electives requirements). No additional hours are required.

Additional College Requirements. For all degrees, six hours of general education designated courses (excluding courses in the major prefix) are to be taken at the 3000 level or above.

Major Requirements. At least 40 semester credit hours as specified by the department, including courses in the major and in supporting fields, must be completed. These 40 hours constitute the student's Major Requirements.

Upper-division Credit. A student must successfully complete at least 50 semester hours of upper-division credit, i.e., credit in courses at the 3000 or 4000 level.

Hours in One Prefix. If a student seeking a B.A. or B.S. degree takes more than 48 semester credit hours in one subject, including both lower-division and upper-division credit, the hours in excess of 48 will be added to the minimum total of 127 hours required by the College for a bachelor's degree.

This "48 hour maximum" applies to all courses taken in a subject, whether they are required or elective, with the exception of required courses in English composition and American history and government.

Total Semester Credit Hours and Grade-point Average. The minimum number of semester credit hours for graduation is 127. The minimum grade-point average is 2.00 and must be earned in all major courses, in Major Requirements, and in all courses applied toward the degree. A minimum cumulative grade-point average of 2.00, as calculated for graduation purposes, is also required. (See "University Academic Regulations" in the Catalog.)

Particular degree programs may specify higher grade-point requirements or exceed the 127 hours total. Details are given in Undergraduate Programs and Requirements.

Native Speaker Policy. It is the policy of the College of Arts and Sciences that native speakers of any foreign language (those whose language of instruction in high school was the language in question) may not normally be permitted to enroll in or establish credit in courses in that language at the 1000 or 2000 level. There are no restrictions on higher level courses. Exceptions necessitated by degree requirements may be determined by interview with the head of the Department of Foreign Languages and Literatures and the appropriate language section chairman.

Endorsement of Student's Plan (Graduation Check). Immediately after their last enrollment, and before their last semester, students should check with their advisers to ascertain that a degree plan has been sent to the Arts and Sciences Office of Student Academic Services.

Changes in Degree Plan. Once a degree plan has been submitted, a student will not graduate until all requirements on it have been fulfilled. Any deviation in the plan must be recommended by the adviser on a "Change in Plan of Study" card, and sent to the Arts and Sciences Office of Student Academic Services for approval.

Checklist of Graduation Requirements.

1. Total hours. Minimum 127 (see degree sheet). Hours of "F" or "I," or in repeated courses (unless officially approved in course descriptions in the Catalog), do not count. ENGL 0123, MATH 0123, and all athletic participation and leisure activity courses are not applicable to the degree. Students must ascertain that grade changes for the removal of "I"s have been sent to the Office of the Registrar by the instructor who gave the "I."

2. Grade-point average. See individual degree sheets for all grade-point minima: overall, in major prefix, and in major requirements.

3. Validity of credits.
   a. No more than two courses in any one subject or (eight hours in biological science) may be used to satisfy General Education and College requirements in the same breadth area.
   b. A course used in the Major Requirements may not be used to satisfy any other degree requirement, except the international dimension, scientific investigation, upper-division general education, and non-Western requirements.
   c. Pass-No Pass Grading System. Courses taken on this campus under the Pass-No Pass Grading System (see "University Academic Regulations") may be used only as elective hours. They cannot satisfy any other requirement (General Education, Departmental, Major Requirement, certification).

4. All degree requirements listed above and specified in "University Academic Regulations" and Undergraduate Programs and Requirements must be satisfied.

5. Exemption. A student who believes that he or she has a valid reason for exemption from a College requirement should file with the Office of Student Academic Services a written request that has been approved by his or her adviser. Although general and departmental requirements apply to transfer students, all or most of the student's previous work may be acceptable as substitutions. Students should consult with their advisers.
Departmental Clubs and Honor Societies
Advertising Club
Alpha Epsilon Delta (premedical honor society)
Alpha Epsilon Rho (broadcasting)
Alpha Kappa Delta (sociology)
American Association of Petroleum Geologists
American Chemical Society Student Affiliate (includes biochemistry)
American Fisheries Society, Oklahoma Student Chapter
Angel Flight
Arnold Air Society
Army Blades
Arts & Sciences Student Council
Association for Computing Machinery
Biochemistry Club
Creative Writers Association
Delta Nu Alpha, Order of Biochemistry
Dobro Slovo (Slavic languages)
Economics Club
English Club
English Graduate Student Association
French Club
Friends of the Forms (philosophy)
Gamma Theta Upsilon (geography)
Geography Club
Geological Society
German Club
History Undergraduate Club
Japanese Club
Kappa Kappa Psi (band honor society)
Kappa Tau Alpha (mass communications)
Math Club
Mathematical Association of America
Music Business Students Association
Music Educators National Conference
Mu Sigma Rho (statistics honor society)
Omicron Delta Epsilon (economics)
OSU Artisans (art club)
OSU National Student Speech-Language-Hearing Association
Phi Alpha Delta (pre-law)
Phi Alpha Theta (history honor society)
Phi Lambda Upsilon (chemistry honor society)
Phi Mu Alpha (music)
Phi Mu Delta (medical technology)
Pi Mu Epsilon (mathematics honor society)
Pi Sigma Alpha (political science honor society)
Political Science Club
Psi Chi (psychology honor society)
Psychology Club
Psychology Graduate Student Association
Public Relations Student Society of America
Ranger Company (military science)
Russian Club
Scabbard & Blade (military science)
Sigma Alpha Iota (music)
Sigma Delta Chi Society of Professional Journalists (journalism)
Sigma Delta Pi (Spanish honor society)
Sigma Pi Sigma /Society of Physics Students
Sigma Tau Delta (English honor society)
Society for Technical Communication
Society of Physics Students
Spanish Club
Speech Communication Organization
Statistics Club
Tau Beta Sigma (band honor society)
Wildlife Society, Student Chapter
Women in Communications, Inc.

Biochemistry and Molecular Biology
Professor and Head James B. Blair, Ph.D.

Biochemistry, the central scientific discipline linking the chemical, physical and biological sciences, exerts a profound influence on the progress of medicine and agriculture. By applying concepts and methods of chemistry and physics to the fundamental problems of biology, biochemists have made great progress in their effort to understand the chemistry of living organisms. Major discoveries concerning the biochemistry of genetic material provide the tools of molecular biology that are essential to contemporary life sciences research.

Biochemists and molecular biologists are concerned with living things. They must acquire some knowledge of the biological sciences. Since a biochemist's tools are the physical sciences, he or she must receive sound education in mathematics, physics and chemistry.

Challenging positions for well-trained biochemists and molecular biologists are available in colleges and universities, state and federal laboratories, research institutes, medical centers and in an increasing number of industrial organizations, particularly the pharmaceutical and food industries. Biochemists are involved with research on the chemistry of processes occurring in plants, animals, and various microorganisms, and with the discovery and development of antibiotics, vitamins, hormones, enzymes, insecticides and molecular genetic techniques.

At the undergraduate level a major in biochemistry and molecular biology administered by the Department of Biochemistry and Molecular Biology is available through the College of Agricultural Sciences and Natural Resources. The department also offers a B.S. degree in biochemistry through the College of Arts and Sciences. An honors program is available. The curriculum provides a broad background in chemistry and biological science and permits flexibility in meeting particular interests of the student. Courses in biochemistry are based on general, organic and analytical

Art
Associate Professor and Head Nancy B. Wilkinson, Ph.D.

The Department of Art provides courses for students interested in: (1) a strong general education background, (2) major concentrations in studio art, graphic design and art history, (3) minors in all three areas.

Two degrees are offered in art: Bachelor of Art (B.A.) with options in art history and studio art, that can be combined with teacher certification; and the Bachelor of Fine Arts (B.F.A.), a professional degree with options in studio art or graphic design. Fields of concentration are available in drawing, oil and watercolor painting, printmaking, graphic design, ceramics, jewelry/metal smithing, sculpture and art history.

Art majors must attain a grade-point average of 2.50 in art courses in order to qualify for licensure and graduation. Because of a large endowment, the department is able to offer substantial scholarships at all levels, freshman through senior.

The Department of Art maintains an exhibition gallery, the Gardiner Art Gallery in the Bartlett Center for the Studio Arts, with approximately 200 linear feet of exhibition space and 2600 square feet of floor space. Works by artists of national and international reputation, faculty and student works and cultural artifacts are shown.
chemical and molecular biology curriculum provides students with sufficient background in the basic sciences of mathematics, physics, chemistry and biology to meet the needs for graduate study in most fields of modern science related to agriculture or medicine. The curriculum is excellent for preprofessional students of medicine, dentistry and veterinary medicine.

**Graduate Programs**

Because many of the opportunities in biochemistry require advanced course work, a major part of the program in the Department of Biochemistry and Molecular Biology is concerned with its graduate program leading to the M.S. or Ph.D. degree. This graduate program is an integral part of extensive basic research activities in the Oklahoma Agricultural Experiment Station. These research activities provide opportunities for part-time employment of undergraduate majors to improve their professional competence.

**Prerequisites.** Although the B.S. in chemistry or biochemistry is preferred, students with strong backgrounds in other biological or physical science disciplines are eligible. Individuals not having at least eight semester credit hours in each of organic and physical chemistry and calculus must take appropriate undergraduate courses to make up deficiencies. The results of the three general GRE exams (verbal, quantitative, analytical) are required for entrance. An advanced GRE subject matter exam (biochemistry, chemistry or biology) is also recommended. A cumulative GRE score of 1500 is normally required.

**Degree Requirements.** A more detailed description of the graduate study program in biochemistry is available from the Department of Biochemistry and Molecular Biology is concerned with its graduate program leading to the M.S. or Ph.D. degree. This graduate program is an integral part of extensive basic research activities in the Oklahoma Agricultural Experiment Station. These research activities provide opportunities for part-time employment of undergraduate majors to improve their professional competence.

**Graduate Programs**

Programs of research and study leading to the degrees of Master of Science and Doctor of Philosophy are offered in many areas of botany, including plant cell biology, ecology, physiology, taxonomy, population biology, genetics and development, and biotechnology-related areas such as tissue culture.

**Prerequisites.** Applicants for admission must have received a baccalaureate degree from an accredited college and should have had 40 semester hours (or equivalent) in upper-division courses in the biological and physical sciences. A grade-point average of 3.00 (on a 4.00 scale) or above is required for unconditional admission. All applicants are required to submit scores for the Aptitude and Advanced Biology portions of the Graduate Record Examination.

**Botany**

Professor and Head James D. Ownby, Ph.D.

Botany is the science concerned with all facets of plant life. Green plants are the constantly renewable source of food and fiber, and it is important that they be thoroughly understood as survival and ecological balance depend upon this knowledge. As populations increase, the need for more and better supplies of food and fiber also increases. The study of botany underlies several applied sciences such as agronomy, forestry, horticulture, plant pathology, range, lake and wildlife management.

To major in botany a student should have a strong interest in science with a good background in chemistry, physics and mathematics. Majors with a B.S. degree may qualify for secondary school science teaching licensure, for technical positions with the federal and state governments in plant inspection and plant introduction work, for plant breeding programs, and for various activities concerned with plants in private industry, such as plant biotechnology.

Facilities used in undergraduate teaching include well-equipped plant structure-function and ecology laboratories, constant-environment chambers, the 160-acre McPherson Preserve, and herbarium with over 125,000 plant specimens. All of the faculty teach and do research in their specialty areas of botany: plant ecology, physiology, taxonomy, anatomy, developmental genetics, algal ecology, and molecular biology.
one semester teaching experience. The requirement for competence in a foreign language will be determined by the student's advisory committee.

All graduate students are expected to attend and participate in departmental seminars.

The Master of Science Degree. Plans of study must contain 30 credit hours including at least 21 semester credit hours numbered 5000 or above, six credit hours of thesis and two credit hours of seminar. A minimum of 16 semester credit hours must be in the major department or field, above the prerequisites required for entrance into the M.S. program.

The Doctor of Philosophy Degree in Plant Science. The Department of Botany is one of seven departments participating in the multidisciplinary Ph.D. in plant science program. Students in this program have great flexibility in research and course work. The student who chooses botany as a home department has a botany faculty adviser from within the department, and will take BOT 6000 research hours in the department. To receive the Ph.D. in plant science, students must enroll in a total of 90 credit hours beyond the B.S. or 60 credit hours beyond the M.S. No fewer than 36 nor more than 60 hours of BOT 6000 are allowed in the plan of study. Two hours of seminar (BOT 5850) must also be included in the plan of study. Students may choose as a specialization area either cellular and molecular, organismal, or ecological plant science. After a Ph.D. candidate has completed most of the course work, qualifying examinations are scheduled. These exams cover major areas of the student's plan of study; all relevant subdivisions of plant science are included. The examinations are both written and oral.

Chemistry

Professor and Head Neil Purdie, Ph.D.

Chemistry is the science that deals with the composition, structure and interactions of matter of all kinds. Materials obtained from the earth, such as ores, petroleum and natural gas, as well as those from plants and animals, such as food, fibers and antibiotics, are all studied and modified through chemical means. The chemist creates from natural products new and useful substances that add to the enjoyment of life. He or she creates new agents to combat pests that destroy great portions of food supplies and new drugs to fight diseases of many kinds. Chemists lead the fight against pollution of the environment that results from rapid multiplication of population and of use of energy. Chemists are at the forefront of the search for new energy sources and for ways to better use existing sources of energy.

A great curiosity concerning the physical world should be characteristic of one who is considering chemistry as a profession. The student should want to learn more about the changes of materials and to use his or her knowledge for the betterment of life. The student should have an interest in physics and mathematics, since those subjects' principles are basic to the study of chemistry.

Chemists are employed by most large companies in this country, especially those that produce foods, medicines, fuels and materials. These chemists work in the areas of research, sales and quality control. Many chemists become teachers in public schools or colleges. State and federal agencies employ chemists for research and analysis. Generally an M.S. or Ph.D. degree is desirable for those interested in research or college teaching.

The Department of Chemistry offers two bachelor's degrees: (1) a B.S. degree that is accredited by the American Chemical Society; and (2) a B.S. degree that requires less specialization.

The chemical laboratories are modern and well-equipped with instruments for determination of properties of chemicals and studies of reactions. Individual laboratory work is encouraged.

Graduate Programs

Prerequisites. The student should have at least eight semester credit hours (or the equivalent) in general, analytical, organic, and physical chemistry. The physical chemistry should have been based on mathematics through calculus.

A beginning graduate student must take diagnostic examinations covering one year of undergraduate study in analytical, organic, inorganic and physical chemistry before the student enrolls for the first time. If the student fails to pass one of these examinations, he or she will be required to take the appropriate courses without graduate credit at the first opportunity. No graduate credit may be earned for chemistry courses numbered below 4000. The student may enroll in graduate courses for which the student has passed the entrance examination.

Admission Requirements. Admission requirements are minimal. For admission without qualification a grade-point average of 3.00 or better is required. Deserving applicants with grade-point averages less than 3.00 are infrequently admitted under probationary conditions. Additional support of the application is sought in the form of three letters of recommendation. Graduate Record Examination scores are not used as a criterion for admission. Recommendations on admission to the Graduate College are made on behalf of the applicant by the departmental admission officer. Acceptance by a permanent adviser is not a prerequisite to admission to the program.

Degree Requirements. A more detailed description of the graduate study program in chemistry is available in a brochure which will be supplied by the department upon request. The requirements set forth below complement the general requirements stated in the "Graduate College" section of the Catalog.

Attendance and participation in the departmental colloquium and CHEM 5011 and 6011 are required.

The Master of Science Degree. Students must complete at least 30 credit hours of graduate course work in chemistry or related fields.

Each student must present an acceptable thesis dealing with a research problem and pass a final oral examination covering it and related material. Research on the thesis problem should be started as early as possible in the graduate program.

The Doctor of Philosophy Degree. Work is offered which leads to the degree with specialization in analytical, inorganic, organic or physical chemistry. A major in biological chemistry is offered by the Department of Biochemistry. The student must pass a qualifying examination in the student's field of specialization.

An acceptable dissertation must be presented which contains a substantial original contribution to the field of chemistry. The student must pass a final oral examination covering the dissertation and related material.

The Doctor of Philosophy degree requires the completion of at least 90 semester credit hours of work beyond the bachelor's degree.

The course requirements are determined by an advisory committee which is appointed for each student.

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Communication Sciences and Disorders

Associate Professor and Head Arthur L. Pentz, Jr., Ph.D.

The Department of Communication Sciences and Disorders prepares students through the master's level to serve individuals of all ages who exhibit speech, language, cognitive and/or hearing disorders. The undergraduate program emphasizes the study of the development and functioning of the individual who presents normal speech, language and hearing. It also stresses academic course work and clinical observation experiences in the nature, symptoms and treatment of those with various kinds of communication disorders. Acceptance into the undergraduate program is considered on a grade-point average for 36 or more hours attempted.

The master's program is designed to provide students with intensive course work in the various communication disorders and a wide variety of challenging clinical activities. These include off-campus clinical practica which serve as an excellent transition from on-campus practicum to an actual professional position after graduation. Students who graduate from this program are prepared to take positions in public schools, hospitals, community speech and hearing centers, private practices and other related settings, or pursue additional graduate education at the Ph.D. level. All graduates meet the academic and practicum requirements for the Certificate of Clinical Competence in Speech-Language Pathology from the American Speech-Language-Hearing Association. In addition, most students elect to earn the state teaching certificate. The program is nationally accredited in speech-language pathology by the Council on Academic Accreditation of the American Speech-Language-Hearing Association.

Graduate Programs

Prerequisites. Other than the general requirements of the Graduate College, no other prerequisites are required for application to the graduate program. The amount of course work taken at the undergraduate level in communication sciences and disorders and related areas will determine the amount of time required for the degree. Students holding undergraduate degrees in other fields are encouraged to apply for admission. Undergraduate prerequisites will add approximately 37 credit hours to the program.

Admission Requirements. Applicants should have a minimum grade-point average of 3.00 (“B”) in all work and at least a 3.00 in the major, strong letters of recommendation from those familiar with the student's previous academic background, and GRE scores acceptable to the Graduate Faculty. Interviews are conducted prior to admission. Students with a baccalaureate degree are required to be admitted to a graduate degree program to take course work in this department. Admission is competitive and varies according to the number of places available in the program. Application deadlines can be obtained from the department.

International students follow the same application procedure as U.S. students with one addition. If English is not the student's native language he or she is required to score a minimum of 550 on the Test of English as a Foreign Language (TOEFL) and a minimum of 60 on the Test of Spoken English (TSE). It is especially important that students have readily intelligible spoken English, because they will be conducting therapy sessions in English. The International Student Services Office is available on campus to assist international students.

Financial Aid. All students are eligible to apply for graduate assistantships and fee waiver scholarships. Graduate assistantships qualify out-of-state students and international students for in-state tuition.

Program Requirements. The program leading to the Master of Arts provides a thorough exposure to the nature and causes of communication disorders and to clinical procedures. Clinical training occurs in the OSU Speech-Language-Hearing Clinic and in off-campus facilities including clinics, schools, adult day care and residential programs, and in acute care and rehabilitation hospitals. Research and independent study opportunities are also available.

The degree consists of a minimum of 26 semester credit hours in courses that examine the nature, causes, assessment, and treatment of communication disorders and related areas, and a minimum of nine semester credit hours in clinical practicum courses. All students enroll in a core curriculum of 16 hours. To complete degree requirements, students may choose from a variety of courses that provide additional study in particular clinical areas.

Examinations. Students may complete a master's thesis or pass a comprehensive examination and complete a portfolio.

Computer Science

Associate Professor and Head Blayne E. Mayfield, Ph.D.

Computer science is concerned with theoretical and practical methods of storing, processing and communicating information by means of computers. Professional computer scientists obtain a formal education through the B.S., M.S. or Ph.D. degrees and apply their knowledge to many diversified fields of science, engineering, business and communications. Computer science offers opportunities to both specialists and generalists.

In little more than three human generations, the computing field has evolved from one associated primarily with engineering and scientific calculations of only casual interest to the layperson, to a factor of significant influence in almost every aspect of modern life. Technical careers in computer architecture and software design, as well as applications in the business and scientific areas, require a thorough knowledge of the principles of computer science. In addition, most managers in any field require some familiarity with computers, not only to be able to understand them, but also to incorporate them into their own decision-making processes.

The department offers the full range of degree programs-B.S., M.S. and Ph.D. For individuals interested in teaching computer science at a two-or four-year institution, an Ed.D. program is also available.

Most B.S. and M.S. graduates obtain positions in industry. Approximately half of the Ph.D. graduates take university teaching and research positions and half are employed in industry.

Computing facilities available include the University Computing and Information Services computers, an IBM 9672-R32ES, a VAX, and a DEC 5000-240 RISC. The Department of Computer Science has a Sequent Symmetry S82 UNIX-based computer. There are also several NCD X-Terminals with windowing graphics displays that are available to graduate students. There is also a special projects room for graduate students.

Computers can be accessed through the Computing and Information Services Network. There are a number of personal computer labs located in various buildings on campus. Some of the residence halls have personal computer labs available. All of these labs have access to personal computer application software and all mainframe computers on campus, as well as Internet access. Both the
University and the department's computers can be accessed 24 hours a day.

The department participates in the CSNET and USENIX networks for computer science research and UNIX users. (UNIX is a trademark of Bell Laboratories.)

**Graduate Programs**

The department offers degree programs leading to the Master of Science degree, the Doctor of Education degree in higher education, and to the Doctor of Philosophy degree. These programs are designed to prepare an individual to pursue a career in either an academic or an industrial setting. In addition to taking a prescribed set of core courses, a student must take sufficient courses in one specialized area. In addition to course work, a student must complete either a thesis, report or creative component for an M.S. degree. A student must complete a dissertation in addition to course work for a Ph.D. degree.

The core course requirement assures the student of breadth of knowledge in computer science; the freedom to choose an area and additional research assures the student of enough depth in some facets of computer science to be able to carry out independent investigations in those areas and put concepts and ideas learned to practical use.

For a master's degree, 30 hours of graduate credit, including a six-credit-hour thesis, are required. A master's degree student is required to pass an oral examination over the thesis. There is no foreign language requirement for the M.S.

A nonthesis option is also available for the M.S. degree. The student takes 36 hours of courses, completes a creative component and passes the Ph.D. Preliminary Examination.

For an Ed.D. or a Ph.D., 60 credit hours beyond a master's degree or 90 hours beyond a bachelor's degree are required. A dissertation of no more than 30 hours is required. The Ph.D. dissertation must describe original research while the Ed.D. dissertation may be expository. Ed.D. and Ph.D. students must pass (at an appropriate level) written preliminary examinations in areas of specialization. For Ed.D. students, one of the specialty areas must be computer science education. Master's students who pass these examinations at the Ph.D. level are encouraged to pursue a Ph.D. program of study. Approximately 700 students graduate each year in the United States with Ph.D.'s in computer science. In general, both academic and industrial positions exist for each Ph.D. graduate.

The candidate's baccalaureate degree need not be in computer science in order to enter this program. Admission to the program does require: (1) an undergraduate degree; (2) successful completion of a 10-hour calculus sequence; (3) demonstrated competence in programming with some procedure-oriented programming language such as C, FORTRAN, or PASCAL; (4) qualifying grade-point average and Graduate Record Examination scores.

**Economics and Legal Studies in Business**

Professor and Head Joseph M. Jadlow, Ph.D.

Economics is a science of choice. The study of economics centers around individuals' attempts to improve their living standards. It provides a comprehensive view of how a society is organized to transform limited resources available into want-satisfying goods and services. It investigates the principles underlying the operation of the economic system, and seeks to determine its weaknesses and to prescribe policy measures that will improve its operation. In the process it ranges over a host of the most important problems confronting contemporary society—the causes of and remedies for depression and inflation, the determinants of and methods for improving income distribution, poverty problems and welfare measures, the role of the government in economic activity, the requisites for economic growth and development, pollution and congestion and their control.

The primary objectives sought in the undergraduate curriculum are to develop a broad understanding and perspective of the economic aspects of people's activities, coupled with thorough training in the fundamental tools of economic analyses. Toward these ends, the development of elementary mathematical and statistical skills is highly desirable, as is complementary study in the social and behavioral sciences, accounting and business administration.

A major in economics prepares students for positions with business firms, nonprofit private organizations and government agencies—both national and international. It provides an excellent background for the study of law and international relations. It qualifies competent students to undertake the graduate work necessary for professional positions in economic research and college or university teaching. A degree option in business economics and quantitative studies is offered through the College of Business Administration to provide additional training in analytical methods and communication skill for both public and private sector occupations.

**Graduate Programs**

The department offers work leading to the Master of Science degree and the Doctor of Philosophy degree. The graduate program in economics prepares economists for academic careers as well as research and administrative positions in business and government agencies.

Graduate fields of specialization include monetary economics, public finance, international economics, economic development, econometrics, labor and human resource economics, industrial organization, and urban and regional economics. In addition, graduate courses are offered in the history of economic thought and in mathematical economics.

The initial admission to a graduate program is determined by an elected graduate studies committee on the basis of the applicant's previous academic record; verbal, quantitative and analytical scores of the Graduate Record Examination; and letters of recommendation.

**The Master of Science Degree. Admission to the master's program in economics is granted to college graduates with superior academic records whose preparation has been broad and thorough. They need not have majored in economics as undergraduates but must be well grounded in economic fundamentals. A good background in one or more such fields as history, philosophy, mathematics, statistics, political science, English, sociology, accounting, finance, psychology, or management is particularly helpful to the graduate student in economics. An applicant whose prior preparation is deficient in some respect, may, if otherwise qualified, be admitted to the program but will be required to remove the deficiency, increasing somewhat the time needed to complete work for the degree.**

Each graduate student is guided in the preparation of a program of study by a graduate studies committee. At the master's level there are two options. One option provides the student with a well-rounded program that avoids premature specialization in some particular area of economics. The candidate for the master's degree is required to show competence in basic economic theory and statistical methods, together with an understanding of the fundamental

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The Department of English prides itself on the diversity of its course offerings and on its small lecture and discussion classes. The B.A., M.A. and Ph.D. degrees are awarded through the department and a full range of courses are offered in seven areas: literature, composition and rhetoric, technical writing, creative writing, linguistics, teaching English as a second language, and film. The number of students in any English class rarely exceeds 30; and in a writing class, including freshman-level classes, the enrollment cannot exceed 25. The maximum number of students in a graduate-level class is 10.

An undergraduate English major has four options: a traditional English major, secondary education teaching certification, creative writing or technical writing, each of which emphasizes literature and writing in varying proportions. English majors may choose from courses in all historical periods of British and American literature, from early to contemporary, and in all genres—novel, film, short story, poetry, and drama. Every literature course emphasizes literary appreciation and analysis and allows ample opportunity for discussion and writing. The student in the traditional major may also take creative writing from practicing, published writers and may specialize at the advanced level in fiction writing, poetry writing, and scriptwriting. Also available are courses in linguistics, which is the study of language, and technical writing, which is writing for science and industry.

Many English majors pursue careers directly related to their major, such as in technical writing or in teaching. An English major with a technical writing option would be well prepared to pursue a career as a writer, editor, publications manager, or information developer. Students who want to teach may earn secondary teaching certification in English through either the Department of English or the College of Education, or they may decide to go to graduate school in order to teach in a college or university. A great many English majors have found the teaching profession a rewarding and challenging one. Other students find that an English major is excellent preparation for law school because it develops the analytical and language skills lawyers use. But one need not have definite career goals to major in English. English majors regularly pursue careers not only in education, professional writing, and law, but also in medicine, the ministry, publishing, government, and business. Professional schools and businesses value English majors both for their communication skills and for their broad-mindedness.

The Department of English serves a great many students other than those majoring in English. It offers a variety of writing courses to fulfill the University’s composition requirements; and English courses in literature, technical writing, creative writing, and film are very popular electives for students in all majors. Many students find English such a good complement to their first major that they choose a second major or minor in English.

A Bachelor of Arts in English requires 39 hours of lower- and upper-division English courses. An English minor requires 18 hours of English, at least nine of which must be upper-division. (These hours do not include Freshman Composition.)
students, technical writing, creative writing, or literature. All teaching assistants are required to take an appropriate pedagogy course during their first year of teaching.

The Master of Arts Degree. The M.A. in English allows students to develop expertise in a variety of areas: British and American literature, creative writing, literary theory and criticism, film, composition and rhetoric, technical writing, linguistics, and TESL. In consultation with their advisory committees, students devise an individualized curriculum that reflects their own intellectual interests and prepares them to enter a doctoral program or to teach at the college level. The degree programs in TESL and technical writing prepare teachers for the bilingual classroom and technical writers for industry.

Prerequisites include a baccalaureate degree with an English major, or at least 24 hours in English (excluding freshman composition). Successful applicants usually have a minimum grade-point average of 3.00 on a 4.00 scale, particularly in English courses.

The M.A. in English consists of 30 credit hours, including six hours of thesis. In addition to these hours, students must demonstrate reading knowledge of a foreign language, pass the M.A. qualifying examination, and pass an oral defense of the thesis. The thesis is a work of original research prepared with the guidance of the student's advisory committee. Creative writing students may present as their theses original works in poetry, drama (including screenplays), or prose fiction. The programs in technical writing and TESL have separate degree requirements described below.

Technical Writing. The M.A. in English program in technical writing consists of 30 credit hours (with thesis) or 33 credit hours (without thesis). In addition to these hours, students must fulfill the foreign language requirement and pass the M.A. qualifying examination in technical writing. Prerequisites are the same as those above.

TESL. The M.A. in English program in teaching English as a second language is designed to provide students with the skills necessary to teach English to nonnative speakers in a variety of situations, e.g., teaching English as a foreign language in an overseas school, college or university; teaching English as a second language to international students studying in intensive English programs in the U.S.; or teaching English to bilingual and bicultural students in American public school systems and adult education programs.

Prerequisites are the same as those above except that the major may be either in English or in a field related to second language acquisition or teaching. In addition, applicants to the TESL program must have six hours in a foreign language with a grade of "B" or better, or must complete this requirement prior to taking the qualifying examination.

The TESL program consists of 30 credit hours (thesis option) or 34 credit hours (nonthesis option). In addition to these hours, students must pass the M.A. qualifying examinations in TESL.

TESL is especially relevant to the public school classroom as a result of recent legislation concerning bilingual education. Teachers in English and other areas of expertise will find this program especially useful. Although the completion of TESL does not confer public school teaching certification, the TESL course work, when combined with selected courses from the College of Education, can lead to the student's obtaining an endorsement in TESL and/or bilingual education to already-certified teachers. (For more information, contact the Office of Professional Education in the College of Education and the State Department of Education in Oklahoma City.)

The Doctor of Philosophy Degree. The Department of English grants one doctoral degree, the Ph.D. in English. Students may, however, emphasize in their courses, their exams, and their dissertations a variety of areas: all periods of British and American literature, Native American literature and language, creative writing, literary theory and criticism, film, technical writing, composition and rhetoric, linguistics, and TESL. They may also choose an interdisciplinary emphasis. In consultation with their advisory committees, students devise an individualized curriculum that reflects their own intellectual interests and professional goals.

Prerequisites include a master's degree in English or a field related to the student's area of emphasis. Successful applicants usually have a minimum grade-point average of 3.50 on a 4.00 scale in their master's degrees. All Ph.D. students are admitted provisionally and must take the first-year examination during their first two semesters of enrollment.

The Ph.D. degree consists of 60 credit hours beyond the master's degree. Fifteen to 20 of these hours are devoted to the dissertation. In addition to these hours, students must take a first-year examination; demonstrate reading knowledge of two foreign languages or mastery of one language; pass the Ph.D. qualifying examination in two areas; and pass an oral defense of the dissertation. The dissertation is a work of original research prepared under the direction of the dissertation committee. Creative students may present as their dissertations original works in poetry, drama (including screenplays), or prose fiction.

Additional information and requirements may be found in the English Graduate Guidelines, available from the Graduate Office of the Department of English.

Foreign Languages and Literatures

The Department of Foreign Languages and Literatures offers French, German, Russian and Spanish as major fields of study. Minors may be earned in French, German, ancient Greek, Japanese, Latin, Russian and Spanish.

In all languages offered by the department, elementary courses are available for students with no previous experience. A special intensive course in Spanish (10 credit hours in eight weeks) is offered in the summer session. Students with previous foreign language experience may take placement tests to find the course best suited for their level of proficiency. A major in a foreign language is often supported by study of another language or work in other fields. Many language majors choose to qualify for an International Studies certificate. Several certificates, such as Asian, Central Asian, Latin American, Russian and Eastern European Studies and Ancient and Medieval Studies, are available.

The study of foreign languages is a vital and humanizing part of a general education. In a rapidly changing and shrinking world, it offers new cultural insights, breaks down barriers, fosters discipline of thought and expression and leads to a better understanding of one's native language. Foreign language majors may expect to find openings in a wide variety of careers in law, medicine, government, industry and commerce, all of which require a liberal arts degree. Job opportunities are greatly enhanced for those who combine foreign language study with a major or minor in other disciplines. Moreover, there is a growing demand for foreign language teachers in secondary education. Bachelor of Arts candidates may qualify for teaching license without increasing the number of hours required for graduation.

In addition to the standard courses in language, literature and civilization for individual languages, the department offers literature-in-translation courses for
general education, and courses in German for reading knowledge and Russian for reading knowledge.

Geography

Associate Professor and Head
Thomas A. Wikle, Ph.D.

Geography is concerned with the surface of the earth and its immediate atmosphere. Geographers study the similarities, the differences and interactions among phenomena in this region. Geographers are interested in the economic, social, political and environmental qualities of places, and in how these attributes interact.

Geographers attempt to understand human behavior by answering such questions as: Where do people work? Where do they play? Where do they live? Why do people make these locational choices? What are the consequences of these decisions and behavior?

Because the physical environment is important in many explanations of spatial behavior and spatial patterns, geographers have traditionally concerned themselves with relationships between humans and their environment. What impact do people have on the land? What impact does the land have on people? How do people perceive their environment? How does this perception influence their activities?

Finally, geographers examine spatial patterns and behaviors in specific regional contexts. These analyses occur at many levels-world-wide, national and local. These kinds of studies lead to suggestions for change and improvement-the application of geography to contemporary rural, urban and regional problems. Thus many aspects of urban, regional and national planning are geographic in nature.

No academic discipline has broader interests than does geography, and the Department of Geography allows students the flexibility to pursue studies that lead to a wide range of educational goals and careers. Students with interests in environment, planning, real estate, economic development, international affairs, travel, remote sensing, geographic information systems, area studies, management or education are among those which can be accommodated. A geography minor program is also available for those who see geography as complementary to another field of study.

Those who wish to study geography tend to be interested in their own surroundings and in other places. They also possess a curiosity for maps, the basic tool of the field. Students of geography will become familiar with remote sensing, computer graphics, statistics, geographic information systems and cartography-tools which facilitate geographic analysis.

Many careers are available to the geography major or minor. Recent graduates have been employed in urban and regional planning, community development, locational analysis in both the public and private sector, resource planning and management, various forms of domestic and foreign service, cartography and teaching. Geography also provides an excellent foundation for a liberal education and is a good basis for a career in business, industry or government.

The department possesses a cartographic laboratory, the Center for Applications of Remote Sensing, a computer mapping facility, field mapping equipment such as global positioning system receivers, an interactive weather analysis system with satellite data feed, and an ARC/INFO equipped geographic information system laboratory. Three national journals are edited and published by faculty members in the department, the Journal of Cultural Geography, Sport Place, and the Journal of Central Asian Studies.

The department specializes in two areas: cultural and historical geography and resource management/GIS. Complementary course work supporting these specialized areas is available in other departments.

The Department of Geography offers the B.A. and B.S. degrees. An option in applied resource management is available within the B.S. degree. An advanced program leading to the Master of Science degree is also available. The department also sponsors students in the interdisciplinary M.S. and Ph.D. programs in environmental science.

Certificate in Geographic Information Systems (GIS). The certificate in GIS provides students with broad exposure to principles and applications of GIS. A student who has earned the certificate is well-versed in general GIS theory and has knowledge and/or practical exposure to the following: (1) hardware and software used in GIS, (2) planning and construction of spatial and nonspatial databases, (3) GIS analyses (performed on data related to the student's area of interest), and (4) representation of data in both mapped and tabular form. Requirements for the certificate are designed to parallel skills needed by GIS professionals. Through elective courses, students focus on one of several areas of specialization. Admission into the certificate program is open to anyone enrolled as an undergraduate student, graduate student or special student at OSU. To receive a certificate in GIS, a student must complete 21 hours of course work in GIS and related topics and hold a bachelor's or more advanced degree from OSU or an accredited college. Students may work toward the certificate while completing their bachelor's degrees.

Graduate Programs

The Department of Geography offers work leading to the Master of Science degree. This degree program emphasizes preparation for employment in positions which are enhanced by an ability to recognize and to interpret spatial distribution, and to analyze regions.

Particular emphasis is placed on the applied aspects of geography, with many graduates employed by private business as well as city, regional, state and national planning agencies. Recipients of the M.S. in geography have also gone on to a variety of successful careers in various fields, including retail store location analysis, banking, and university teaching and research.

The Master of Science Degree. Admission to the master's program in geography is granted to college graduates with superior academic records. An undergraduate geography major is not required. Majors from the social, physical, and behavioral sciences and from the humanities are encouraged to apply. Incoming graduate students must demonstrate competency in cultural geography, physical geography, statistics, and cartography. If deficiencies are apparent, they must be corrected, possibly increasing the time needed to complete the degree.

Two basic plans of study exist for the master's degree. One plan requires a minimum of 30 credit hours including a thesis, the other is a 36-credit-hour non-thesis option. Plans of study can be developed to accommodate many interests. Major faculty interests include resource management, cultural and historical geography, regional analysis and development, and cultural ecology.

School of Geology

Brown Monnett Professor, Regents Professor and Head
Zuhair F. Al-Shaieb, Ph.D.

Earth is the residence of the human race. It is essential to develop a better
understanding of the composition, internal and external processes, that affect the Earth. Earth is an outdoor laboratory filled with opportunities to observe Earth processes in action. By applying knowledge of forces that shape the Earth, geoscientists seek to reconstruct the past and anticipate the future. Geoscientists provide information to society for solving problems and establishing policy for resource management, environmental protection, and public health, safety and welfare.

Geology is concerned with the processes, the history, and the characteristics of the rocks and sediments that shape the Earth. Human activities, predominantly on or near the surface, have utilized rocks and rock products, mainly petroleum and metals, to contribute to the quality of life. Because the Earth is dynamic—that is, the land surface is constantly changing—knowledge of earthquakes, volcanoes, plate tectonics, floods and landslides, to name a few dynamic events, is critical to minimize human suffering and economic loss. Within geology, different specialties, such as petroleum geology, ground-water geology (hydrogeology), geomorphology (study of surface processes), structural geology, and paleontology (study of fossils), have developed.

The School of Geology offers traditional academic program services, awards B.S. and M.S. degrees in geology and conducts various outreach programs. Geology majors are provided a quality education designed to develop leadership skills and enhance employment opportunities. The School of Geology has embraced two areas with great potential for growth: sedimentary/petroleum geology and hydrogeology/environmental geology. In both areas, the school has already established a sound infrastructure-appropriate of faculty appointments, laboratory and computer upgrades, and a sound record of productivity. Geology undergraduates are eligible for one of at least 10 departmental scholarships available, based on academic achievement and need. Teaching assistantships, research assistantships, and fellowships are available for qualifying geology graduate students.

Geologists are employed extensively in applied and pure research and in teaching. Applied research includes the exploration for, and development of, oil and gas fields, metallic and nonmetallic mineral deposits, and reservoirs of ground water. The geologist is well-prepared to pursue and direct environmental studies. Careers in research may be found with private employers, government agencies or universities. Teaching positions in geology are available at all levels, beginning with secondary education. As with most other sciences, more employment opportunities will be available to students with advanced training and a broad background. In general, careers as teachers in a college or university and in research are open only to those with graduate training.

Graduate Programs

Prerequisites. The student should have at least 39 credit hours in geology. Additional undergraduate requirements to enter the master's degree program include: nine credit hours of chemistry, eight credit hours of physics, and four credit hours of zoology or botany. Deficiencies in course work must be made up by the student after entering the program. The Graduate Record Examination is recommended, but not required, for admission to the program.

The Master of Science Degree. Emphasis in the master's degree program is placed on applied geology, including sedimentary/petroleum geology, hydrogeology/environmental geology, paleontology, and structural geology. The thesis option is recommended for students planning to continue graduate studies at the doctoral level. Each candidate must complete at least 30 semester credit hours of work beyond the prerequisites. As many as 12 of these may be taken in other departments of the University upon approval by the candidate's advisory committee. Each candidate is required to write a thesis. A final defense of the thesis and the research that it documents is required of all students.

Nonthesis Option—This option is recommended for students who do not plan to continue graduate studies. Each candidate must complete at least 33 semester credit hours of work beyond the prerequisites and three semester hours for the creative component.

Students who wish to pursue the Ph.D. degree upon completion of the M.S. have the option of entering the interdisciplinary program in environmental science administered through the Graduate College. Numerous Department of Geology faculty members currently advise students seeking the doctoral degree. Funding as a teaching or research assistant may be available to assist students seeking the Ph.D. in environmental science if the thrust of their research is related to geology.

History

Associate Professor and Head William S. Bryans, Ph.D.

History is the record, explanation and interpretation of the totality of man's activities. The study of history is unique in its concern for the role of time in human development. History enhances the individual's knowledge of self and gives perspective and deeper meaning to contemporary events. Courses in the Department of History are intended to give the student a broad understanding of the evolution of civilizations, peoples, countries and institutions, and an insight into the meaning of this evolution, as well as to prepare graduates for many types of employment.

Because history is basic to many specialized fields, the department's instruction is designed to aid students interested in education, law, journalism, scientific and technical disciplines, public service and business administration. Students in colleges other than the College of Arts and Sciences who wish to pursue the study of history are encouraged to enroll in courses of interest. The Department of History offers a number of courses that satisfy General Education requirements in the social sciences and the humanities. It participates actively in the Honors Program and offers to its majors the option of pursuing a special plan of study leading to a Departmental Honors certificate. The Department of History also participates actively in the Area Studies certificate programs and in the Women's Studies certificate program.

Graduate Programs

The Department of History offers programs leading to the M.A. and Ph.D. in history. In addition to the general Graduate College requirements, the candidate for the Master of Arts or Doctor of Philosophy degree with a major in history is expected to have prerequisites of approximately 30 semester credit hours (including 18 upper-division hours) of undergraduate history courses, with an undergraduate grade-point average of at least 3.00.

The Master of Arts Degree. Admission to the master's program requires submission of scores for the verbal, quantitative aptitude, and analytical sections of the Graduate Record Examination. Candidates for the Master of Arts degree choose one of three alternative plans. Requirements common to all three plans include completion of a course (HIST 5023) in historical methods of research and writing, several graduate seminars, and a two-hour oral examination at the
end of the program. Students must maintain at least a 3.00 ("B") grade-point average. An advisory committee will be appointed for each student during the first semester of enrollment. The three plans are designed for different careers, and the distinctive requirements of each are summarized below:

Plan I-(This plan is recommended for those planning to continue graduate studies at the doctoral level.) Students must complete a minimum of 30 hours of graduate courses in three fields (at least one in United States history and one in non-United States history). These hours must include at least nine hours of seminar offered by the department (reading and/or research), Historical Methods (HIST 5023), and six hours of thesis (HIST 5000). With the consent of the advisory committee, students may substitute a field in a related discipline for one field in history. Students must take at least six hours in the related discipline. The specific courses used to comprise this field must be taken at the graduate level and have the approval of that member of the advisory committee representing the related discipline.

Fields of study include:
Ancient Mediterranean world
Medieval Europe
Early modern Europe to 1789
Europe since 1789
East Asia
England to 1714
Latin America
Middle East
Russia and East Europe
United States to 1877
United States since 1877
Women's history

Students must demonstrate satisfactory reading knowledge of at least one foreign language.

Plan II-(Students must be pursuing applied history.) Students must complete a minimum of 33 hours of graduate courses. These hours must include at least three hours of research seminar, six additional hours of seminar offered by the department (reading and/or research), Historical Methods (HIST 5023), an internship (HIST 5030), and two hours of report (HIST 5000). With the approval of the student's advisory committee, as many as 9 of these hours may be taken in related disciplines.

Plan III-Students must complete a minimum of 36 hours of graduate courses in three fields, at least one in United States history and one in non-United States history. (See "Fields of Study" listed under Plan I.) The 36 hours must also include at least three hours of research seminar, nine additional hours of seminar offered by the department (reading and/or research), Historical Methods (HIST 5023) and a three-hour creative component (master's research paper). The creative component requirement is satisfied by the course HIST 6120, Special Studies in History. At least six hours of the course work must be in United States history and at least six hours in non-United States history. With the approval of the student's advisory committee, as many as nine of these hours may be taken in related disciplines.

The Doctor of Philosophy Degree. Admission to the doctoral program requires a satisfactory score on the Graduate Record Examination, including the Advanced Examination in History. Each applicant must also meet Oklahoma State University requirements for the M.A. degree in history, with a grade-point average of at least 3.20 (on a 4.00 scale) in previous graduate work in history.

No definite course requirements apply to all students. Work necessary to prepare the student for his or her written and oral examinations will be indicated in a plan of study which is prepared and approved by an advisory committee. Generally, a minimum of 60 semester graduate credit hours beyond the M.A. degree with a "B" grade average for all courses is required.

The prospective doctoral student must offer four fields for examination, one of which may be a pertinent field outside of history. Students specializing in United States history must offer for examination:
1. The United States history field.
2. One chronological or topical field from the following:
   Early America to 1787
   Nineteenth-century United States, 1787-1877
   Modern United States, 1877-present
   United States economic
   United States military
   United States social and intellectual
   United States South
   United States West
3. Two fields from the following:
   Ancient Mediterranean world
   Medieval Europe
   Early modern Europe to 1789
   Europe since 1789
   East Asia
   England to 1714
   Latin America
   Middle East
   Russia and East Europe
   Women's history

With the consent of the advisory committee, a student may substitute for one of these fields a pertinent field outside history. At least 12 hours of graduate coursework in a field outside history would normally be expected.

Students specializing in non-United States history must offer for examination:
1. Three fields from the following:
   Ancient Mediterranean world
   Medieval Europe
   Early modern Europe to 1789
   Europe since 1789
   East Asia
   England
   Latin America
   Russia and East Europe
2. Any field in United States history.
3. With the consent of their advisory committee, students may substitute for one of the fields (except United States history) a pertinent field outside history. At least 12 hours of graduate coursework in a field outside history would normally be expected.

Upon admission to do graduate work at the doctoral level, the student's temporary adviser is the departmental director of graduate studies. Before the middle of the student's second semester, an advisory committee is appointed to assist the student in preparing the plan of study. This committee will consist of four members of the departmental graduate faculty (one from each of the examination fields), including the student's major adviser, who acts as chairperson.

No student is admitted to candidacy until he or she has (1) demonstrated a reading knowledge in at least one foreign language; (2) completed all course work on the plan of study; (3) completed with a "B" grade graduate courses in historical methods and historiography; (4) obtained approval of a proposed dissertation topic; and (5) passed comprehensive written and oral examinations in each of the areas of concentration.

Upon admission to candidacy, the student begins work on the dissertation. Supervised by the major adviser and members of the advisory committee, the dissertation provides the student an opportunity to do original research on a topic within the major area of study. The final dissertation must be submitted to the Graduate College in accordance with the regulations contained in the "Graduate College" section of the Catalog. Upon completion of the dissertation, the student undergoes a final examination. Oral in nature and no more than two hours in length, the examination is primarily a defense of the dissertation.
School of Journalism and Broadcasting

Professor and Director Paul Smeak, Ph.D.

At Oklahoma State University, the professional areas of mass communication are grouped in the School of Journalism and Broadcasting (SJB). These areas seek to complement each other with a minimum of duplication.

A modern democratic society cannot live by its ideals if its mass media practitioners are merely competent technicians who worry less about what is reported to the people than how it is reported. Citizens must have accurate information about social, political and economic problems as well as knowledge of actions taken by government agencies at all levels. From village council to Supreme Court, there can be no exception from the rule that public business is the public’s business.

To speak to people through radio, television or the printed page requires a knowledge of the people to whom one wishes to speak and an understanding of the world in which they live. Therefore, the curricula of the School of Journalism and Broadcasting are designed to offer more than training in communication techniques. Three-quarters of the SJB student’s time at the University is devoted to a liberal education in the arts and sciences. At the same time, the student gains competence in a professional field through courses in the SJB.

In brief, then, the purposes of the School of Journalism and Broadcasting are:

1. To provide thorough, broadly-based professional education for the mass-media professions.
2. To encourage liberal and cultural background in the arts, literature, languages, and social, biological and physical sciences.
3. To promote scholarly research and professional performance.
4. To provide media leadership and assistance in extension and public service through high school and college educators and professional communication associations.
5. To emphasize high standards of ethics and responsibility in mass communication.

Accreditation

The undergraduate programs of study in the School of Journalism and Broadcasting are accredited by the Accrediting Council on Education in Journalism and Mass Communication.

Special Requirements

Any student who elects a specific option from those listed in succeeding pages should meet with an SJB faculty adviser as soon as possible. The ability to type a minimum of 30 words a minute and a computer course or computer literacy are required for registration in all writing courses beginning with the course Mass Media Style and Structure (JB 1393). In addition, competence in typing is expected of all majors in the School. Prospective students are advised to prepare for this requirement before enrolling at the University.

Advertising and Sales

Ideas ranging from the introduction of new products and services to public service messages are communicated to mass audiences through advertising. Advertising also provides the economic base for the mass media—newspapers, radio and television, magazines, cable—thus freeing them from the political control found in many countries.

Upon a strong liberal arts foundation, majors in advertising build educational experiences that prepare them for work in copywriting and layout, production, management, media selection, market analysis, sales and campaign planning. Basically, the program focuses on decision-making and problem-solving, and includes courses in marketing, psychology, sociology, management and economics. Opportunities for part-time jobs, summer internships and participation in the Advertising Club round out the student’s experience.

The program is also designed for students who wish to write, sell and produce commercial messages, and to move into management or ownership positions on radio and television stations.

The program is affiliated with the American Association of Advertising Agencies, the Advertising Federation of America and the Point of Purchase Advertising Institute.

Journalism

News coverage today has gone beyond routine reporting on police and city hall activities. The modern newspaper or broadcasting station tries to spotlight the diverse components of our complex society. This objective calls for writers with broad interests and special knowledge in politics, religion, science, business, economics, art and public welfare. From the ranks of these reporters come the future print and broadcast journalists.

Programs offered in journalism are:

- News-editorial. This program prepares students for writing and editing positions on newspapers, magazines, and trade journals, in radio and television news departments, and in book editing and publishing.
- Technical communication. Students may combine agriculture and journalism or home economics and journalism to prepare for specialized work in technical writing and editing. These programs are developed in cooperation with the colleges of Agricultural Sciences and Natural Resources and Human Environmental Sciences.
- Community journalism. This program, for those who plan eventually to own or manage weekly or small daily newspapers, requires experience in news, advertising and management, and thus requires a wide range of courses both within and outside the School of Journalism and Broadcasting. This program is an individualized one and should be entered only with the advice and consent of the SJB director.

Journalism majors assist in the publishing of a campus newspaper, The Daily O’Collegian, in the newsroom of radio station KOSU, and in audio and video news programming cablecast over a local cable station. Many juniors and seniors find this work a source of revenue to assist them in the cost of their education. Advanced news-editorial students also spend one summer on an internship with a commercial newspaper or broadcasting station, and some spend the spring or fall semester on a daily newspaper. Some hold part-time jobs as campus correspondents for various publications or work for media in the Stillwater area. Part of the laboratory work in JB 2393, 2413, 3413, and 4413 is done on The Daily O’Collegian or other publications.

The journalism program is affiliated with the Oklahoma Press Association, Southwest Journalism Congress, Society of Professional Journalists, and the Association for Education in Journalism and Mass Communications.

Public Relations

Public relations practitioners perform a variety of tasks. As writers, they prepare
news releases, speeches, trade-paper and magazine articles, texts of booklets, radio and television copy, product information and stockholder reports. They may supervise the company newspaper, magazine or newsletter, or other company communication programs.

The public relations option is related to and draws upon the news-editorial curriculum, as do the public information departments of government, business and industry. The public relations program is affiliated with the Society of National Association Publications, International Association of Business Communicators, and the Public Relations Society of America.

Radio-TV

The programs in radio-television are designed to prepare students for careers in broadcasting. They offer graduates a chance to develop abilities in announcing, production, copywriting, news, documentary, sports, sales and management.

The undergraduate degree is offered in the professional option broadcast journalism. It is intended for students who wish to write, edit and produce news, discussion and documentary programs for broadcasting stations, networks and cable companies.

The facilities of the University’s color-equipped Telecommunications Center, a full-time radio station, KOSU, an electronic news-gathering laboratory (ENG), and access to a channel on local television, make it possible for majors to acquire experience along with professional studies. Radio-television is affiliated with the National Association of FM Broadcasters, Radio Advertising Bureau, Oklahoma Association of Broadcasters, Oklahoma Broadcast Education Association, National Association of Broadcasters, Broadcast Education Association and National Public Radio.

Graduate Programs

The School of Journalism and Broadcasting offers courses leading to the degree of Master of Science in mass communication. The School also cooperates with the College of Education in planning and supervising study leading to a Doctor of Education degree with emphasis in mass communication.

Prerequisites for unqualified admission to the master’s program include a bachelor’s degree in an area of mass communication with an overall grade-point average of 3.00. The Graduate Record Exam (GRE) is required. Potential doctoral candidates must have a bachelor’s or master’s degree in a mass communication area, in addition to professional experience. Graduates of a non-mass communication discipline may enter the Master of Science program, with the stipulation that they complete, without graduate credit, foundation courses relevant to career interests before they take graduate courses.

Basic emphasis is on application of current communication theories and research methods and designs to the professional aspects of mass communication. Electives in the behavioral sciences are encouraged.

Mathematics

Professor and Head Benny Evans, Ph.D.

Contemporary mathematics is concerned with investigations into far-reaching extensions of such basic concepts as space and number and also with the formulation and analysis of mathematical models arising from varied fields of application. Mathematics has always had close relationships to the physical sciences and engineering. As the biological, social and management sciences have become increasingly quantitative, the mathematical sciences have moved in new directions to develop interrelationships with these subjects.

Mathematicians teach in high schools and colleges, do research and teach at universities, and work in industry and government. In industry mathematicians usually work in research, although they have become increasingly involved in management. Firms employing large numbers of mathematicians are in the aerospace, communications, computer, defense, electronics, energy, and insurance industries. In industry a mathematician typically serves either in a consulting capacity, giving advice on mathematical problems to engineers and scientists, or as a member of a research team composed of specialists in several fields. Among the qualities which he or she should possess are breadth of interests and outlook, the ability to think abstractly and a keen interest in problem solving.

An undergraduate specializing in mathematics will begin with calculus or sometimes with college algebra and trigonometry. Well-prepared students are encouraged to establish credit in elementary courses by passing advanced standing examinations. All majors take courses in differential equations, linear and modern algebra and modern analysis. The remainder of the field of concentration is determined by the student’s interests and future plans. Students are encouraged to acquire proficiency in computer programming and to take substantial work in related fields in which they have a special interest.

Undergraduate degree options are available to prepare students for: (1) employment in industry; (2) secondary school mathematics teaching; and, (3) graduate study in mathematics. Students choosing secondary school teaching complete all requirements for state licensure as part of this program.

Many of the more challenging positions in mathematics require study beyond a bachelor’s degree. For example, university teaching requires a Ph.D., while teaching in a junior college requires at least a master's degree and possibly a doctorate. Approximately 25 percent of the students receiving a bachelor’s degree in mathematics go on to graduate work.

Graduate Programs

The Department of Mathematics offers programs leading to the Master of Science and Doctor of Philosophy degrees and also cooperates with the College of Education in supervising a program leading to the Ed.D. degree with emphasis in mathematics.

Prerequisites. A student beginning graduate study in mathematics is expected to have had, as an undergraduate, at least 18 semester hours in mathematics beyond elementary integral calculus including courses in differential equations, linear algebra and modern algebra. An applicant whose preparation is deficient may be admitted to the program, if otherwise qualified, but will be required to correct the deficiency, increasing somewhat the time required to complete work for the degree. Prospective graduate students are advised to take at least introductory courses in related fields such as physics, statistics, and computer science.

The Master of Science Degree. The department offers two programs in the Master of Science degree, one in mathematics and one in applied mathematics. Each degree requires 32 credit hours of graduate course work in mathematics or related subjects. Two of these hours are waived if a master’s thesis is written. Each student must pass a comprehensive exam on the basic graduate courses of his or her program.

The Doctor of Philosophy Degree. Admission to the Ph.D. program is granted only to students with superior records in their previous graduate or undergraduate study. A minimum of 90 semester credit hours of graduate credit beyond the bachelor’s degree is required for the
Microbiology and Molecular Genetics

Professor and Head Robert V. Miller, Ph.D.

Microbiology

Microbiology is the study of bacteria, viruses and fungi and their many relationships to humans, animals and plants. Microbiologists apply their knowledge to public health and sanitation, food production and preservation, industrial fermentations which produce chemicals, drugs, antibiotics, alcoholic beverages and various food products, prevention and cure of diseases of plants, animals and humans, biodegradation of toxic chemicals and other materials present in the environment, insect pathology, and other activities which seek to control microbes, to enhance their useful activities and prevent those which are harmful. Microbiology also is the basis for the exciting and expanding new field of biotechnology which endeavors to utilize living organisms to solve important problems in medicine, agriculture and environmental science.

Microbes are also studied as living in a great variety of environments and carrying out many of the processes found in higher organisms. They are thus interesting in their own right as model systems for the study of reactions which occur in higher organisms. As subjects for research in biochemical and molecular genetics, microbes have contributed most to the current knowledge of genetics at the molecular level (microbial systems are in the forefront of genetics engineering).

Opportunities for employment exist at all scholarly levels, in many local, state and national government agencies and in varied industries. The record for employment of microbiologists has been excellent for many years and with the increased interest in biotechnology, job prospects look even brighter for the future.

Students interested in careers in microbiology should have broad interests in the biological sciences and an aptitude for biology and chemistry. For some areas of specialization, an aptitude for mathematics and physics is also essential.

Departmental courses are designed to provide comprehensive training and the skills required for working with microorganisms, as well as a broad understanding of all aspects of microbial life. Many of the microbiology positions require graduate level studies. In addition to the B.S. degree, the department offers graduate studies leading to the M.S. and Ph.D. degrees in various areas of concentration including virology, microbial physiology, microbial genetics, microbial anatomy, immunology, and several applied areas.

Graduate Programs

Programs of course work and research leading to the degrees of Master of Science and Doctor of Philosophy are offered by the department in microbiology or cell and molecular biology. Students may elect either microbiology or cell and molecular biology within the M.S. and Ph.D. program.

Prerequisites. Applicants for admission must have received the baccalaureate degree from an accredited college and must have completed a minimum of 30 semester credit hours in biological and physical sciences. The Aptitude Test portion of the Graduate Record Examination is required of all applicants. An applicant will not be accepted unless at least one member of the departmental graduate faculty agrees to act as the applicant's adviser at the M.S. level. A majority of the departmental graduate faculty must approve an applicant at the Ph.D. level.

The Master of Science Degree. In addition to the general requirements for the degree, the following departmental requirements must be met in attaining 30 credit hours with thesis. The plan of study must include six credit hours in MICRO 5000 and one credit hour in MICRO 5160.

All candidates for the M.S. degree are expected to attend and participate in all departmental seminars. A final oral examination covering the thesis is administered by the advisory committee.

The Doctor of Philosophy Degree. The study plan of a student entering the
program with a bachelor's degree must include 30 credit hours in courses other than MICRO 5000 and MICRO 6000. Those entering with a master's degree must include 15 hours in courses other than MICRO 6000 which were not included in the master's study plan. Three hours of MICRO 5160 must be included.

Candidates for the Ph.D. degree must pass both a written and an oral qualifying examination. The final examination covering the dissertation research is given promptly after the candidate has given a public seminar on his or her research work.

Medical Technology

The program in medical technology is designed to give the student the broad general education and the highly technical skills that are required for a successful career in this important medical science. The minimum requirement for the B.S. degree in medical technology is three years of university work and one year of clinical laboratory education (internship) in an approved school of medical technology.

Clinical Laboratory Education. For the B.S. degree and certification, the student will, after three years of university work, complete one year of clinical laboratory education (internship) in a school of medical technology accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) and currently affiliated with Oklahoma State University. Schools of medical technology at the following hospitals are currently affiliated:

- Comanche County Memorial Hospital, Lawton, Okla.
- Muskogee General Hospital, Muskogee, Okla.
- St. Anthony's Hospital, Oklahoma City, Okla.
- St. Francis Hospital, Tulsa, Okla.
- St. Mary's Hospital, Enid, Okla.
- Valley View Hospital, Ada, Okla.

Students entering their twelve months of internship must enroll in Medical Technology Clinical Laboratory (MTCL) courses for 12 credit hours during the equivalent fall and spring semesters and for six hours during the equivalent summer session, as follows: Fall-MTCL 4117, 4125; Spring-MTCL 4236, 4246; Summer-MTCL 4325, 4351. A grade of "I" will be given for the first two semesters of internship. Final letter grades will be awarded upon receipt of the final official transcript showing final letter grades in the six MTCL courses from the school of medical technology by the University medical technology coordinator. If a student fails to complete the entire 12-month internship, no course credit will be awarded. Students will pay the regular tuition for the credit hours in which they are enrolled, except that the facilities fees will be waived for the 30 hours of MTCL courses. Students who earn a B.S. degree prior to entering hospital internship will not be required to enroll and pay tuition during internship unless they desire to earn a second B.S. degree in medical technology.

Preprofessional Courses. NAACLS requires a minimum of 16 hours of chemistry, including organic and/or biochemistry and 16 hours of biology, including immunology. The University requirement for the B.S. degree in medical technology is as follows: two semesters of general chemistry; organic chemistry and biochemistry; immunology, genetics, anatomy, and physiology; and two upper-division courses in microbiology; college algebra and computer science.

Residence Requirements. Although the MTCL courses are considered to be resident credit, the student is required to complete additional resident requirements from regular on-campus courses as follows: 30 hours of resident courses, including 18 hours of upper-division courses listed under Major Requirements on the current degree requirement sheet in the Undergraduate Programs and Requirements.

Grade-point Average Requirements. Students, to be qualified for the B.S. degree, must earn a grade-point average of not less than 2.00 overall and 2.00 in upper-division major courses. Students with less than 2.80 overall grade-point average may find it difficult to gain acceptance to a school of medical technology under current conditions of competition.

Applications and Admission to Internship. Students should apply directly to one or more schools of medical technology about 10 months prior to the beginning date for internship. Approximately 70 percent of students applying for internship are accepted, depending upon the degree of competition in any particular year. The decision on acceptance of any applicant is entirely at the discretion of the hospital-based school of medical technology. Enrollment is limited by the size of the classes in the affiliated hospital-based programs. Satisfactory completion of the clinical laboratory education is required for eligibility to take a certifying examination. The B.S. degree in medical technology is not dependent on a passing grade on the certifying examination.

Departments of Military Studies

Coordinator Smith L. Holt, Ph.D.

In agreement with the U.S. Air Force and the U.S. Army, OSU recognizes separate departments of Aerospace Studies and of Military Science as integral academic and administrative departments of the University. These two departments are administered within the framework of the College of Arts and Sciences. The two departments provide instruction under the basic and advanced Reserve Officers' Training Corps (ROTC) programs.

Scholarships

Both the Army and Air Force ROTC offer full scholarships each year for students enrolling in the program. ROTC scholarships provide full payment of tuition, fees and books and $150.00 per month subsistence allowance. Applications for four-year scholarships may be obtained through local high school principals or advisers and the ROTC departments. Information concerning three-year scholarships may be obtained by direct contact with the ROTC departments located on campus in Thatcher Hall.

Flexibility

ROTC at OSU offers a variety of programs, giving the student considerable flexibility in charting a path to commissioning in the Army or the Air Force. Programs are designed so that individuals in all OSU colleges, departments and majors can tailor their academic/ROTC curriculum in order to attain commissioned status. Opportunities also exist in both Army and Air Force ROTC for the student to "test the water" early in his or her academic program by participating in basic familiarization courses. Those interested in learning more about ROTC at OSU, or in enrolling, are urged to contact the professor of aerospace studies or professor of military science in Thatcher Hall on campus.

Aerospace Studies

Professor of Aerospace Studies and
Head Lt Col Russell D. Miller, M.S.

The basic, four-year Air Force ROTC program consists of one classroom hour and one leadership laboratory period per week during the freshman and sophomore years. Basic courses give students
a thorough background in United States Air Force (USAF) structure and history, as well as drill and ceremony, military customs and courtesies, and wear of the uniform. No military obligation is incurred by non-scholarship cadets enrolling in the freshman- and sophomore-level courses. During the spring of the sophomore year, students compete for selection into the Professional Officer Corps (POC); those selected will attend either a four- or six-week field training encampment during the summer between the sophomore and junior years. For students getting a late start into the Air Force ROTC program, there are both two- and three-year programs that can lead to POC entrance and eventual commissioning.

Following completion of field training, students spend two years as POC cadets; academic courses consist of three classroom hours and one leadership laboratory per week, for three hours of credit per semester. Class work and laboratory involvement are designed to prepare the student for his or her future role as a leader in the U.S. Air Force. In addition, students are given the opportunity to gain practical leadership experience by holding various positions of responsibility in the Cadet Corps. POC cadets not on three- or four-year scholarships are eligible for partial scholarships of $1000 per semester if they maintain at least a 2.35 semester GPA.

All students have the opportunity to participate in various corps-sponsored extracurricular activities during the year. These include visits to active Air Force installations to gain first-hand knowledge of the duties of junior Air Force officers; cadets are often taken on incentive flights in USAF aircraft. Cadets are also given the option to apply for numerous summer programs. These include expanded base visits, and even survival training, free-fall parachuting, and glider training programs in conjunction with the U.S. Air Force Academy.

Students who successfully complete the POC program are commissioned as second lieutenants in the United States Air Force, with a four-year obligation. Those who are selected for pilot or navigator training incur a six- to eight-year commitment.

Military Science
Professor of Military Science and Head LTC Charles T. Payne, M.A.

Students desiring to expand the scope of their education, while preparing for a dynamic and rewarding career as an officer in the United States Army, active duty, National Guard, or Army Reserve, choose the Army Reserve Officer Training Corps program (ROTC) as an adjunct to their chosen field of study. With courses dealing in a wide range of subjects from leadership to tactics, taught both indoors and out, the Army ROTC program produces 3,800 second lieutenants each year across the nation.

The Army ROTC program consists of a basic course and an advanced course. Students desiring to see what the program is like may enroll in up to 10 hours of military science with no commitment to the United States Army. During this basic course, emphasis is placed upon leadership, war gaming, individual skills, problem solving, rappelling, and land navigation. All lower-division ROTC courses are open to the entire University community regardless of year in school.

Students committing themselves to a commission in the United States Army are permitted to enroll in the Army ROTC advanced course upon completion of the basic course or equivalent. The advanced course consists of 12 hours of academic work taken during the junior and senior year. In addition, participation in a six-week summer camp is mandatory. The advanced course emphasizes further development of leadership skills, offensive and defensive tactics, physical conditioning, ethics, military law, professional and basic military knowledge and skills. Additionally, advanced course students are responsible for use of required military skills as they act as assistant instructors during laboratory periods, plan leadership laboratories, plan and conduct field training exercises and are responsible for coordinating and supervising departmental extracurricular activities.

All advanced course students must satisfy directed professional military education (PME) requirements prior to receiving a commission. The PME consists of two essential parts—a baccalaureate degree and at least one undergraduate course from each of the following fields of study: written communication, military history, computer literacy, and math reasoning.

Students interested in the Department of Military Science are encouraged to visit with departmental faculty members at any time for further information concerning departmental course offerings and class sequence. A number of two- and three-year scholarships are available through the department. Prior enrollment in military science is not a prerequisite for departmental scholarship application.

Music
Professor and Head William L. Ballenger, M.A.

The music program at OSU serves students who plan careers in the field of music as well as those who desire to participate in any element of a comprehensive music program. Professional instruction prepares students for careers in performance, teaching, or the music industry. The OSU undergraduate degrees are also excellent preparation for graduate school and for church positions.

The student planning to major in music at the university level should consider his or her background carefully. It should include a strong interest in music during high school years and a talent for performance in vocal or instrumental music. Individual lessons, fundamental theory knowledge, and basic piano ability will also be helpful.

The music major may choose from the following degrees: (1) Bachelor of Music (B.M.) in performance, (2) B.M. in instrumental/vocal music education, (3) B.M. with elective studies in business, and (4) Bachelor of Arts (B.A.) in music. In addition, the Bachelor of University Studies allows the student to combine an interest in music with another outside field.

The student majoring in a discipline other than music may participate with music majors in all ensembles (choirs, opera, orchestra, wind ensemble, marching band, concert band, jazz bands, and chamber groups) and courses, as well as individual lessons for academic credit.

An active scholarship program provides assistance to music majors as well as non-majors. Students are invited to write for audition information.

Faculty members, students and ensembles present over 100 concerts and recitals annually. The department also supports an active program of extension and outreach opportunities.

The Department of Music is accredited by the National Association of Schools of Music (NASM). Students wishing to major in music should contact the Department of Music to arrange for an entrance audition and interview.

Graduate Programs
The Department of Music offers a Master of Music in pedagogy and performance. Consult the "Master's Degree Programs" section of the "Graduate College" in the Catalog for general regulations and requirements relating to admission.
The Master of Music in pedagogy and performance combines the salient elements of music performance and the pedagogy of music. Its intent is to adapt the changing complexion of today’s musical world by melding the areas of pedagogy and performance into a single, functional degree.

There are two tracks of study available to students enrolled in the Master of Music in pedagogy and performance. The conducting track facilitates the development of rehearsal techniques, an understanding of the pedagogical issues surrounding ensemble building, and the shaping of conducting skills. The applied music track is designed for students who wish to hone their performing and pedagogical skills on a specific instrument.

Students accepted to the Master of Music in pedagogy and performance program are required to take a placement examination in music theory and history prior to their first semester of enrollment. Prior to graduation, all students must pass a final oral examination.

The following classes are required for students enrolled in the conducting track: MUSIC 5004, 5113, 5512, 5522, 5712, 5722, 5733, 5742, 5750, 5973. An additional six hours of elective credit must be earned toward this 32-credit degree.

The following classes are required for students enrolled in the applied music track: MUSIC 4890, 5004, 5113, 5490, 5733, 5750, 5842, 5973. An additional four hours of elective credit must be earned toward this 32-credit degree.

**Admission Requirements.** To participate in the pedagogy and performance program, a student must first make application to the Graduate College. Prospective students must have earned a Bachelor of Music from an NASM accredited institution, or the equivalent. Students interested in the conducting track must audition on campus, or submit a videotape of their conducting, and fill out the department of music application for admission. Students interested in the applied music track must audition on campus, or submit an audiotape of a recent performance (minimum of 20 minutes of music), and fill out the Department of Music application for admission.

**Financial Assistance.** The Department of Music offers a myriad of assistantships with areas of specialization including music appreciation, class piano, instrumental techniques, accompanying, and music technology. Additional scholarships may be awarded through the Department of Music.

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**Philosophy**

Professor and Head Edward G. Lawry, Ph.D.

Philosophy is an intellectual activity to be practiced and a subject matter to be studied. As an activity, philosophy seeks to analyze, evaluate, and often reformulate the ideas, principles and arguments by which experience is understood and explained and by which action is directed and justified. Every area of experience or behavior-aesthetic, political, religious, scientific or moral—is considered by philosophy. The writings produced by great philosophers are worthy of study as models of thought and as artifacts of historical influence and cultural significance. In this latter role philosophy is related to the development of every academic discipline.

Courses offered in philosophy fall into three general groups: broad introductory courses that cover a variety of topics, historical courses that proceed chronologically through a sequence of thinkers, and special topic or field courses. Some offerings combine the latter two characteristics. No undergraduate course is intended primarily for majors. The B.A. program in philosophy has been approved for offering at the University Center at Tulsa.

Students may pursue work in philosophy as part of their general education, as a support to their major area of concentration, as a minor, as a major leading to a B.A. degree, as a second major or in connection with a graduate program. The program in the major accommodates students of three sorts. The "general" track is designed for students who wish to explore philosophy as a general path to the refinement of their thinking, writing and speaking, and a deepening appreciation of the most fundamental and guiding ideas and values of civilization. It is a very flexible program, requiring two lower-division introductory courses, two upper-division historical survey courses and 19 hours of additional unspecified philosophy courses numbered 3000 or above. The "preprofessional" track is designed for students who wish to ground their professional interests (such as law, medicine, business, public service, the ministry), on a philosophic basis. Though requirements are technically the same for these students as ones on a general track, they are assigned a second adviser who helps to coordinate curricular and other activities for the best career preparation possible. The "graduate preparation" track is designed for students who are interested in pursuing graduate studies in philosophy. It requires an additional six hours of upper-division philosophy and mandates more specific courses than either of the other tracks. Students may shift from track to track at any time in their matriculation without prejudice.

A minor or a second major in philosophy will complement any other area of study. A philosophy minor requires 18 hours of unspecified philosophy courses, 12 of which must be numbered 3000 or above.

**Graduate Programs**

The Department of Philosophy offers a Master of Arts degree in philosophy. Consult the "Master's Degree Programs" section of the "Graduate College" in the Catalog for general regulations and requirements relating to admission.

The Master of Arts degree in philosophy offers a broad-based curriculum designed to serve the interests of three kinds of students:

1. **Teaching Emphasis:** for the student who wishes to pursue his or her study of philosophy and prepare for a career teaching philosophy at a community college or small four-year institution; students interested in the teaching emphasis have the opportunity to intern at a community college, take collateral courses in second areas of teaching interest, and incorporate course work in pedagogy in the College of Education at OSU. They will typically complete their M.A. requirements under the "Courses Option" (see below).

2. **Professional Emphasis:** for the student who wishes to pursue his or her study of philosophy as a supplement to preparation in a wide variety of professions including business, law, government, the health professions, the ministry, or counseling;

3. **Ph.D. Emphasis** for the student who wishes to pursue his or her study of philosophy as a preparation for Ph.D. studies in philosophy at another institution.

Students interested in the teaching emphasis have the opportunity to intern at a community college, take collateral courses in second areas of teaching interest, and incorporate course work in pedagogy in the College of Education at OSU. They will typically complete their M.A. requirements under the "Courses Option" (see below).

Students interested in the professional emphasis have the opportunity to choose from a wide variety of courses that support their career plans (biomedical ethics, business ethics, philosophy of law, philosophy of religion, and cognate courses in other disciplines). They will typically complete their M.A. requirements under the "Reports Option" (see below).

Students interested in the Ph.D. emphasis have the opportunity to enhance their understanding of the history of philosophy, logic, and metaphysics and epistemology. They will typically complete their M.A. requirements under the "Thesis Option" (see below).
Students in all of these programs are able to compete for teaching assistantships and may teach either Critical Thinking or Introductory Moral/Social Problems courses.

The Master of Arts degree in philosophy may be earned through any of three options: (1) Courses Option (usually 12 three-credit-hour courses); (2) Reports Option (usually 10 three-credit-hour courses and a two-credit-hour report); and (3) Thesis Option (usually three-credit-hour courses and a six-credit-hour thesis). The Courses Option requires 36 hours, the Reports Option requires 32 hours and the Thesis Option requires 30 hours.

Prerequisites for admission to the program are 24 semester credit hours (at least 18 at the upper-division level) in philosophy including courses in the history of ancient, medieval, and modern philosophy (PHILO 3113 and 3213 or equivalents) and a course in logic (PHILO 4303 or equivalent). Students without these prerequisites, but otherwise admissible, may be granted "qualified" or "provisional" status until the prerequisites are satisfied.

All candidates for the Master of Arts in philosophy degree are required to pass a six-hour written examination on selected major Western philosophical works. This exam must be passed before a student will be allowed to begin work on either a thesis or the report and normally will be taken about two-thirds of the way through the required course work for the degree. Each student is supervised by a three-person advisory committee appointed for, and in consultation with, the student. This committee arranges and administers the written examination, and is responsible for determining the student's plan of study, thesis, report topics, and any other special requirements that may need to be fulfilled.

**Master of Arts in Philosophy, Courses Option:**
Thirty-six hours of course work in classes and seminars approved by the student's advisory committee and/or the graduate adviser.

**Master of Arts in Philosophy, Reports Option:**
1. Thirty hours of course work in classes and seminars approved by the student's advisory committee and/or the graduate adviser.
2. Two hours of PHILO 5910, in which two research papers are prepared. These papers typically will have their origin in graduate seminars taken as part of the plan of study, or in classes related to the professional field the student wishes to enter.
3. An oral examination and defense of these reports required in a formal presentation to the departmental faculty and additional invited persons with interest or expertise in the topics.

**Master of Arts in Philosophy, Thesis Option:**
1. Twenty-four hours of course work in classes and seminars approved by the student's advisory committee and/or the graduate adviser.
2. Six hours of PHILO 5000, in which a well-reasoned, substantial piece of research on a narrowly defined topic is written as a thesis.
3. An oral examination and defense of the thesis before the departmental faculty and additional invited persons with interests or expertise in the topic.

A student may also, in accordance with the policies of the Graduate College, select a graduate minor in connection with any of the three programs, thus permitting a concentration of work in broad areas such as social thought, cognitive science, or religion. Interdisciplinary work is encouraged for students pursuing the Professional Emphasis and the Teaching Emphasis.

Under the auspices of the Department of Educational Administration and Higher Education (EAEHD) and with the cooperation of the Department of Philosophy, a student can earn the degree of Doctor of Education in higher education with special emphasis in philosophy. General requirements concerning the Ed.D. in higher education are listed in the "Doctor of Education" and "Educational Administration and Higher Education" sections of the Catalog.

Departmental acceptance is required for admission to the M.A. program and the Ed.D. program. Persons who meet the stated prerequisites for the M.A. degree are encouraged to apply directly to the Graduate College for admission. Applications are forwarded to the department for evaluation and recommendation of admission status. Persons interested in the M.A. program but who do not meet the prerequisites should contact the head of the department prior to application. Application for admission to the Ed.D. program must be initiated through the Department of Educational Administration and Higher Education.

Students pursuing a master's or doctor's degree in another field may elect philosophy as a graduate minor: Selected courses and seminars in philosophy can broaden and complement work in such areas as economics, education, engineering, English, history, psychology, and sociology.

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**Physics**

**Regents Professor and Head Stephen W. S. McKeever, Ph.D.**

In today's technological society, professionals in many diverse fields need to possess critical skills in observation and quantitative evaluation. Increasingly, persons trained in physics can be found in career positions in finance, medicine, business and many other fields where analytical skills are now a necessity for competitive survival. The program in physics at OSU is aimed at developing these skills in both experimental and theoretical settings. Curriculum plans are available for degrees in fundamental physics, or in applied programs that combine physics with biology, business, computer science, engineering, mathematics, premedicine, and others.

During the first two years, the physics program provides a basic, quantitative and intuitive understanding of the physical world, from the classical ideas of Newton and Maxwell to the modern relativistic and quantum laws of Einstein and Schrodinger. At the same time, mathematics and computer skills are developed in application to physical problems. After two years, a student in the physics program may elect to pursue more advanced courses in theoretical and experimental physics, leading to a B.S. degree in physics and graduate studies in physics, or a related field. Alternatively, the student may elect to replace certain upper-division physics courses with upper-division courses in one of the above mentioned fields, leading to a B.S. degree in applied physics.

Continued communication, beginning with the student's first semester in the Department of Physics, establishes a productive rapport between the physics major and his or her faculty adviser. A physics minor is also possible and the requirements can be obtained from the department head.

**Graduate Programs**

**Prerequisites.** Thirty semester hours of physics beyond the elementary course work, and mathematics courses through advanced calculus and differential equations are required.

**The Master of Science Degree.** Students can choose between a thesis or non-thesis option. The thesis option requires the successful completion of 30 semester credit hours beyond the B.S. and the submission of an acceptable thesis (six credit hours of PHYSC 5000) based on original and independent research, on a topic chosen in consultation with the student's adviser. The
student must successfully defend the thesis in an oral examination. In addition, nine semester credit hours of electives must be completed in physics, mathematics or an allied field. The non-thesis option requires 32 semester credit hours beyond the B.S. degree, including a one credit hour seminar program, and two credit hours of library research (PHYSC 5000) on a topic chosen in consultation with the student's adviser. The completed written report must be orally presented to the student's advisory committee. Fourteen hours of electives are allowed within this program, including up to nine credit hours of senior level courses, depending upon the student's background. For both options, the required courses are PHYSC 5113, 5313, 5413, 5453 and 5613. The electives must be chosen in consultation with the student's advisory committee. For example, an advanced course in mathematics along with Solid State I and II may be reasonable choices for someone with a materials specialization. For others, more courses in electrical engineering may be preferable.

Also available is an M.S. program in photonics, with a specialization in physics, offered through the interdisciplinary M.S. in natural and applied sciences major, in association with the departments of chemistry and electrical engineering. Students may pursue one of three options, all of which require 24 credit hours of course work with at least one course taken outside the student's specialization. Beyond this, the first option (30 credit hours) requires an additional six hours of research and a successful defense of a thesis. The second option (32 credit hours) requires an additional six hours of course work and a two-credit-hour report. The third option (36 credit hours) requires 12 additional credit hours of course work with a creative component. For the second and third options at least two courses must be outside the field of specialization and a successful oral presentation of the report or creative component may be required.

The Doctor of Philosophy Degree. Prior to the appointment of the advisory committee, as described in the "Graduate College" section of the Catalog, a comprehensive written examination must be taken. This examination will cover the content of the course work required up to and including the M.S. degree, and will be given once a year. It will be given in four parts of three hours each. The results of this examination will be included in a review by the Department of Physics to determine whether the student should be admitted to Ph.D. candidacy.

The following physics courses are required: PHYSC 5213, 5313, 5413, 5453, 5613, 6313. Four additional PHYSC prefix courses at the 5000 or 6000 level, including at least one course not in the student's specialization, must be completed. Additional courses reflecting the candidate's specialization may be required by the advisory committee. Ninety semester hours of credit beyond the bachelor's degree are required. A minimum of two-thirds of the graduate course credits must be in physics. No more than six credit hours of physics at the 4000 level can be counted toward graduate credit and no more than 12 total credit hours in all subjects at the 3000 or 4000 level can be counted toward graduate credit. Courses taken at another institution will be evaluated by a faculty committee to determine whether they satisfy any requirements.

The most important single requirement for the Ph.D. in physics is the presentation of an acceptable dissertation which represents original research work by the student and which demonstrates the student's ability to do independent study as well as to plan and carry out future research in his or her field.

Political Science
Associate Professor and Head
Michael W. Hirlinger, Ph.D.

Political science is, on the one hand, an ancient discipline with roots in Plato and Aristotle, and on the other, it is one of the most recent of the social sciences, with roots in the early twentieth century. Political scientists study political institutions, the political behavior of individuals and groups, the formulation of public policy, the relations among states, and also enduring moral issues, such as what is justice and how leaders should be chosen. Political science by its very nature blends normative and empirical issues. Questions about democracy, participation, justice and representation have both empirical and evaluative components. It attempts to understand who participates in the political process and, when they do not, what it means for a democratic society. There is fundamental rethinking of the relations between the executive branch and the legislature, the distribution of power between the national and state governments, and the policy and budget priorities of the American people. It is a fascinating period in American political history and a major in political science offers the student a front row seat in the analysis of these changes.

The principal fields of study in political science are political theory, public law, comparative politics, international rela-

Graduate Programs
Candidates for the Master of Arts degree in political science may choose from three plan options. Plan A is a traditional political science option that per-
Students may choose from the following six areas: American politics, comparative politics, international relations, public administration, public policy, and women and politics. The plan is designed to prepare professional political scientists for careers in research and teaching, as well as government and public service. Plan B is for students interested in public administration. The objective of this plan is to prepare students for careers in administrative and policy positions in local, state or national government. Plan C is a specialization in fire and emergency management. This program is designed to provide an educational foundation for those who are currently serving or aspire to serve, as managers or administrators in fire services or emergency management.

Admission Requirements. Any student having a bachelor’s degree with an overall 3.00 grade-point average (on a 4.00 scale) is admitted as a student in full standing. Those with less than an overall 3.00 grade-point average are considered for admission on a probationary basis. The Graduate Record Exam (GRE) is not required. As a prerequisite course, all graduate students must have completed an undergraduate statistics class, or must be willing to take such a class during their first semester as a graduate student.

A complete application for admission to the master’s program must include:

1. A completed Graduate College application submitted with a non-refundable application fee.
2. An official copy of undergraduate transcript(s).
3. Two letters of recommendation with at least one from an employer or faculty member familiar with the applicant’s academic abilities.
4. TOEFL results for students for whom English is a second language. Students must have a score above 549 to be considered for admission.
5. A brief letter indicating interests and other information the applicant considers relevant.

Degree Requirements. In addition to the general requirements of the Graduate College, requirements for the Master of Arts degree with a major in political science are listed below.


1. A minimum of 33 credit hours in political science or closely related courses, including three hours of quantitative methods. A minimum of 18 hours of political science graduate seminars (seminars numbered 5000 or above); either a six-hour thesis or a three-hour creative research paper; and additional graduate level courses in political science to complete the 33-hour requirement. The student must successfully defend the thesis or creative component orally before the faculty committee.
2. Satisfactory completion of three-hour comprehensive exams in the last semester of the student’s program in two of the following areas: American politics, comparative politics, international politics, public administration, public policy, or women and politics.
3. Minimum 3.00 grade-point average, with only one grade of “C” allowed.

Plan B: Public Administration and Public Policy.

1. A minimum of 36 credit hours in political science or closely related courses; either a six-hour thesis or a three-hour creative research paper; and the following required courses: Seminar in Quantitative Methods, Seminar in Public Program Evaluation, Seminar in Public Management, Seminar in Public Policy Analysis, Seminar in Public Organizations, and Seminar in Public Personnel Administration.
2. An optional three-to-six-credit hour internship.
3. Satisfactory completion of a four-hour comprehensive exam in the last semester of the student’s program.
4. Twelve to 15 hours for an area specialization tailored to the needs of the student, that can include courses taken outside the department.
5. Minimum 3.00 grade-point average, with only one grade of “C” allowed.

Plan C: Fire and Emergency Management.

1. A minimum of 39 credit hours in political science or closely related courses; completion of a three-hour practicum that represents the student’s creative component; and the following required courses: Readings in Public Administration, Seminar in Public Organizations, Seminar in Public Program Evaluation, Seminar in Public Management, Seminar in Public Personnel Administration, Seminar in Public Policy Analysis, Seminar in Quantitative Methods, and Seminar in Fire and Emergency Management.
2. An optional three-credit hour internship.
4. Nine hours of electives to complete degree requirements.
5. Minimum 3.00 grade-point average, with only one grade of “C” allowed.

Psychology

Associate Professor and Head
Maureen A. Sullivan, Ph.D.

The student pursuing a B.A. or B.S in psychology is provided with a background which can be of great value in dealing with the personal, social and vocational areas of his or her life. The course of study applies the scientific method to the study of the behavior of an individual and behavior between individuals. The understanding of such material can be directly related to functioning in a job or career.

A bachelor’s degree in psychology is useful in a wide number of occupations in business, education and industry. The range of positions obtained by graduates covers almost all occupations requiring direct personal contact with other people. Some examples are supervision, training, sales, public relations and interviewing. Also included are positions with city, state and federal agencies, and in applied research. Although there is no licensure or certificate to teach psychology in the schools, it is possible to get a teaching certificate or licensure in social studies education with endorsement in psychology while pursuing a major in psychology. Persons interested in such teaching should contact the Office of Teacher Education. (See “Teacher Education Programs” in the “College of Education” section of the Catalog.)

Graduate Programs

Employment in the professional field of psychology requires a graduate degree. Psychologists with advanced degrees have exclusive claim to some professional positions.

The Department of Psychology offers two programs of study leading to the degree of Doctor of Philosophy, one in clinical psychology and one in experimental psychology. Students applying for the doctoral degree should have the following prerequisites: introductory psychology, quantitative psychology, experimental psychology, history and systems. Abnormal psychology is recommended for students applying to the clinical program.
Students in the doctoral program first work toward a Master of Science degree. In addition to meeting the general requirements of the Graduate College, for completion of the Master of Science, students must also:

1. Complete two semesters of quantitative psychology along with other course credits totaling 30 credit hours.
2. Complete a thesis project, supervised and reviewed by appropriate faculty members.

Following the completion of requirements, the student may be admitted to doctoral status in clinical psychology or experimental psychology.

Religious Studies

Professor Bruce C. Crauder, Ph.D.

Courses in religious studies are a vital part of a liberal arts education. The field involves the objective study of religious belief, literature and practice around the world. Opportunity is given for serious and objective study of these aspects in relation to major religions of past and present cultures. Special attention is given to the historical bases of world religions as well as to their effect upon present-day societies, in both the East and West. Courses are offered in several world religions, biblical studies, religious thought, and religion and culture.

Courses are open to all students without regard to personal views or affiliations. No attempt is made to promote a particular view. Emphasis is placed on the academic study of religion rather than the practice of a particular form of religion. The undergraduate courses enable students to satisfy humanities requirements and also provide an excellent background for many types of graduate and professional programs.

Sociology

Associate Professor and Head Patricia A. Bell, Ph.D.

Sociology is the scientific study of human society and social behavior. As such, sociologists study a broad array of social phenomena ranging from the dynamics of social interaction to the composition and workings of entire societies.

Many different points of view are represented in the areas of expertise of the departmental faculty. The diversity of the faculty is reflected in many different types of courses offered. Topics include community organization, criminology and corrections, gerontology, social problems and deviance, environmental sociology and population studies, social psychology, industry and work, and rural sociology. The department also offers courses in anthropology, race and ethnicity, and gender issues. The department emphasizes pure research. Many undergraduate majors elect to have supervised work-related internship experiences in work settings of their choosing.

Course offerings in anthropology provide students with a basic introduction to concepts and principles of physical anthropology, archeology and cultural anthropology. Regular course offerings include an emphasis on North American Indian cultures and archaeology. Other courses deal with anthropological methods and theory.

The Department of Sociology offers B.A. and B.S. degrees in general sociology and applied sociology. The general sociology degree provides students the opportunity to obtain a strong liberal arts degree with a maximum number of elective and required courses, and provides a good base for pursuing a professional or graduate degree in sociology and in several other fields of study. The applied option provides practical experience for work in research and data analysis, the helping professions, and fields dealing with social problems.

Graduate Programs

The Department of Sociology offers the Master of Science and Doctor of Philosophy degrees. Programs are designed to prepare students for appointments to the faculties of colleges and universities, to work in private industry and in social service agencies, and for research positions in business and in government. The department offers concentrations in environmental sociology, complex organizations, deviance and criminology, and social psychology. The department also offers a Master of Science degree with special emphasis in corrections.

The department offers employment to a limited number of graduate students as teaching assistants or as research assistants. These teaching and research experiences constitute an invaluable part of the student's professional preparation.

Admission Requirements. Students seeking admission to graduate programs in sociology must be accepted by the Graduate College and the departmental graduate committee prior to official admission. A combination of several criteria are used to evaluate an applicant’s suitability for full admission to either of the programs. These include grade-point average, Graduate Record Examination scores, and letters of recommendation. Conditional or probationary admittance is considered under specified circumstances. Details on admission criteria are provided in the departmental Graduate Student Manual that can be obtained by contacting the Department of Sociology or the director of graduate programs.

Degree Requirements. The M.S. in sociology requires a minimum of 30 hours of course work. For students pursuing the Ph.D., a minimum of 90 semester credit hours beyond the baccalaureate, or 60 hours beyond the master's degree, is required. Each student is required to take nine hours of sociological theory, six hours of research methods, and nine hours of statistics. In addition to the 90 semester credit hour requirement beyond the baccalaureate degree, the doctoral candidate must satisfy either a foreign language or international studies component. Detailed information on each program is available by writing to the department and requesting a Graduate Student Manual.

Speech Communication

Associate Professor and Head Michael Stano, Ph.D., J.D.

The Department of Speech Communication affords a variety of opportunities for students who wish to become involved in the excitement of a changing world. Not only does the department offer academic subjects leading to both undergraduate and graduate degrees, but students are afforded an opportunity to gain practical experience in interpersonal and public communication.

In speech communication, students are prepared for positions in industry and business and are qualified to work with interpersonal communication problems. Graduate work in this area increases the student's career opportunities in the field of communication consulting. In addition, the department's concern with related areas, such as sociology, business and psychology, allows the admission of graduate students with undergraduate preparation in some of these fields.

Graduate Programs

Prerequisites. To enter the program, the student should have at least 24 semester credit hours of undergraduate
courses in speech communication or the equivalent.

Admission Requirements. Applicants normally should have at least a "B" grade-point average at the undergraduate level and strong recommendations from those familiar with the student’s previous academic background. Beyond that, the number of students admitted will depend on the number of places available in the program.

Program Requirements. The complexity of today’s society requires an individual capable of solving a wide range of problems. In order to meet this need, the speech communication graduate program aims at producing: (1) individuals capable of fulfilling the role of a communication consultant or interventionist within governmental, business and industrial, public service, educational and community organizations; (2) individuals capable of using methods and procedures of the behavioral sciences in investigating and solving practical as well as theoretical problems in communication; (3) individuals with the background to pursue graduate degrees in speech communication or other professional degrees; and (4) competent teachers of communication for two-year and four-year colleges as well as the common schools.

The student may earn the Master of Arts degree under one of the following plans:

Plan I-A minimum of 24 semester hours of speech communication courses and a thesis for which six credit hours is earned.

Plan I-I-A minimum of 30 semester hours, no fewer than 24 of which must be in speech communication, and a project for which two hours may be earned.

Plan III-A minimum of 36 semester hours, no fewer than 24 of which must be in speech communication, with no thesis or project.

The plan that a student chooses must be approved by the graduate faculty of the department.

Examinations. The student following Plan I must pass an oral examination over his or her thesis. The student following Plan II must pass a written and oral comprehensive examination, and an oral examination over his or her project. The student following Plan III must pass a written and oral comprehensive examination.

Statistics

Professor and Head P. Larry Claypool, Ph.D.

Statistics is the science of learning from data. It is concerned with the development of theory and with the application of that theory to the collection, analysis and interpretation of quantitative information.

Because statistics is important in many scholarly disciplines, a degree in statistics provides the opportunity to enter not only the statistics profession but also many other fields which make extensive use of statistics. The areas of application include agriculture, the biological sciences, engineering, the physical sciences, the social sciences, education, business and home economics, among others. Statistics also promises to be important in emerging endeavors such as pollution and environmental research, energy utilization and health-care administration.

Those who pursue the study of statistics should be interested in scientific inquiry and should have a good mathematical background. In addition it is desirable that they have a genuine interest in some other subject which uses statistics.

Careers in government, industry and education, involving the disciplines previously mentioned, are open to the statistics graduate. In government and industry a statistician usually serves as a researcher or as a consultant to research scientists and decision-makers. In education, of course, the teaching function is added to those of research and consultation. In almost all careers, the statistician uses the computer.

The Statistical Laboratory operates within the department to provide statistical consulting to researchers both faculty and student-across the campus.

The Department of Statistics offers the B.S. and M.S. degrees to those interested in applications of statistics, and the Ph.D. degree to those who wish to make original contributions to the theory of statistics.

Graduate Programs

Admission Requirements. It is necessary to have an undergraduate degree, not necessarily in statistics or mathematics, to begin a program of study toward the master’s degree in statistics. In some instances, it may be advantageous to have an undergraduate degree in another field. However, the student should have acquired a good mathematical background as an undergraduate. This should be equivalent to the required mathematics courses in the bachelor's program (MATH 2145, 2155, 2233, 3013, 4013). Students admitted to the program with deficiencies will be required to remedy such deficiencies.

The Master of Science Degree. The Master of Science degree in statistics may be completed by following one of the three plans listed in the "Graduate College" section of the Catalog. Normally, the all-course work plan will be initiated at the suggestion of the faculty. Each student will be required to attain an introductory knowledge of some field of application outside of statistics, mathematics and computer science. This requirement may be satisfied by having taken a three-hour graduate course in an approved field of statistical application. Each student is required to have completed COMSC 2113 or to have demonstrated competence in a procedure-oriented language such as FORTRAN.

The Doctor of Philosophy Degree. The Ph.D. requires the completion of 90 hours beyond the B.S. degree. A maximum of 30 of these credit hours may be earned by research for the dissertation. Each student will be required to attain an introductory knowledge of some field of application which may be satisfied by taking two three-hour graduate courses outside the fields of statistics, mathematics and computing. Each student is required to have completed COMSC 2113 or to have demonstrated competence in a procedure-oriented language such as FORTRAN.

Theater

Associate Professor and Head Bruce Brockman, M.F.A.

The program in theater provides course work and practical experience in all areas. The degree programs are broadly based with academic, humanistic and artistic approaches to the subject matter. Training typically involves not only the most obviously theatrical disciplines such as acting, but also extensive technical skills, literary and historical knowledge, artistic expression, and self-discipline.

Study of theater can lead to many careers besides those in the performing arts. Fields where theater study can be especially helpful include business management, sales, law, politics, teaching, counseling, ministerial professions, or any career area where self-awareness and effective personal communication are essential.
Ambitious seasons of varied productions offer practical experience for both majors and nonmajors. Students with a major interest in theater choose a Bachelor of Arts degree.

Graduate Programs

The department offers work leading to the Master of Arts degree in speech. The enrollment in the program is typically small, allowing a great deal of individual contact with faculty members and considerable latitude in developing the plan of study.

Students are trained in all aspects of the discipline with the aim of producing graduates: (1) who will be effective teachers and artists in two- and four-year colleges as well as secondary schools; (2) who are artists and/or technicians highly qualified for professional positions; or (3) who have the appropriate background to pursue further study toward M.F.A. or Ph.D. degrees.

The Master of Arts degree may be achieved in accordance with any of the three plans described in the section "Master's Degree Programs" in the "Graduate College" section of the Catalog.

A limited number of teaching and technical assistantships are available to highly qualified students. Information and application forms may be obtained from the department head.

Undergraduate credentials should be referred to the department head for evaluation to assist advisement and to determine any possible deficiencies which will affect the admission status.

Zoology

The Department of Zoology offers B.S. degree programs in biological science, physiology, wildlife and fisheries ecology, and zoology.

The degree in biological science is available for students wishing to obtain a broad program encompassing all of the life sciences. By including appropriate course work, students can obtain licensure to teach in the secondary schools. Requirements for admission to graduate school, as well as dental, medical and other health-related professional schools can be met through the biomedical option of the biological science degree.

The undergraduate degree in physiology also serves as preparation for graduate school or a medically-related professional school. The bachelor’s degree in physiology requires participation in undergraduate seminars and course work in general biology, genetics, gross and microscopic anatomy, mammalian and cellular physiology, mathematics, physics; and chemistry.

The wildlife and fisheries ecology undergraduate program involves comprehensive study in the conservation of renewable natural resources, with an emphasis on the optimum balance between wild animal populations and habitat requirements. Courses in the wildlife and fisheries program fulfill the requirements for many other applied and professional careers in wildlife ecology, including preparation for graduate programs. Undergraduates majoring in wildlife and fisheries ecology may choose a degree emphasis from communications, fisheries, management/research or wildlife management/research areas. In communications, biological training is combined with course work in journalism, social sciences and the uses of electronic media. Management/research emphases include wildlife and fisheries ecology and offers excellent preparation for graduate study.

The B.S. degree curriculum in zoology is designed to provide a background in biology with specialization in that area of zoology in which the student wishes to focus. The B.S. degree requires courses in cell biology, ecology, evolution, genetics, and vertebrate and invertebrate zoology. To become a zoologist the student must also have a good foundation in the related fields of chemistry, physics, mathematics and botany. Zoology provides a background for graduate school, and for many applied and professional careers.

Graduate Programs

Programs of Study. Programs of study leading to M.S. and Ph.D. degrees are offered in wildlife and fisheries ecology, zoology and zoology-physiology. The department emphasizes (1) wildlife and fisheries ecology and conservation, (2) aquatic and terrestrial toxicology, and (3) ecology, evolution and behavior. Specializations of faculty include animal behavior, behavioral ecology, cellular physiology, cytogenetics, developmental biology, ecology, ecotoxicology, evolution, fisheries biology, herpetology, ichthyology, limnology, mammalogy, membrane physiology, molecular systems, parasitology, physiological ecology, reproductive endocrinology, teratology, and wildlife nutrition. The department includes the Water Quality Research Laboratory and the Cooperative Fish and Wildlife Research Unit.

Teaching and research assistantships and out-of-state tuition waivers are available to qualified students. Information and application forms may be obtained from the departmental office.

Prerequisites. Applicants must have completed a baccalaureate degree including 40 semester hours in biology and related areas and have completed the Graduate Record Examination including the advanced test in biology.

The Master of Science Degree. In addition to the general Graduate College requirements, students are required to show competence in either a reading knowledge of a foreign language or a relevant research technique such as statistics, mathematics, or computer science. Students must prepare research proposals and complete either a thesis or a report. For the thesis option, 30 credit hours are required; for the report option, 32 credit hours. The plan of study must include at least two credit hours in a graduate seminar.

The Doctor of Philosophy Degree. In addition to the general Graduate College requirements, students are required to show competence in either a reading knowledge of a foreign language or relevant research technique such as statistics, mathematics, or computer science. This requirement is in addition to the competence demonstrated for the M.S. degree. The plan of study must include 60 credit hours and at least four credit hours in a graduate seminar. A student must pass written and oral examinations, prepare a research proposal, and complete a dissertation based on original research worthy of publication.
College of Business Administration

Gary L. Trennepohl, Ph.D., Dean
Gerald M. Lage, Ph.D., Associate Dean
Margaret A. White, Ph.D., Associate Dean
Julie L. Weathers, M.B.A., Director of Extension
Craig B. Robison, Ed.D., Director of Student Academic Services

Today's business world is one of excitement. It offers young men and women a challenging professional future as well as the opportunity for meaningful social involvement and civic service. A steadily increasing number of young people today are choosing careers in business as they seek to shape our nation's economic structure and deal with some of its social problems. New developments in automation, economics, and innovations in management techniques and social responsibility are constantly creating new and exciting opportunities. The College of Business Administration (CBA) at Oklahoma State University assists in preparing students for these opportunities.

The College of Business Administration seeks to accomplish three major objectives: (1) to provide students with a liberal education in a program which includes study in four general areas: behavioral and social sciences, communications, humanities and fine arts, and natural science and mathematics; (2) to provide students with an understanding of the functions of business and other economic units in the American economy; which includes study in the basic areas of accounting, economics, business law, finance, management, management in-formation systems, marketing, production and statistics; and (3) to provide students with the opportunity for specialized study in selected major areas of business.

Accreditation

The College of Business Administration at Oklahoma State University is fully accredited by the Accreditation Council of the American Assembly of Collegiate Schools of Business, the only recognized accrediting organization for schools of business at the university level.

High School Preparation

Although a sound high school program is adequate preparation, prospective business students will benefit from a strong background in English and mathematics. Also, course work in history and government, science, geography, computer science, foreign language and public speaking will be quite valuable.

Scholarships

Oklahoma State University has an extensive scholarship program for entering freshmen, and applications should be sent to the OSU Financial Aid Office by February 1 during one's senior year in high school. College of Business Administration scholarships are primarily reserved for sophomores, juniors and seniors. Scholarship awards are based on academic performance, leadership and need.

Academic Advisement and Enrollment Procedure

Freshmen will plan their study in conference with a staff adviser in the Office of Student Academic Services of the CBA.

All students should tentatively select a major during their sophomore year. Each student will then be assigned to a faculty adviser from the major field of study. Thereafter, counseling will be provided by the assigned faculty adviser.

The dean and associate dean, as well as the director of the Office of Student Academic Services, are available to all students for counseling on special problems.

Academic Programs

Undergraduate Programs. The Bachelor of Science in Business Administration degree is offered by the four departments and one school of the College. Departmental majors are listed below.

Accounting, with a major in accounting.

Economics and Legal Studies in Business, with majors in economics and an option in business economics and quantitative studies; general business; and agribusiness.

Finance, with a major in finance and an option in commercial bank management.

Management, with majors in management with an option in human resource management; management information systems; and management science and computer systems.

Marketing, with a major in marketing.

Graduate Programs. Master's Degrees. Two types of master's degrees are available to students desiring to do advanced work in the business area. One of these is the Master of Business Administration degree (which allows concentrations in management, management science and computer systems, marketing or finance) and the other is the Master of Science degree, which requires completion of a graduate major in accounting or economics. In addition, a Master of Science in telecommunications management draws on the expertise of the College of Business Administration, College of Arts and Sciences, and College of Engineering, Architecture and Technology. Only persons admitted to a graduate degree program may take graduate courses in the College of Business Administration.

Doctor of Philosophy Degree. Graduate work toward the Doctor of Philosophy degree with a major in economics is offered in the Department of Economics. Graduate work toward the Doctor of Philosophy degree with a major in business administration is offered in the departments of Finance, Management, and Marketing and the School of Accounting.
General Education Requirements

The minimum general education requirements are summarized as follows: not less than 40 semester hours, including six hours of English composition, and 34 hours in the breadth areas. These include: six hours in American history and government and six hours in each of the areas—Social and Behavioral Sciences, Humanities, and Analytical and Quantitative Thought, and four hours in the area of Natural Sciences. No more than 18 of the 34 hours meeting breadth requirements may be in disciplines directly supportive of the major.

Two other requirements include: an "International Dimension" and a "Scientific Investigation" component. These may be met in any part of the student’s program, and thus do not necessarily add to the number of hours required. The International Dimension simply requires each student to learn something about cultures and societies outside the United States. The Scientific Investigation requirement involves some kind of laboratory experience with student involvement. More detail concerning these and other requirements is found in the next section, "Lower-division Requirements."

Lower-division Requirements

Work in the freshman and sophomore years is planned in such a way as to give the student basic information in the general areas of (1) behavioral and social sciences, (2) communications, (3) humanities and fine arts, (4) natural science and mathematics, and (5) business foundation courses. In order to ensure study in each of these five areas, courses totaling up to 59 semester credit hours are required. The student may also select additional hours from courses in these areas, with the opportunity of achieving either further breadth or a certain degree of depth by concentrating these hours in a particular area of interest. As part of the student’s general education, one course must be selected that is identified as satisfying the International Dimension requirement.

During the freshman and sophomore years the student will complete courses in each of the following areas:

**Behavioral and social sciences:** American history, three semester credit hours; American government, three hours; and six hours elected from at least two of the following fields: anthropology, geography (except physical geography courses), history, political science, psychology and sociology.

**Humanities and fine arts:** Six semester credit hours elected from two different fields identified by the University as satisfying humanities (H) credit.

**Natural science and mathematics** A minimum of 10 semester credit hours with the specific number of required hours in mathematics and natural science varying with the major chosen. Specific requirements for each major are published by the University in the book *Undergraduate Programs and Requirements.*

**Communications** English composition, six semester credit hours, and introduction to public speaking, three hours.

**Pre-business core:** For business students, a minimum GPA of 2.00 in the following 30-hour pre-business core is prerequisite for MGMT 3013, MSIS 3223, MKTG 3213 and FIN 3113; ENGL 1113 and 1213; ACCTG 2103 and 2203; ECON 2013 and 2023; MATH 1483 or 1513; MSIS 2103; STAT 2023; and SPCH 2713. For non-business students, the University prerequisite for upper-division courses applies. (See “Academic Regulations” elsewhere in the Catalog.)

**General electives:** In addition the student may elect courses from any area except lower-division aerospace studies and military science and HPEL activity courses to complete lower-division requirements.

Credits earned during the freshman and sophomore years in another institution may not be substituted for junior and senior course requirements in majors in the College of Business Administration.

School of Accounting

Professor and Head Lanny G. Chasteen, Ph.D., CPA

The School of Accounting offers three degree programs in accounting: (1) B.S. in Business Administration with a major in accounting, (2) M.S. in accounting, and (3) Ph.D. in business administration with emphasis in accounting.

The common objective of the B.S. and M.S. accounting programs is to educate students to commence and continue to develop in a wide range of professional accounting careers. The specific objective of the B.S. in accounting program is to provide candidates with a greater breadth and depth in accounting than is possible in the B.S. program, in order to prepare graduates for careers as professional accountants in financial institutions, industry, nonbusiness organizations, and public practice.

Students who are considering a professional accounting career should have above-average aptitudes in mathematics and English, disciplined work habits, an interest in working with people and an attitude of service.

The B.S. in accounting, including an auditing course, is acceptable in lieu of three years of required public accounting experience required before a candidate may take the Oklahoma Certified Public Accountants’ Examination. The M.S. in accounting earned at Oklahoma State University satisfies educational requirements for C.P.A. candidates in all jurisdictions of the United States.

Considerable electives are available in both degree programs. Specialization in systems/auditing, financial reporting, or tax is possible in the M.S. in accounting program.
Candidates for either of these degrees are encouraged to select some electives in quantitative and behavioral science areas.

Graduate Programs

The Master of Science Degree. The specific objectives of the M.S. in accounting are to provide candidates with a greater breadth and depth than is possible in the B.S. program, in order to prepare graduates for careers as professional accountants in financial institutions, industry, nonbusiness organizations, and public practice, and to develop judgmental ability in accounting and related areas. Advanced courses provide a theoretical base for insight into significant problems confronting the accounting profession. In addition, a specialty in taxation is available for interested candidates. The candidate receives assistance from the faculty in selecting a pattern of courses designed to prepare the student according to the chosen professional goals.

Graduates of recognized colleges and universities whose records indicate adequate intellectual capacity and desirable personal characteristics may qualify for admission. The typical applicant admitted to the program has a GMAT score of 525 or above and an undergraduate grade-point average of 3.25 or above.

Prerequisites. The following are required: 24 semester hours of advanced accounting; six semester hours of business law; business calculus; three semester hours each in finance, management, marketing, production, quantitative analysis, business policy, intermediate microeconomics; and six semester hours in statistics. As many as eight semester hours of course deficiencies may be removed within the 32 semester hours required for the degree.

The Doctor of Philosophy Degree. The Ph.D. in the College of Business Administration with a major in accounting emphasizes flexibility to meet the particular needs and objectives of individual candidates. The program is designed to provide the highest degree of preparation for the individual student, enabling the student to make significant professional contributions in research, teaching, or in business or government positions.

Graduates of recognized colleges and universities whose records indicate adequate intellectual capacity and desirable personal characteristics may qualify if they have a good academic record and achieve satisfactory scores on the GMAT. Admission is competitive.

The Ph.D. program is designed so that a candidate may, at his or her option, specialize in one of the following accounting areas: auditing, managerial accounting, financial accounting systems, or taxation. All candidates are required to take a series of seminars that provide an overview of relevant academic literature. These seminars are restricted to Ph.D. candidates. Two minor areas, one of which may be outside the College of Business Administration, are required, in addition to competence in economics and quantitative analysis. The candidate's advisory committee is responsible for assisting in the development of a plan of study encompassing the above areas. Students in residence are required to do teaching or research on a quarter-time basis while earning the degree.

Business Administration

M.B.A. Program Director Raj Basu, Ph.D.
M.S.T.M. Program Director Rick Wilson, Ph.D.

Graduate Programs

The Master of Business Administration Degree. The Master of Business Administration program provides graduate professional education for individuals preparing for administrative careers in either the private or public sector. It is a comprehensive, yet flexible program providing the knowledge and analytical tools to cope with the complexities of management within diverse environments.

The program develops fundamental knowledge in the areas of accounting, finance, information systems, management, marketing and economics. Further, it provides critical analytical and research capabilities through research design and computer-based decision courses. The program is a 50-hour, self-contained program. The length of the program for a full-time student is normally two years, but the degree may be earned in less time by attendance in summer session courses. Degree requirements may be reduced by a maximum of nine credit hours. To be eligible for this waiver, students must have earned a baccalaureate degree in business administration at an AACSB-accredited institution.

The individual course of study follows a personalized, interdepartmental curriculum developed in conjunction with the graduate adviser. Students may use elective courses either to continue broad managerial development or to emphasize studies in a functional area (finance, management, marketing or management science and information systems).

Outstanding students with baccalaureate degrees in any field of study may apply. All individuals admitted to the program are required to demonstrate proficiency in applied calculus and personal computer usage. The M.B.A. is an advanced studies program that assumes a fair degree of sophistication in mathematics, statistics, and computer technology.

Admission is granted to those students whose potential for successful graduate study is clearly indicated by the undergraduate grade-point average, the score on the Graduate Management Admissions Test, letters of recommendation from three sources, past work experience, extracurricular and community activities, and stated career goals.

The Master of Science in Telecommunications Management Degree. In response to industry's need for skilled and knowledgeable telecommunication management graduates, Oklahoma State University offers a Master of Science degree in telecommunications management. This program is offered not only through traditional means to on-campus students but also via distance learning technologies to students at remote locations.

The program is currently housed in the College of Business Administration. However, the telecommunications management program draws on the combined expertise of three OSU colleges—the College of Arts and Sciences, the College of Business Administration, and the College of Engineering, Architecture and Technology. As a result the telecommunications management student will have a traditional home department to achieve a depth of knowledge in one discipline, while developing broad knowledge in business, technical and communication disciplines.

This program prepares graduates for managing the telecommunications technologies as well as managing in a competitive environment with telecommunications systems. The graduates of this program are likely to be employed by providers or users of telecommunications technologies.

Telecommunications Management Curriculum. The program curriculum consists of a minimum of 35 credit hours, including seven core courses, one laboratory, one practicum, and three electives. Students may choose either a part-time or full-time sequence. Full-time students can complete the
Students may choose electives from one of two tracks. Track I is the technical track consisting of computer science, electrical engineering, or management science and information systems courses. Track II is the management/management information systems/management science track.

**Admission Requirements.** Qualified graduates of colleges and universities of recognized standards are eligible to seek admission to the OSU Graduate College. Applicants must submit the completed application form to the Graduate College with official transcripts of all academic work and degrees received.

In addition to the OSU Graduate College's standard requirements, the telecommunications management program admissions committee will consider students' letters of recommendation, GMAT or GRE scores, previous academic performance, and telecommunications experience.

Information about the program is available on the World Wide Web (http://www.mstm.okstate.edu).

**The Doctor of Philosophy Degree.** The Ph.D. in business administration is an interdepartmental program in the College of Business Administration. The degree emphasizes flexibility to meet the particular needs and objectives of individual candidates. The program is designed to provide the highest degree of preparation for the individual student, enabling him or her to make significant professional contributions in research, teaching, or in business or governmental positions.

**Requirements.** Students select one major area of study from either accounting, finance, management/management information systems/management science or marketing, and two minor areas. The dissertation is usually written in the student's major area. One of the minor areas must be taken in the College of Business Administration. The second minor may be taken from another department within the College of Business Administration or from a department outside the CBA.

All candidates for the Ph.D. degree in business administration are expected to have a basic competence in all the major functional areas of business administration-accounting, economics, finance, management/management information systems/management science and marketing. In addition, basic competence is expected in finite mathematics, calculus and statistics. Students who possess a recent master's degree in business from a program accredited by the Accreditation Council of the American Assembly of Collegiate Schools of Business will generally have satisfied most of the basic competence requirements in these areas.

**Administration.** The program is administered by the dean of the Graduate College and the department in which the student enrolls with the assistance of a faculty advisory committee.

**Major and Minor Areas.** The candidate's advisory committee is responsible for assisting in the development of a plan of study that assures competence in the major and minor areas and in economics and quantitative analysis. All Ph.D. students in residence are required to do teaching or research on a quarter-time basis, for at least one semester, while earning the degree.

**Economics and Legal Studies in Business**

Professor and Head Joseph M. Jadlow, Ph.D.

Economics is a science of choice. The study of economics centers around individuals' attempts to improve their living standards. It provides a comprehensive view of how a society is organized to transform the limited resources available into want-satisfying goods and services. It investigates the principles underlying the operation of the economic system, and seeks to determine its weaknesses and to prescribe policy measures that will improve its operation. In the process it ranges over a host of the most important problems confronting contemporary society-the causes of and remedies for depression and inflation, the determinants of and methods for improving income distribution, poverty problems and welfare measures, the role of the government in economic activity, the requisites for economic growth and development, pollution and congestion, and their control.

The primary objectives sought in the undergraduate curriculum are to develop a broad understanding and perspective of the economic aspects of people's activities, coupled with thorough training in the fundamental tools of economic analyses. Toward these ends, the development of elementary mathematical and statistical skills is highly desirable, as is complementary study in the social and behavioral sciences, accounting and business administration.

A major in economics prepares students for positions with business firms, nonprofit private organizations and government agencies-both national and international. It provides an excellent background for the study of law and international relations. It qualifies competent students to undertake the graduate work necessary for professional positions in economic research and college or university teaching. A degree option in business economics and quantitative studies is offered to provide additional training in analytical methods and communication skill for both public and private sector occupations.

**General Business**

The general business program gives students a broad, comprehensive type of business education preparing them to enter employment in a wide range of administrative positions in private business, government, or nonprofit organizations. The scope of their educational experience enables these graduates to assume management positions in organizations of varying sizes and ranges of operations.

Students majoring in general business will take general education or foundation course work in behavioral and social sciences, communications, humanities and fine arts, natural science, mathematics, and statistics, as well as business foundation courses in accounting, business communications, business law, economics, finance, management information systems, management, and marketing.

This major, which provides for a high degree of individual student choice, includes required upper-division course work beyond the business core in each of the business disciplines as well as substantial work in business or business-related courses, selected by the student in consultation with his or her major adviser.

**Agribusiness**

The major in agribusiness is offered in cooperation with the Department of Agricultural Economics. Students pursuing this major may obtain a Bachelor of Science in Agriculture or Business Administration. Typically, a graduate of this program would be prepared for employment in the food industry by organizations involved in the production, processing, distribution, marketing, transportion, research, or supplying of food, food products, or input for the production or processing of food products for human or animal consumption.
The student will take regular general education course work as well as foundation courses in agriculture and business administration. Additional upper-division course work in agricultural economics and business will be selected by the student in consultation with his or her major adviser.

Graduate Programs

The department offers work leading to the Master of Science degree and the Doctor of Philosophy degree. The graduate program in economics prepares economists for academic careers as well as research and administrative positions in business and government agencies.

Graduate fields of specialization include monetary economics, public finance, international economics, economic development, econometrics, labor and human resource economics, industrial organization, and urban and regional economics. In addition, graduate courses are offered in the history of economic thought and in mathematical economics.

The initial admission to a graduate program is determined by an elected graduate studies committee on the basis of the applicant's previous academic record; verbal, quantitative and analytical scores of the Graduate Record Examination; and letters of recommendation.

The Master of Science Degree. Admission to the master's program in economics is granted to college graduates with superior academic records whose preparation has been broad and thorough. They need not have majored in economics as undergraduates but must be well grounded in economic fundamentals. A good background in one or more such fields as history, philosophy, mathematics, statistics, political science, English, sociology, accounting, finance, psychology, or management is particularly helpful to the graduate student in economics. An applicant whose prior preparation is deficient in some respect, may, if otherwise qualified, be admitted to the program but will be required to remove the deficiency, increasing somewhat the time needed to complete work for the degree.

Each graduate student is guided in the preparation of a program of study by a graduate studies committee. At the master's level there are two options. One option provides the student with a well-rounded program that avoids premature specialization in some particular area of economics. The candidate for the master's degree is required to show competence in basic economic theory and statistical methods, together with an understanding of the fundamental institutional operations of the United States economy. The second option is in applied economics which stresses communication skills, quantitative analysis and course work from other disciplines related to their career objectives.

Each program contains enough electives to permit considerable choice among areas of emphasis. A research report or thesis is required of all students who take only the M.S. degree. Those accepted for the Ph.D. program have the option of applying for and receiving the M.S. degree without the research report upon successful completion of the Ph.D. qualifying examination and the filing of an approved Ph.D. thesis topic with the Graduate College. A foreign language is not required.

The Doctor of Philosophy Degree. Admission to the doctoral program in economics is granted to college graduates who have satisfactorily completed at least one year of graduate work in economics and who have superior academic records.

This program stresses balanced preparation in economic theory and in mathematics and statistics, as well as competence in subject-area fields of specialization. The student is required to pass qualifying examinations in the theory core and in one field of specialization. (The theory core is not considered a field of specialization.) Competence must be demonstrated in second and third fields of specialization, either through course work or by passing a qualifying examination in each field. An advisory committee helps the student plan a program of study to achieve these objectives. A foreign language is not required.

A dissertation based upon original research is required of the candidate for a Ph.D. degree in economics. A final oral examination deals principally with the dissertation and fields to which it is most closely related.

Finance

Associate Professor and Head Janice W. Jadlow, Ph.D.

There are financial implications in virtually all organizational decisions, whether the organization is a business firm, a nonprofit organization, or a government. Thus, financial executives are of central importance to overall planning and control, and nonprofit executives must know enough finance to work the financial implications into their areas of expertise. The increasing importance of finance for any organization has accompanied the evolution of the field of finance itself.

Finance has evolved since the early 1900s from a descriptive to an analytical discipline recognized as a genuine science. Finance builds on economic theory to focus on both sides of the organization's balance sheet, asset analysis and the optimal mix of liabilities and equity, including the implications of investor portfolio theory for the firm. Finance consists of three interrelated core areas: financial markets and institutions, investments and portfolio theory, and managerial (business) finance. Other topics interwoven within these core areas include international finance, futures and options, bank management, insurance, real estate, and personal finance. Recent issues of emphasis include deregulation of financial institutions, the implications of telecommunications on financial information and decisions, innovative methods of financing long-term investments, and the influence of inflation on interest rates.

The primary objective of the undergraduate finance curriculum is to develop a broad understanding of the financial aspects of the activities and decisions and to provide thorough training in the fundamental tools of financial analysis. Toward these ends, the study of finance is complemented with the development of elementary mathematical and statistical skills and with study in economics, accounting, and business administration. The major in finance is intended to prepare students for positions with a wide variety of organizations that require special understanding of financial analysis, financial management and financial systems.

Finance majors entering the corporate world may begin in one of several positions. A career in financial management can lead to a major executive position, including chief executive officer. The positions within managerial finance include capital budgeting analyst, daily cash manager, credit analyst, financial analyst (who works closely with accountants), and property manager.

Alternatively, finance majors may choose to enter the financial services industries. Career possibilities include: the banking industry as a loan officer, retail bank manager, or a member of the trust department; the securities industry as a stockbroker or account executive, a securities analyst, investment banker, or financial planner; and the insurance industry as an agent or underwriter.
Graduate Programs

Concentrations in finance are offered through the Master of Business Administration and Doctor of Philosophy degrees.

The Master of Business Administration Degree. (See "Business Administration.")

The Doctor of Philosophy Degree. A Ph.D. in business administration with concentration in finance prepares the student for careers in academia, business or government.

The program is designed to meet the needs and objectives of individual students, but all students will seek an in-depth understanding of the theoretical foundations of financial economics and develop research competency, and will develop teaching skills. The small class size provides a supportive environment conducive to the exchange of ideas and the development of new insights by both faculty and students.

Students will select finance as their major area of study. Two areas of concentration are also to be selected. As support for the major field of study, each student is required to attain graduate level competence in economic theory and quantitative methods.

Prerequisites for admission to the program are appropriate basic courses in calculus, statistics and computer science.

Competence in planning and executing research is demonstrated by a dissertation. In addition, each candidate must pass comprehensive qualifying examinations and a final oral examination on the dissertation itself.

Outstanding students with degrees in any field of study may apply. Applications for admission are evaluated on the basis of (1) undergraduate and graduate grade-point averages, (2) score on the Graduate Management Admissions Test, (3) a two- or three-page statement describing goals and academic interests, (4) three letters of recommendation, (5) evidence of research potential, and (6) a personal interview when feasible. It is the applicant's responsibility to see that all materials related to these criteria are received by the Department of Finance.

Management

Professor and Head Wayne A. Meinhart, Ph.D.

The majority of accomplishments in contemporary society are created through organization and group effort.

Whether the goals are to realize success in business or solve the pressing problems of society, organizational systems must be effectively managed in order to maximize the probability of success.

As an area of study, the field of management offers dynamic, exciting possibilities to students interested in business careers, careers with complex nonbusiness organizations, and to students who seek the challenge of working on relevant, real-world problems. The field of management is concerned with the analytical process and the application of relevant theory and research to creative business problem solving. Examples of such challenges include designing organizational systems leadership; motivating people; planning courses of action; and efficiently allocating and utilizing resources. Since people in the field of management deal with real-world problems, the student should have a deep interest in applying knowledge in problem-solving situations. Examples of the kinds of knowledge applied include, but are not limited to, behavioral science, economics, mathematics and statistics, management information systems, communications skills, accounting, and necessary knowledge of theory and methods in management and management science. It is not necessary for students to have interests in each of these areas since the field offers substantial opportunities for specialization.

The curriculum for the bachelor's degree requires of all students a common foundation of work in the disciplines listed above. Students are then guided into advanced work in these areas and in their applications of courses in management, management science, and management information systems. Four degree programs are available for choice based upon the student's interest in specialized work. Each program emphasizes the knowledge bases and applications that will be useful in a rapidly changing world.

Human Resource Management

The option in human resource management is designed to prepare students for careers in personnel and human resource management. Anything that concerns the work force of an organization is the concern of the personnel manager. This includes working with labor relations and collective bargaining, forecasting the demand for personnel, attracting potential employees, orienting them and then developing the careers of those employed. For those who enjoy working with both data and people, a career in personnel management offers many opportunities and the chance for personal growth and development.

Management Information Systems

The major in management information systems (MIS) prepares students for work in information systems development and operation. Both applications of computer systems technology and understanding of data and information flows among the functional areas of business are emphasized. The continuing integration of the computer in all aspects of business and the critical need for responsive management information systems has created a strong demand for graduates who are knowledgeable about both information systems and business. The first two years of study involve the study of mathematics, statistics, and computer science as well as English, accounting, economics, psychology and other courses designed to develop a broad educational background. The junior and senior years focus on aspects of information systems and computer technology including programming languages, data base management, artificial intelligence, systems analysis, data communication systems, and management science methods. Coverage of functional areas prepares MIS graduates to understand the information needs of complex business organizations for which information systems are developed.

Management Science and Computer Systems

The major in management science and computer systems is designed to prepare students for careers as staff managers in complex businesses or nonprofit organizations. There is a high demand for persons with advanced quantitative and computer competency with a knowledge of business systems.
Many students have a special interest in building concentrations in management systems and computer science. The management science and computer systems program is ideal for this purpose. Examples of topics covered include managerial decision theory, operations research, systems analysis, management information systems, and operations research. The study of management science and computer systems may be combined with advanced work in related disciplines for those with appropriate interests. Management science and computer systems majors typically enter business or public organizations as management systems analysts, computer systems analysts, or management trainees. Many also undertake graduate study to further their professional education.

Graduate Programs

The Department of Management offers work leading to the Master of Business Administration and "the Doctor of Philosophy in business administration degrees.

The Master of Business Administration Degree. (See "Business Administration.")

The Master of Science in Telecommunications Management Degree. The interdisciplinary MS. in telecommunications management degree is also currently housed in the Department of Management. This program prepares graduates for managing the telecommunications technologies as well as managing in a competitive environment with telecommunications systems. The graduates of this program are likely to be employed by providers or users of telecommunications technologies.

Information about the program is available on the World Wide Web (http://www.mstm.okstate.edu).

The Doctor of Philosophy Degree. The Ph.D. in business administration program through the Department of Management provides intensive study in management, management science and management information systems. It prepares the student for significant professional contributions in university teaching and research, or staff positions in business or government.

The program is quite flexible and individually structured to meet the needs and objectives of each candidate. Emphasis is placed on an astute understanding of analytical and theoretical foundations of the business environment and development of research capabilities in the area.

The student will select as his or her major area management/management science. Two minor areas are also to be selected. One of the minor areas must be taken in the College of Business Administration from the fields of accounting, economics, finance, or marketing. The second minor area may or may not be taken outside the College of Business Administration. As support for the major and minor fields of study, each student is required to attain graduate level competence in economic theory and quantitative methods.

As prerequisite to the program, all candidates are to have completed appropriate basic courses in calculus and statistics. Likewise, candidates are expected to have a basic competence in the major functional areas of business—accounting, finance, management, and marketing. Competence in the functional areas is usually assumed for candidates having recently completed an appropriate graduate course in each area through a program accredited by the American Assembly of Collegiate Schools of Business.

In planning and executing research must be demonstrated in a dissertation. In addition, each candidate must pass a series of comprehensive qualifying examinations, both written and oral, and a separate, final oral examination on the dissertation itself. To enhance teaching skills, all Ph.D. students in residence are required to teach on a quarter- or half-time basis for at least one semester while earning the degree.

Outstanding students with master's degrees in any field of study may apply. The application for admission to the program is evaluated on the basis of (1) undergraduate and graduate grade-point averages, (2) the score on the Graduate Management Admissions Test, (3) a two- or three-page statement describing goals and academic interests, (4) three letters of recommendation, (5) evidence of research potential, and (6) a personal interview when feasible. It is the responsibility of each applicant to ensure that all material related to the above criteria is received by the department.

Marketing

Professor and Head Joshua L. Wiener, Ph.D.

Marketing is an exciting field of study in which a wide variety of job opportunities exist. It is also an excellent foundation study for eventual movement to top management within an organization.

Marketing is concerned with the identification of wants and needs by consumers and the development of products, distribution channels, price and communication methods to best satisfy those wants and needs. Our economic system is dependent on the ability of organizations to match resources with needs. As such, firms become more marketing-oriented every year.

A marketing graduate will likely be involved in performance and management of many different traditional areas of decision-making—sales, advertising, logistics and marketing research. In addition, one will frequently assist in product planning, developing marketing information systems, and general management.

The effective marketing executive today must develop a perspective and capability that reflect a four-dimensional program of study: (1) a liberal education in the sciences, humanities, behavioral and social sciences, mathematics and communications; (2) an adequate knowledge of the major functional areas of business; (3) a high-level competency in marketing; and (4) study in a supportive field. Liberal education is emphasized during the freshman and sophomore years. The study of the functional areas of business begins in the sophomore year and continues into the junior year. During the junior and senior years, the focus is on marketing. In addition to the introductory course, which provides an overview of the field of marketing, the student will take courses in consumer behavior, promotion, sales management, marketing research, channels and marketing policy. While studying marketing, one typically selects courses in fields such as management, finance, statistics, advertising/public relations, international business, and other fields to support a particular career choice within the marketing field.

Graduate Programs

The Department of Marketing offers work leading to the Master of Business Administration and the Doctor of Philosophy in business administration degrees.

The Master of Business Administration Degree. (See "Business Administration.")

The Doctor of Philosophy Degree. The Ph.D. in business administration program through the Department of Marketing provides intensive study in marketing. It prepares the student for significant professional contributions in university teaching and research, or staff positions in business or government.

The program is quite flexible and individually structured to meet the needs and objectives of each candidate. The program is designed to create scholars and researchers in the field of marketing. Highly student oriented, the program focuses on training individuals in current marketing theory and research.
techniques. Collaboration between students and faculty is strongly encouraged.  

Program Content. The student will take 15 hours of Ph.D. seminars in marketing. The student must also complete a nine-hour minor in another discipline, such as economics, management, sociology or psychology. As support for the major and minor fields of study, extensive course work (normally 18 credit hours) in the area of quantitative/research methodology is required. In addition, each student must attain graduate level competence in economic theory.

Each candidate must pass a series of written comprehensive qualifying examinations that address knowledge in the major and minor fields. An oral examination will be held on the dissertation itself. To enhance teaching skills, all Ph.D. students who plan to teach in the United States are required to teach on a quarter- or half-time basis for at least one semester while earning the degree.

As prerequisites to the program, all candidates are to have completed appropriate basic courses in calculus and statistics. Likewise, candidates are expected to have a basic competence in the major functional areas of business—accounting, finance, operations management, organizational theory, economics, and marketing. Competence in the functional areas is usually assumed for candidates having recently completed an appropriate graduate course in each area in an M.B.A. program accredited by the American Assembly of Collegiate Schools of Business.

Application Procedure. Outstanding undergraduate or graduate students from any field of study may apply. For those with an M.B.A., the program will normally consist of two years of course work and two years of dissertation work. For those without a master's degree, the plan of study for the Ph.D. degree will typically allow for the granting of an M.B.A. prior to completion of the Ph.D. degree. Applications for admission to the program are evaluated on the basis of (1) undergraduate and graduate grade-point averages, (2) the score on the Graduate Management Admissions Test or Graduate Record Examination, (3) a two- or three-page statement describing goals and academic interests, (4) three letters of recommendations, (5) evidence of research potential, and (6) a personal interview when feasible. It is the responsibility of each applicant to ensure that all material related to the above criteria is received by the Department of Marketing. Application forms and detailed explanation of the Ph.D. degree in business administration with an emphasis in marketing are available through the department.
College of Education

Ann C. Candler Lotven, Ed.D., Dean and Director of Professional Education
Ed Harris, Ph.D., Associate Dean for Administrative Affairs and Director of Research and Extension
Lowell Caneday, Ph.D., Associate Dean for Graduate Studies
Kouider Mokhtari, Ph.D., Interim Associate Dean for Undergraduate Studies

The College of Education includes the schools of Applied Health and Educational Psychology, Curriculum and Educational Leadership, and Educational Studies. The College offers a wide range of undergraduate and graduate programs to prepare individuals for careers in teaching, administration or research in the professional field of education either in the common schools or in institutions of higher education. Additionally, programs in adult education and technical education prepare individuals for careers as human resource development specialists in business, industry and agency settings. There are a variety of degrees within the College at the bachelor’s, master’s, specialist and doctor’s levels that prepare individuals for productive lives in the global community (see the “Degrees Offered” section of the Catalog). The Office of Extension within the College of Education concentrates its efforts on fulfilling the College’s commitment of the land grant university to inform and educate the citizens of Oklahoma. In order to better serve the citizens, the office offers diverse programs through video conferences, weekend and evening courses for staff development, credit and noncredit courses, and conferences. These formats allow undergraduate, graduate, and other constituents to come together to discuss pertinent issues related to such topics as public schooling, higher education, parental involvement, health, human performance, and leisure behavior, aeronautics, aviation education and space sciences. The office offers ACT preparation workshops for high school students and the Summer Reading Fun Club for area school children. The School of Curriculum and Educational Leadership offers a master’s degree through education extension by compressed video.

Accreditation
In the College of Education, the aviation programs are accredited by the Federal Aviation Administration, the only nationally-recognized accrediting body for programs in aviation. OSU was the first university in Oklahoma with a program receiving this designation. The counseling psychology program is accredited by the American Psychological Association. The leisure studies program is accredited by the National Recreation and Park Association, and the American Association for Leisure and Recreation with options in leisure service management and therapeutic recreation. All professional education programs are accredited by the Oklahoma State Board of Education and the North Central Association of Colleges and Secondary Schools. Business education, as well as technical and industrial education professional education programs, are also accredited by the Oklahoma State Department of Vocational-Technical Education.

Statement on Diversity. The college of Education is committed to the promotion and affirmation of diversity in the broadest sense. This commitment is consistent with the ethical principles of the various professions represented in the College. These principles place a high value on the dignity and worth of individuals regardless of their gender, race, ethnicity, sexual/affectional orientation, age, physical abilities, religious beliefs, and socio-economic class. Appreciation of the value of diversity also extends to diversity of thought and perspective. Faculty make every effort to promote an atmosphere of respect and trust in which individuals feel free to explore, discuss and express their beliefs with one another.

Admission Requirements
Freshman students are admitted to the College of Education consistent with criteria published for admission to the University. For continuing enrollment in good standing, the College of Education requires a minimum of a 2.50 GPA for admission to Professional Education, student teaching, and graduation. This requirement is consistent with state standards for students in the state of Oklahoma who complete professional education programs and seek licensure.

Criteria for students wishing to transfer into the College of Education include a required minimum grade-point average based on the University graduation and retention grade-point average policy.

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<th>Total hours attempted</th>
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<td>over 45</td>
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Requests from students seeking readmission after having been placed under probation/suspension should be submitted to the Office of Student Academic Services in the College of Education and will be reviewed by the director of Student Academic Services prior to readmission.

All student grades are reviewed at the end of each semester to determine whether appropriate academic progress is being made.

High School Preparation
Students are expected to satisfy the high school curriculum requirements as determined by the Oklahoma State Regents for Higher Education. It is recommended that the student be involved in clubs and organizations as well as have had some experiences working with children and youth, depending on the chosen field.
For graduation with recommendation for Licensure/Certification, the following minimum GPAs are required: (1) a 2.50 overall GPA; (2) a 2.50 GPA in the Major Requirements; (3) a 2.50 GPA in Professional Core Requirements; and (4) where noted, a 2.50 GPA in the College/Departmental Requirements. The student must earn minimum grades of "C" or "P" in each course in the Major Requirements, the Professional Core Requirements, and where noted, the College/Departmental Requirements. The student must earn grades of "P" in all sections of observation (lab and clinical experience) courses and student teaching for recommendation for Licensure/Certification.

Scholarships

The College of Education offers a variety of scholarships for undergraduate and graduate students. The following are scholarships offered by the College of Education:

- Ray E. Brown Memorial Scholarship
- College of Education Alumni Association Centennial Scholarship
- College of Education Alumni Association Freshman Scholarship
- College of Education Alumni Association Minority Scholarship
- College of Education Alumni Association 21st Century Scholarship
- College of Education Special Leadership Award
- Valerie Colvin Scholarship
- Gretchen Lynnette Cumberledge Air Traffic Control Association Scholarship
- Rachel Dotson Scholarship
- Larcisha Diane Stephens Earl's Memorial Scholarship
- Education Student Council Scholarship
- Charles A. "Adam" Esslinger Outdoor Recreation Scholarship
- Future Teachers Scholarship
- Aix B. Harrison Scholarship
- Ora A. Henderson Memorial Scholarship
- Daniel and Mary L. Herd Memorial Scholarship
- J. Andrew Holley Memorial Scholarship
- Arlene Starwall Jeskey Scholarship Fund in Math Education
- Helen M. Jones Scholarship
- Henry S. Jordan Humanitarian Scholarship
- Richard and Edna Jungers Scholarship
- Robert B. Kamm Distinguished Graduate Fellowship Fund
- Kappa Delta Pi Scholarship
- Knaub Family Endowed Scholarship
- Locke, Wright, Foster, and Cross Graduate Scholarship
- Mable Marietta Macy-Oaks Memorial Atl Scholarship
- Leon L. Munson Memorial Scholarship
- Percy W. Oaks, Sr. Memorial Art Scholarship
- Outstanding Freshman Aviation Education Student
- James L. Prince Memorial Scholarship
- Wendell Sharpton Family Scholarship
- Helmer and Frances Sorenson Scholarship
- J. Kenneth St. Clair Sorenson Scholarship
- Amy Louise Wagner Memorial Scholarship
- Hoyt E. Walkup Scholarship
- Kim R. Watson Endowed Scholarship
- Loyd L. Wiggins Scholarship
- Xerox Corporation Scholarship

In addition to these scholarships, Oklahoma State University is allocated, on an annual basis, a large number of Oklahoma State Regents for Higher Education scholarships. These scholarships are available in teaching fields identified by the Oklahoma State Board of Education as critical shortage areas and are only available to Oklahoma residents attending or desiring to attend OSU.

Privately funded scholarships are also available. Information concerning these scholarships may be obtained through the office of the appropriate department head.

Academic Advising

Academic advisement for undergraduate students is coordinated through the Office of Student Academic Services, located in 106 Willard, in the College of Education. Students are assigned to a particular academic adviser in the Office of Student Services or to the faculty in the academic departments, depending on the student's declared major. Faculty academic advisers are nominated by their department heads and appointed by the dean of the College. Academic advisers may confer with their advisees on such matters as vocational counseling, course selection, academic problems, long-range professional goals, and semester by semester enrollment.

Special Academic Programs

Bachelor of University Studies. The College of Education utilizes the Bachelor of University Studies degree program along with the other colleges in the University. Unique career objectives of non-traditional students may be met by working with academic advisers selecting a specially tailored program that ultimately leads to a degree.

Applied Educational Studies. The applied educational studies, Ed.D., is an interdisciplinary, cross-departmental degree program, coordinated by the Office of the Dean of the College of Education, to combine the traditional priority of preparing leaders in education with the nontraditional degree needs related to education.

The research core may include a combination of two or more course work areas offered by the schools of Applied Health and Educational Psychology, Curriculum and Educational Leadership, and Educational Studies.

Students interested in such an interdisciplinary degree should contact a school within the college for information on degree requirements and the application process.

Tutoring Program. The Reading and Math Learning Center within the School of Curriculum and Educational Leadership offers elementary education undergraduate and graduate students a faculty-supervised opportunity to tutor school-age children interested in improving their reading and math skills.

OSU-Frontier Alliance. OSU-Frontier Alliance, initiated in 1990, provides OSU professional education students the opportunity to be involved in a joint institutional effort designed as a proactive approach for meeting the needs of students and teachers in a culturally diverse environment. This alliance allows OSU to have a continuing collaboration with the Native American tribal community and the Frontier School District.

Professional Development Conferences. Professional education students and alumni are encouraged to attend the annual Oklahoma Teacher of the Year (OKTOY) organization conference held on the OSU campus. The College of Education is the official home of the Oklahoma Teacher of the Year organization. The membership of the OKTOY organization is made up of winners of the annual Oklahoma Teacher of the Year competition. The goals of the organization are to attract academically talented high school youth to the teaching profession; to retain undergraduate students currently enrolled in education programs; to feature the skills, talents, and expertise of Oklahoma's finest educators; to create student/teacher mentor relationships; and to establish a cadre of educators as a resource for research on improved instruction and academic excellence.

Graduation Check. The College of Education Office of Student Academic Ser-
services prepares a graduation check that indicates the undergraduate's status for completion of degree requirements. For those students in Professional Education, licensure as a teacher is included in the graduation check. Undergraduates may request through their academic advisers that the graduation check be completed.

Job Placement. An employment service is provided for College of Education students and coordinated through the Office of Career Services. It assists students in signing up for interviews with in-state and out-of-state employers. Opportunities with school districts and other employers not recruiting on campus are maintained at all times. Resources that are available to assist the student seeking employment include resume information, interviewing tips and placement annuals. Registration with Career Services affords students the opportunity to participate in several placement days held on campus and to access the office's referral service to employers.

Alumni Association. The College of Education Alumni Association complements the cooperative efforts of Career Services to assist a student during college preparation for a career in education. The organization provides students a professional support organization and an immediate network of professional contacts. Four scholarships are provided by the Alumni Association for students in the College of Education. Graduates attending the college convocation receive an invitation for a one-year complimentary membership to the College of Education Alumni Association.

General Education Requirements
All undergraduate degrees in the College of Education require a minimum of 40 semester hours in general education that includes the following: communication skills, mathematics, United States history and government, science, behavioral studies, arts and humanities, and electives. All degrees are consistent with the current University General Education requirements and the Oklahoma State Board of Education standards.

Departmental Clubs and Honor Societies
American Association of Airport Executives
Education Student Council
Elementary Educators of Tomorrow
Flying Aggies
Health Promotion Club
Kappa Delta Pi (education honor society)
Leisure Club

Multicultural Educators of Tomorrow
Phi Epsilon Kappa (health, physical education, leisure honor society)
Physical Education Club
Student Art Education Association
Student Council for Exceptional Children
Student Education Association

School of Applied Health and Educational Psychology
Associate Professor and Head Jerry Joe Jordan, Ph.D.

The School of Applied Health and Educational Psychology is a multi-faceted organizational unit encompassing undergraduate and graduate academic programs in health promotion, physical education, leisure studies, counseling, counseling psychology, educational psychology, school psychology, and gifted and talented program in education. The School seeks to fulfill the traditional functions of teaching, research, extension, and public service that are consistent with Oklahoma State University. The mission is to foster the development, integration, and application of empirical knowledge, theory, skills and experiences to promote social, physical, psychological, educational, and environmental health. Consistent with the goals of the University's Professional Education Council's Core Concepts and Goals Statement, faculty strive to demonstrate and perpetuate teaching based on theory and research-driven educational practices.

Course Prefixes. Courses that support counseling, counseling psychology, educational and school psychology, and gifted education are listed in the catalog under the ABSED prefix. Graduate courses in leisure studies and health and human performance are listed in the catalog under the HPEL prefix. Undergraduate leisure courses continue to use the LEIS prefix. Undergraduate courses in physical education continue to carry a PE prefix. Undergraduate health courses continue to carry the HLTH prefix.

Degree Opportunities. A student may earn a degree of Bachelor of Science (B.S.), Master of Science (M.S.), Specialist in Education (Ed.S.), Doctor of Education (Ed.D.) or Doctor of Philosophy (Ph.D.) with emphasis in one of the following:

Programs/Areas of Emphasis Degrees
Counseling/Counseling Psychology
Community Counseling M.S.
Elementary School Counseling M.S.
Secondary School Counseling M.S.
Counseling Psychology Ph.D.

Educational Psychology and School Psychology
Educational Psychology M.S., Ph.D.
Gifted Education Ed.D.
School Psychology Ph.D., Ed.D. (pending approval)
School Psychometry M.S., Ed.S. (pending approval)

Health and Human Performance
Health Promotion B.S., M.S., Ed.D.
Exercise and Fitness Science B.S., M.S.
Physical Education Pedagogy B.S., M.S.
Physical Education Administration M.S., Ed.D.
Athletic Training B.S. (pending approval)

Leisure Studies
Leisure Service Management B.S., M.S., Ed.D.
Therapeutic Recreation B.S., M.S., Ed.D.

Counseling and Counseling Psychology
Associate Professor and Coordinator Alfred F. Carlozzi, Ed.D.

The counseling and counseling psychology program areas offer graduate programs in community counseling and school counseling leading to the M.S. degree in counseling and student personnel, and counseling psychology leading to the Ph.D. degree in applied behavioral sciences.

The M.S. program in community counseling is intended for individuals who wish to serve as professional counselors in a variety of human service and community mental health agencies. Students may choose elective courses in selected areas of specialization such as youth counseling, substance abuse counseling, and mental health counseling.

The M.S. programs in elementary and secondary school counseling are intended for individuals who wish to provide counseling services to children, youth, and consulting services to the children's teachers and parents in the school setting. Each program meets academic requirements for state certification as a school counselor.
Both M.S. programs are designed to meet academic and practice requirements for licensure as licensed professional counselors in Oklahoma. Applications for M.S. programs are reviewed in April and October.

The Ph.D. program in counseling psychology is based on the scientist-practitioner model of training, and is accredited by the American Psychological Association. The program is designed to prepare students for counseling, consulting, teaching, and research roles in various settings such as university counseling centers, academic departments, child guidance centers, youth and family centers, hospitals, business settings, and mental health clinics. Students are required to follow a specified sequence of study in which academic course work and practicum experiences are integrated. Students must also complete one year full-time internship. Application materials for the counseling psychology program are due by January 15 for the following fall enrollment.

Educational and School Psychology

Professor and Coordinator Kay Bull, Ph.D.

Educational Psychology Programs. M.S. Program. A master's degree in educational psychology is available as an area of specification within the M.S. in applied behavioral studies. Educational psychology emphasizes the application of psychological theory and research in the field of education. Every educational psychology master student takes basic courses in educational psychology and research. Each student also takes additional courses in a concentration area of either educational/instructional psychology or human development.

Ph.D. Program. The Ph.D. in applied behavioral studies with specialization in educational psychology includes specialization in instructional psychology, human development, and education of the gifted. The programs prepare students for the role of teacher and researcher in educational and non-educational settings such as higher education, business, government, and communities. The educational psychology Ph.D. is designed to provide students with maximum opportunity to individualize their programs according to their own interests, needs and professional goals. Applications for the Ph.D. program in educational psychology are due by February 1 for the following fall enrollment.

M.S. Program in Gifted Education. The master's degree program, with emphasis in gifted and talented education, is designed to provide experiences, skills and knowledge that facilitate the development of program options for and the education of individuals who are gifted and talented in the areas of general intellectual ability, specific academic ability, and creativity. The program is characterized by its applied nature and includes a broad general preparation in gifted education including identification and behavioral characteristics, teaching models and strategies, program and curricular development, creativity; counseling the gifted, social, emotional and cultural needs of students who are gifted; working with parents; and identification and recruitment of community resources. An endorsement in gifted education is available through the State Department of Education.

School Psychology Programs. M.S. Program. The master's in school psychology prepares individuals to provide psychometric services to schools, youth agencies and other organizations working with children and youth. The master's level school psychometrist/educational diagnostician functions primarily as a psychoeducational examiner and teacher consultant. The psychometrist spends the bulk of time with assessment and individual educational programming. Psychometrists are employed by Oklahoma's twenty Regional Education Service Centers and by public school districts. The school psychometry program meets the Oklahoma State Department of Education certification requirements.

The Ed.S. program in school psychology (pending approval) is available through the School of Applied Health and Educational Psychology. The Ed.S. is the appropriate level of training for those who are interested in applying psychology to a variety of child-related learning and adjustment problems, and for the improvement of children's mental health. Specialist-level school psychologists typically work in school systems and function in diverse roles including consultation, psychological and psychoeducational assessment, and intervention to facilitate success for all children. The Ed.S. program at OSU is approximately 70 hours, consistent with the National Association of School Psychologists (NASP) standards for training, and meets the Oklahoma State Department of Education certification requirements. Successful completion of this program leads to eligibility for certification by the Oklahoma State Department of Education as a school psychologist and also the NASP National Certification in School Psychology (NCSP). Applications for the Ed.S. program are due March 1 for consideration for admission the following semester.

Health and Human Performance

Professor and Coordinator Betty Edgley, Ed.D.

The programs in health and human performance prepare students at the undergraduate level for careers in athletic training, exercise and fitness science, health promotion, and physical education.

The exercise and fitness science track prepares students for careers in rehabilitation exercise settings and post baccalaureate study in exercise science and allied health. This degree track prepares students for American College of Sports Medicine certifications.

The health promotion track prepares students for careers in a variety of settings including corporate, hospital-based, community, government and entrepreneur enterprises. Students culminate their degree requirements with an on-site internship during their last semester. This degree track prepares students for American College of Sports Medicine certificates and National Commission for Health Education Credentialing for the Health Education Specialist.

The physical education program includes a curriculum designed for profes-
sional preparation as a certified teacher of physical education. Specifically, students obtain certification that qualifies them to teach physical education and health in grades kindergarten through grade 12. Core courses for all physical education students include the following courses: an introduction to the discipline, eight hours of methodology in sport activities, applied anatomy and kinesiology, biomechanics, motor learning, exercise physiology, motor development, and physical education pedagogy. Students engage in two formal field-based experiences designed to better prepare them to become certified teachers: (1) a 45-hour practicum consisting of on-site observational experiences in one or more public school settings; and (2) a student teaching experience that includes on-site experiences as both an elementary and a secondary physical educator.

The athletic training program (pending approval) includes a curriculum designed for professional preparation as a certified athletic trainer by the National Athletic Trainers Association. In addition to core course requirements, students are required to complete 1500 hours of clinical experience in accordance with the National Athletic Trainers Association. The track in athletic training prepares students to work in a variety of allied health settings including secondary or post-secondary academic institutions, hospitals, rehabilitation or sports medicine centers, and professional sports teams.

Beyond the baccalaureate level the health and human performance program provides preparation at the master's and doctoral levels in health promotion and physical education.

Leisure Studies
Professor and Coordinator Chris Cashel, Ed.D.

The program in leisure studies at Oklahoma State University prepares students at the undergraduate and graduate levels for careers in leisure service management and therapeutic recreation. Both undergraduate options are accredited by the National Recreation and Park Association (NRPA) and the American Association for Leisure and Recreation (AALR). Students completing the programs are eligible to sit for respective national certification examinations. Leisure service management prepares students for employment in a variety of settings such as municipal, commercial, and industrial recreation; state and national park services; YMCAs and YWCAs; and armed services recreation. Therapeutic recreation prepares students to work with persons with disabilities in a variety of settings including hospitals, rehabilitation centers, day programs, institutions and within the community.

Beyond the baccalaureate level, the program in leisure studies provides preparation at the master's and doctoral level in leisure service management and therapeutic recreation.

School of Curriculum and Educational Leadership
Professor and Head David England, Ph.D.
Associate Professor and Assistant Head Nan Restine, Ph.D.

The broad mission of the School of Curriculum and Educational Leadership is the study of schooling and the education of professionals for meaningful lifelong work with diverse individuals in schools, industry, higher education, and clinical settings at the state, national and international levels. This mission is focused on the integrated study of curriculum, instructional process, professional development, and educational leadership. Consistent with the goals of OSU's Professional Education Council's Core Concepts and Goals Statement, faculty strive to demonstrate and perpetuate teaching based on theory and research-driven educational practices.

Undergraduate Programs
Associate Professor and Elementary Education Coordinator, Margaret Scott, Ph.D.
Professor and Secondary Education Coordinator, John Steinbrink, Ed.D.

The School offers undergraduate degrees in elementary, secondary and K-12 education, and technical and industrial education.

Completion of the Bachelor of Science in Elementary Education degree qualifies the student for an Oklahoma elementary teaching license (1-8). This program of study includes course work in general education, in a field of specialization, and in professional education accompanied by substantial field-based practicum experiences.

The Bachelor of Science in Secondary Education degree is available in the following discipline areas: English, foreign language, mathematics, science and social studies. Completion of this program emphasizing one of these areas qualifies the student for a secondary (7-12) Oklahoma license. Students emphasizing foreign language, also receive a degree in secondary education and qualify for an elementary/secondary (K-12) Oklahoma license. Professional Education course work in art education for College of Arts and Sciences majors is also offered. Each of these secondary degree programs includes general education courses, extensive specialization course work in the discipline area, and professional education courses accompanied by substantial field-based practicum experiences.

The Bachelor of Science in Technical and Industrial Education (TIED) is designed with two distinct options: the noncertification option, for students interested in adult technical education, and the certification option for students interested in secondary vocational education.

TIED Noncertification Option. Students choosing the noncertification option are prepared to become instructional personnel for technical programs in community junior colleges, technical institutes and industry. Graduates with this option also accept technical employment of various types in business, industry and government.

The noncertification option is designed primarily for graduates of technical programs in technical institutes and community junior colleges. Qualified students from preprofessional programs can be accepted with advanced standing. In addition, students desiring to prepare for careers in technical education may enter the program directly from high school and complete their technical major requirements at OSU.

TIED Certification Option. Students selecting this option are prepared to serve as teachers, supervisors and coordinators for vocational trade and industrial education programs. Plans of study leading to the bachelor's degree are offered for those wishing to qualify for teaching under the approved state plan for vocational education. Students completing this option are qualified to teach in vocational departments of high schools and area vocational-technical centers.

The certification option includes area specializations selected from but not limited to the industrial fields of air conditioning heating and refrigeration, automotive technology, aviation technology, building and grounds maintenance, carpentry, commercial art, commercial photography, computer repair technology, cosmetology, diesel engine technology, drafting, electronics, individualized cooperative education, laboratory technology, machining, masonry, printing, plumbing, television production, and welding technology. The specific field is
Curriculum and Instruction

The curriculum and instruction (CI ED) program area offers graduate degree programs at the master's and doctoral levels. While specialization is required, maximum program flexibility enables students to meet individual goals. Programs are designed to prepare persons to enter private or public secondary and post-secondary schools as curriculum directors, department heads, reading specialists and instructional team leaders. Doctoral programs provide preparation for university teaching and research, as well as for K-12 roles, such as curriculum administrators.

A student may earn the degree of Master of Science (M.S.) in curriculum and instruction with emphasis in one of the following: curriculum studies/supervision, elementary education, reading, K-12 education, and secondary education. Students specialize in such areas as art, curriculum/instruction, early childhood education, elementary education, English/language arts, foreign language, mathematics, reading, science, secondary education or social studies. Students planning an emphasis in K-12 and secondary education incorporate graduate course work from an academic discipline. The master's degree program is also frequently designed to qualify persons for certification in a specific area. Certification in school building administration may be incorporated into a master's degree emphasis.

A student may earn the degree of Doctor of Education (Ed.D.) in curriculum and instruction with emphasis in one of the following: curriculum/supervision, elementary education, K-12 education, reading, or secondary education.

Educational Leadership

Professor and Coordinator Ken Stem, Ed.D.

The Specialist in Education (Ed.S.) degree with an emphasis in educational leadership is designed for students who seek to earn certification as a building principal or superintendent. It is a program of study beyond the master's degree for aspiring and practicing school administrators. The primary purpose of the program is to provide a well-articulated plan of study leading to a graduate degree in educational leadership while fulfilling the State Department of Education course requirements for school administrators from the provisional principalship through standard superintendency.

The Ed.S. program includes a sequence of 39 credit hours—27 hours in an administrative leadership core, six hours in a planned internship during a fall and spring semester, three hours of practicum (a field-based study integrating course work and experiential learning activities), and a three hour elective.

Students must be admitted to either the Ed.S. program or another graduate program of study at OSU to enroll in most Ed.S. courses. Upon completion of the courses required for certification, students may seek certification through the State Department of Education. After the degree is completed, OSU will recommend certification.

To be considered for admission to the Ed.S. program, students must meet the following prerequisites: hold a current standard teaching certificate; hold a master's degree in education or a related field; have at least two years of teaching experience at an appropriate level in an accredited elementary, secondary, or post-secondary school; and have completed a course in student exceptionalities.

The majority of courses required for this program are currently listed under the EAHED prefix.

Occupational Education Studies

Professor and Coordinator Reynaldo Martinez, Ph.D.

Occupational education studies consists of areas in technical and industrial education, and graduate studies related to vocational-technical and industrial education. In addition occupational education studies provides programs to prepare vocational administrators, workplace education leaders and occupational professional personnel who may work in secondary, post-secondary or international education arenas.

The degrees offered include the Master of Science degree in occupational and adult education, vocational education, trade and industrial education and technical education. Most master's programs have the option of a thesis, creative component or internship and report. Admission requires an undergraduate degree in an appropriate field, together with academic qualification indicative of potential success at the graduate level. Experience related to the degree sought is desirable. Work experience is necessary in the vocational-technical education emphasis.
The master's degree in occupational and adult education is intended for individuals who wish to prepare for broader education roles relating to all vocational education disciplines, adult and continuing education and human resource development. The emphasis in vocational education prepares teachers, curriculum development specialists, professional development specialists and administrators in secondary or post-secondary vocational-technical institutions and government agencies. The emphasis in adult and continuing education prepares teachers and administrators in public and vocational-technical schools, community and junior colleges, universities, medical, correctional, and religious organizations as well as volunteers to facilitate effective learning for continuing education and returning adult students. The emphasis in human resource development prepares trainers, training managers, human resource executives, and related personnel in business, industry, government, military, health care service agencies and other environments to improve organizational performance by improving human performance.

The master's degree in trade and industrial education is designed to develop leadership and expertise in a wide variety of trade areas and industrial program design, implementation and assessment. The program builds and increases the competency of teachers, supervisors, and coordinators in instructional, occupational, and supervisory settings for advanced leadership opportunities in trade and industrial education programs. Plans of study can be designed for those who wish to qualify for state trade and industrial teacher certification credentials.

The master's degree in technical education is offered for persons who are preparing for employment in junior and community college or technical institute technician education programs, and teachers or administrators of technical education programs in domestic and international education settings. An adequate background in a major technical field and undergraduate program with technical course work are required for admission.

The Doctor of Education degree in occupational and adult education is offered with specializations in teacher education and personnel development, vocational education administration, curriculum and instruction, and research. This degree is for individuals who serve in occupational education roles such as university teacher educators, state and national vocational-technical education agency leaders, and vocational-technical education school administrators. Other potential roles include leadership positions adult and continuing education and private sector human resource development organizations. A doctoral application folder and interview must be successfully completed to gain full admission.

The majority of courses required for this program are listed under the OAED or TIED prefix.

Special Education

Professor and Coordinator C. Robert Davis, Ph.D.

M.S. Programs. The academic preparation program in the special education area includes special techniques and arrangements to facilitate the education of individuals with disabilities. At the master's level, students may pursue sub-area emphases in mild-moderate disabilities, severe-profound disabilities, and behavior specialist.

Ph.D. Programs. Graduates pursue careers in university teaching and in the administration of special education programs in public and private settings.

The majority of courses required for this program are listed under the ABSED prefix.

General Program Requirements, Application Procedures and Financial Aid

Master's Programs. Students elect one of three plans for completion of the master's degree: Plan I (minimum of 30 hours including a required thesis), Plan II (minimum of 32 hours including a required formal report), or Plan III (minimum of 32 hours including a required creative component). Application to the Graduate College precedes program admission decisions. Neither letter of recommendations nor standardized tests are required for admission.

Specialist and Doctoral Programs. The Ed.S. requires a minimum of 39 hours beyond the master's degree. The Doctor of Education (Ed.D.) and Doctor of Philosophy (Ph.D.) degrees require a minimum of 60 semester hours beyond the master's degree or 40 hours beyond the Ed.S. Application to the Graduate College precedes program admission decisions. For program admission, candidates prepare a folder to be evaluated by faculty. This folder is to include a score from the Graduate Record Exam or the Miller Analogies Test, a Statement of Goals and Objectives, references, and examples of written expression. An interview may be required.

Financial Aid. Support is available each year for research assistantships and for qualified graduate students to assume teaching responsibilities in the undergraduate curriculum. Selections are usually made in the spring semester for the following academic year. Interested persons are encouraged to apply at any time. Applications can be obtained from the School of Curriculum and Educational Leadership. A limited number of graduate fee waivers and College of Education scholarships are available to eligible graduate students.

School of Educational Studies

Professor and Head Martin Burlingame, Ph.D.

Associate Professor and Assistant Head Katye Perry, Ph.D.

The School of Educational Studies offers degree programs in nine areas: adult education, aviation and space education, higher education, human resource development, organization and leadership, research and evaluation, social foundations, student personnel, and technology. These programs conduct scholarly inquiry into and educate professionals about topics that are foundational to educational thought and practice in a wide variety of occupational roles associated with business, educational and industrial settings. Consistent with the goals of OSU's Professional Education Council's Core Concepts and Goals Statement, faculty strive to demonstrate and perpetuate teaching that is based on theory and research-driven educational practices.

These degrees provide specialized training at the undergraduate and graduate levels yet permit flexibility to enable students to meet individualized goals. Additional general information about undergraduate degrees may be found under the "University Academic Regulations" section of the Catalog. Additional general information about graduate degrees may be found in the "Master's Degree," "Doctor of Education," or "Doctor of Philosophy" section of the "Graduate College" section of the Catalog.

Financial support is available for research assistantships and for qualified graduate students to assume teaching responsibilities under faculty supervision in the undergraduate curriculum. Selections for assistantships are usually made...
in the spring semester for the following academic year. However, interested individuals are encouraged to apply at any time. Applications can be obtained from the School. A limited number of graduate fee waivers and College of Education scholarships are available to eligible students. This information can be obtained from the School.

**Adult Education**

The adult education program offers the M.S. and Ed.D. degrees for professionals working with adult learners in a wide variety of formal and informal educational settings.

**Master's Degree Program.** Each student's program of study is individually designed according to the needs of that student, of the academic program, and of the field. Plans of study may include either a thesis or a nonthesis option. The following courses are required as a core to provide a foundation in the nature of the learner, in the art of teaching, in program development, and in the background of the field: OAED 5203-Foundations of Adult and Continuing Education, OAED 5213-Characteristics of Adult Learners, OAED 5233-Needs Analysis, OAED 5253-Instructional Strategies for Adults, OAED 6871-Doctoral Seminar I, OAED 6881-Doctoral Seminar II.

Each student is expected to identify courses to support the core courses that will provide a complete program for satisfying the student's educational goals in the program. These courses may include additional courses in adult education or human resource development, additional foundation courses as needed, a block of courses in another area that represents a cognate area of study, and courses from any department in the University.

Research requirements include the three areas of (1) a basic knowledge of research design, (2) quantitative research methods, and (3) qualitative research methods. In addition, one other course in either quantitative or qualitative methods is required.

In order to tailor the doctoral program to meet the specific needs of each student, students may include self-directed activities in their plans of study. These include directed independent study of special topics under OAED 5340 and internships under OAED 5880 or OAED 6880. Students should work with their committee chair and program committee members in designing these self-directed activities. Since conducting independent research is a requirement of the Ed.D. degree and an expectation of all doctoral students, the plan of study must contain 10 dissertation hours.

**Application Procedures and Admission Requirements.** Information is available from the School.

**Aviation and Space Education**

**Aviation Education.** The aviation education program prepares students for careers in the aerospace industry. A bachelor's degree on aviation sciences offers three options: professional pilot, aviation management, and technical services management. Each option is tailored to meet specific needs for skilled individuals in the air carrier, air manufacturing and sales, and general aviation segments of the industry.

Students in the professional pilot option complete all flight requirements for private pilot. Commercial pilot with instru-
Higher Education

The higher education program has emphases in three areas: administration, academic leadership, and college teaching. In the administration emphasis, the master's and doctoral degree are offered; academic leadership and college teaching offer only the doctoral degree.

The administration emphasis prepares individuals for administrative positions in all levels of post-secondary education. Course work emphasizes a thorough foundation in administrative theory, a multidisciplinary approach to understanding the administrative process, and extensive consideration of administrative functions and problems unique to particular higher education contexts. In academic leadership, course work focuses on developing leaders who work or practice in college and university units specializing in student learning and services. College teaching prepares two- and four-year college teachers in a cooperative arrangement between the student's disciplinary field and the higher education program. Students take a majority of their course work in their academic field and selected courses in higher education to prepare them to be skilled college and university instructors. College teaching majors are expected to have an undergraduate or master's degree in the discipline they plan to teach at the college level. Persons interested in college teaching should contact the School for further information about specific cooperative arrangements with selected disciplinary fields. Some course work for these degrees have an EAHED prefix.

Application Procedures. Applications to the program are received upon arrival from the Graduate College. These applications are reviewed by the program graduate review committee.

Human Resource Development

Human resource development (HAD) offers undergraduate, M.S., and Ed.D. degrees. These programs emphasize the professional training and development of prospective and practicing trainers, human resource development professionals, and performance improvement technologists.

These degrees are offered in collaboration with adult education and with occupational studies programs in the School of Curriculum and Educational Leadership.

Undergraduate Degree Program. Students choosing this degree, titled B.S. in Technical and Industrial Education, obtain the knowledge and skills needed to analyze, design, develop, implement, and evaluate HAD efforts in workplace education. Qualified students from pre-professional programs can be accepted with advanced standing. In addition, students desiring to prepare for careers in this area may enter the program directly from high school and complete the technical major requirements at OSU. Specific information about degree requirements are available at the School.

Master's Degree Program. Each student's program of study is individually designed according to the needs of that student, of the academic program, and of the field. Plans of study may include either a thesis or nonthesis option. The following courses are required as a core to provide a foundation in the nature of the learner, in the art of teaching, in program development and in the background of the field: OAED 5213-Characteristics of Adult Learners, OAED 5233-Needs Analysis, OAED 5253-Instructional Strategies for Adults, and OAED 5533-Human Resource Development.

Each student is expected to identify courses to support the core courses that provide a complete program for satisfying the student's educational goals in the program. These courses may include additional courses in human resource development or adult education, additional foundation courses as needed, a block of courses in another area that represents a cognate area of study, and courses from any department in the University.

Research requirements include three credits in basic research design or quantitative analysis. These may be satisfied by AGED 5980-Research Design in Occupational Education or ABSED 5013-Research Design and Methodology. Basic statistics can be satisfied with a course such as ABSED 5953-Elementary Statistical Methods in Education. In addition, the research component must include either (1) six credits of thesis, (2) an internship with a formal report, or (3) an identified creative component.

Doctoral Program. Each student's program of study is individually designed according to the needs of that student, of the academic program, and of the field. Plans of study for the Ed. D. degree are required to include a minimum of 60 hours beyond the master's degree. In this plan, HDR students are expected to have strong foundations in multiple areas including philosophy, psychology, economics, organization theory, and technology. The following courses are required as a core to provide a foundation in the nature of the learner, in the art of teaching, in program development and in the background of the field: OAED 5213-Characteristics of Adult Learners, OAED 5233-Needs Analysis, OAED 5253-Instructional Strategies for Adults, OAED 5533-Human Resource Development, OAED 6553-Critical Issues in Human Resource Development, OAED 6871-Doctoral Seminar I, OAED 6881-Doctoral Seminar II.

Each student is expected to identify courses to support the core courses that provide a complete program for satisfying the student's educational goals in the program. These courses may include additional courses in human resource development, or adult education, additional foundation courses as needed, a block of courses in another area that represents a cognate area of study, and courses from any department in the University.

Research requirements include the three areas of (1) basic knowledge of
research design, (2) quantitative research methods, and (3) qualitative research methods. In addition, one other course in either quantitative or qualitative methods is required.

In order to tailor the doctoral program to meet the specific needs of each student, students may include self-directed activities in their plan of study. These include directed independent study of special topics under OAED 5340 and internships under OAED 5880 or OAED 6880. Students work with their committee chair and program committee members in designing these self-directed activities. Since conducting independent research is a requirement of the Doctor of Education degree and an expectation of all doctoral students, the plan of study must contain 10 hours of dissertation.

Application Procedures and Admission Requirements. Information is available from the School.

Organization and Leadership

Graduate work is offered at the master's and doctoral level. The program prepares individuals for positions as faculty and administrators in public and private schools, and for positions in state and federal education agencies. The programs emphasize a thorough foundation in administrative theory, a multidisciplinary approach to understanding the administrative process, and extensive consideration of administrative functions and problems unique to particular organizational and educational contexts.

Degree Requirements. The Ed. D. program requires a minimum of 64 hours of course work in core, administration, minor, and research courses, as well as dissertation hours. In conjunction with the School of Curriculum and Educational Leadership, the program supports the Specialist in Education (Ed.S.) with an emphasis in educational administration. Applicants entering the doctoral program after completing the Ed.S. must earn a minimum of 40 hours, including dissertation hours, from Oklahoma State University. Some course work for these degree programs has an EAHED prefix.

Application Procedures. Student applications are reviewed following receipt of all materials including an application essay, resume/vita, samples of written work, a current score on the MAT or GRE, and three letters of recommendation. Complete folders are reviewed twice a year, after October 1 and February 15.

Research and Evaluation

The research and evaluation program offers the M.S. and Ph.D. degrees. The M.S. program prepares students to function as staff members in research and evaluation units in school districts, governmental agencies, and private corporations and foundations. Graduates of the M.S. program prepare to serve as college or university professors, directors of research and evaluation for public schools and universities, researchers for funded projects, state department of education consultants, and professional employees for test publishers and local, state, and federal government agencies.

Degree Requirements. The M.S. requires a minimum of either (Plan I) 41 hours of course work including a written thesis for which six hours will be received or (Plan II) 43 hours of course work including a written report. Course work includes core courses (e.g., educational foundations), specialization courses (e.g., research in education, statistical methods, program evaluation) and elective courses that define a collateral area of study consistent with or complementary to the undergraduate degree emphasis. Students must take two qualifying examinations that cover the program core and the area of professional specialization. The Ph.D. degree requires a university determined minimum of 60 semester hours beyond the master's degree or a minimum of 90 semester hours beyond the bachelor's degree. The typical doctoral student in the program completes nine hours of common core course work in educational foundations (educational psychology, human development, special populations), 33 professional course hours (e.g., statistical methods, psychometric theory, applied multivariate research, program evaluation), 18 hours in one or two collateral areas (e.g., mathematical statistics, computer science) and 15 dissertation hours. Students also select two applied experiences from a list of suggested experiences with the assistance and approval of their committee chair.

Many opportunities exist for graduate students to consult, teach, and collaborate with faculty on research projects. Research collaborations often lead to conference presentations and scholarly publications.

Admission Requirements. Criteria for full admission to the master's program include an undergraduate GPA of at least 2.50, GRE score of at least 900, and three positive letters of reference. For the doctoral program, criteria include a graduate GPA of at least 3.50, a minimum GRE score of 1000, three positive letters of reference on SES forms, and a master's degree from an accredited institution.

Application Procedures. Applicants must submit a completed portfolio consisting of a Graduate Application for Admission form, three positive letters of recommendation, a signed Confidentiality of Reference form, minimum Graduate Record Exam scores, two official transcripts from each institution attended, Statement of Purpose, and the Graduate College application fee. International applicants must include TOEFL scores and a signed Confirmation of Resources form. Applications are reviewed as they are received.

Social Foundations

Social foundations offer programs at the M.S. and Ed.D. levels. The roles for which this program prepares individuals are:

Field Based. The program assists practicing classroom teachers in understanding the social, historical, international and philosophical underpinnings of the institution called the school.

University Based. At the Ed.D. level, the program prepares individuals who wish to become teacher education professors in the fields of social foundations. Students traditionally have minors in content areas from the College of Arts and Sciences or the College of Business Administration.

Degree Requirements. The basic structure of the M.S. degree requires social foundations and research (12 hours), minor (12 hours) and thesis (six hours). The M.S. may also include additional course work in social foundations and the minor in lieu of the thesis. In this case, students are required to present a creative component or report (two hours). The basic structure of the Ed.D. degree require a core area in social foundations (12 hours), research (12 hours), support course work (nine hours), minor area (18 hours) and dissertation (10 hours). This program is multidisciplinary. Some course work for these degrees has a CI ED prefix.

Admission Requirements and Application Procedures. Information concerning admission requirements and application procedures are available from the School.

Student Personnel

The program offers the M.S. and the Ph.D. degrees. The M.S. program in student personnel services prepares students for entry level positions in ser-
and the College of Education's facilities offer students access to well-equipped computer laboratories, linear and non-linear video production equipment, distance learning television studios, satellite capabilities, and multimedia systems. Close interaction with faculty and other talented graduate students create an atmosphere at collegiality and support for achieving individual goals.

**Degree Requirements.** The M.S. degree requires a core curriculum consisting of at least one graduate course in each of the following areas: educational foundations, curriculum studies, instructional theory, psychological foundations, and educational research. The M.S. program may also be closely allied with the Oklahoma State Department of Education's requirements for the graduate conversion certificate as a library media specialist.

The Ed.D. may be pursued with an emphasis in information/communication technology. The Ed.D. requires the completion of a minimum of 60 graduate hours beyond a master's degree, 10 hours of which must be dissertation hours.

**Admission Requirements and Application Procedures.** Entrance requirements for admission to the M.S. degree are based upon acceptable grade-point averages (3.00 for all courses taken for the bachelor's degree or 3.25 for all upper-division and graduate course work or 3.50 for OSU graduate course work included in the initial nine hours of study). All plans require a three-person faculty committee.

For admission to the Ed.D. program, applicants must complete a folder that is reviewed by faculty. This folder must contain copies of undergraduate and graduate transcripts, written statement of goals and objectives, example(s) of applicant's written expression, letters of reference, and current results of the Miller Analogies Test or the Graduate Record Examination. An interview may be required.

**Technology**

The program in educational technology offers both M.S. and the Ed.D. degrees. It is designed to be an interdisciplinary approach to assist in the integration of information and communication technologies in the teaching/learning process. Its focus is on the utilization of such technologies in elementary and secondary school settings by teachers and administrators as well as in such areas as business, industry, vocational education, and health sciences. Central to the program is the routine assessment of the efficacy of innovative technological systems in the form of research and the broad-based application of that research.

The program is conducted in an educational environment well-equipped to allow students to investigate and participate in applications of leading technologies. Both Oklahoma State University and the College of Education's facilities offer students access to well-equipped computer laboratories, linear and non-linear video production equipment, distance learning television studios, satellite capabilities, and multimedia systems. Close interaction with faculty and other talented graduate students create an atmosphere at collegiality and support for achieving individual goals.
candidate will be eligible for licensure/ certification to serve in the schools of Oklahoma. All candidates completing an approved program or applying for a teaching license are subject to all rules and regulations specified by the OSU Professional Education unit, the Oklahoma State Board of Education, and the Oklahoma Commission on Teacher Preparation.

Programs are offered at various levels, but all require the earning of at least a bachelor's degree for recommendation for a standard certificate. Graduate programs leading to the master's degree, the education specialist degree, and both the Doctor of Education and the Doctor of Philosophy degrees are offered in several areas. In addition, there are programs at the graduate level that lead to certification but which may or may not lead to graduate degrees. Professional Education programs at Oklahoma State University have the approval of the Oklahoma State Department of Education.

Undergraduate Professional Education programs are offered in the College of Education as well as in the colleges of Agricultural Sciences and Natural Resources, Arts and Sciences, and Human Environmental Sciences. The student must meet the program requirements of the OSU Professional Education unit as well as the degree requirements of the particular college each student who desires to enter a Professional Education program must make formal application to do so and must meet the admission standards specified.

Students classified by the Graduate College as "special" or "provisionally admitted" who are pursuing teacher certification must be admitted to the Professional Education program. Information regarding admission requirements may be obtained from the Office of Professional Education.

The requirements for the degree being sought are made known to the student when he or she first enrolls at Oklahoma State University. While the curriculum may change before a student graduates, a student who makes normal progress toward graduation (no more than two years beyond the normal four-year bachelor's degree requirements) will be held responsible for the degree requirements at the time of matriculation, and any changes that are made, so long as these changes do not result in semester credit hours being added or delayed graduation. State-mandated changes in teacher certification may result in additional course requirements for licensure & certification.

Inquiries concerning any aspect of Professional Education programs at Oklahoma State University should be addressed to the head of the administrative unit offering the program or the Office of Professional Education, 228 Willard.

There are increasing opportunities in business, industry and state and federal agencies for persons with unique preparation in several education specialties. The College also provides academic preparation for a wide range of specialties:

**School Service Personnel-Certification Areas**

**Administrator (elementary school principal)**

**Administrator (school superintendent)**

**Administrator (secondary school principal)**

**School counselor (elementary and secondary)**

**School psychologist**

**School psychometrist**

**Teaching Specialties-Certification Areas**

**Elementary school certificate (grades 1-8)**

- Middle level English
- Middle level foreign language
- Middle level math
- Middle level science
- Middle level social studies

**Elementary-secondary school certificate (K-12)**

- Art
- English as a second language
- Foreign language
- Gifted and talented
- Health
- Library media specialist
- Physical education/health
- Reading specialist
- Special education (emotionally disturbed, learning disability and mental retardation)

**Secondary school certificate (grades 7-12)**

- Business education
- English
- Mathematics
- Science
- Social studies
- Speech/Drama
- Technical and industrial education

### Undergraduate Certification Programs

Undergraduate programs are offered in the following areas: agriculture; art; business education; elementary education; English, foreign language (French, German, Spanish); health education; mathematics; music-instrumental; music-vocal; occupational agriculture; physical education/health; science; social studies; speech and drama; and technical and industrial education. There are also other teaching endorsements available.

### Graduate Programs

Initial certification programs offered at the graduate level are school psychologist, school psychometrist, special education (mild/moderate, severe/profound, and behavior specialist), and speech-language pathology. Advanced certification programs offered at the graduate level include reading specialist, school counselor, elementary school principal, secondary school principal, and school superintendent. Master's degrees are available in conjunction with all of the above programs and doctorates are available in many. Areas of concentration in several of these fields may be included as part of master's and doctoral degree programs if approved by the department head of the administrative unit offering the program and the dean of the Graduate College.

### Admission to Professional Education

The criteria for admission to undergraduate Professional Education programs are based on University-wide policies recommended by the director of Professional Education through the Council on Professional Education. Requirements are applicable to all Professional Education administrative units of the colleges preparing teachers. The student is not considered a fully eligible participant in a Professional Education program until formally admitted to Professional Education.

A student will not be permitted to enroll in the courses in the professional sequence, teaching methods and the student teaching internship, unless full admission to the Professional Education program has been earned and maintained. Certain vocational programs may vary from this requirement due to state guidelines. Students should apply for admission to Professional Education as early as possible in their programs.
Criteria for Admission to Undergraduate Professional Education Programs

During the first semester of the academic program, the student must complete the Declaration of Intention to Pursue a Program in Professional Education. This form can be obtained in the Office of Student Academic Services, 106 Willard, for College of Education students. Students wishing to enter Professional Education programs within the College of Education must meet the required minimum grade-point average. (See "College Education Admission Requirements.") If the student is enrolled in the Professional Education program in the College of Agricultural Sciences and Natural Resources, Arts and Sciences, or Human Environmental Sciences, the student should check with the office of the department head for further information. In addition to completing the Declaration of Intention to Pursue a Program in Professional Education, the student should schedule the Professional Education interview and register for the Preprofessional Skills Test (PPST) or meet the current OSRHE alternative admission criteria. Professional Education interviews are generally scheduled during the first early laboratory and clinical experience. Registration booklets for the PPST are available from the University Testing and Evaluation Service and the Office of Professional Education.

After declaring an intention to pursue a program in Professional Education, the student may elect to enroll in course work in the following preprofessional education areas (which must be completed before student teaching):

1. Foundations of education;
2. Exceptional child;
3. Early laboratory and clinical experiences (45-clock hours minimum)

Full admission to Professional Education must be achieved before the student may enroll in the remaining professional education sequence of learning theory, evaluation and methods. The student must meet all the following criteria:

- Basic Skills Competency. Teacher candidates are expected to demonstrate competency in basic reading, writing, and mathematics. The Preprofessional Skills Test is offered to all Professional Education students and is designed to assess mathematics, reading, English grammar and writing skills. A student may pass the PPST with the OSRHE established Standard Test scores (mathematics 171, reading 173, writing 172) or Computerized Test scores (mathematics 316, reading 320, writing 318); or meet the alternative criteria by earning a 3.00 GPA in all hours of liberal arts and sciences courses (minimum of 20 hours). Caractt the Office of Professional Education for specific information relative to alternative criteria. Information and registration for the Preprofessional Skills Test can be obtained from the University Testing and Evaluation Service and the Office of Professional Education. A study guide for the test is available in the Reserve Room in the Library.

2. Interview for Admission to Professional Education. All candidates for full admission to undergraduate Professional Education must satisfactorily complete a formal interview with designated OSU Professional Education faculty. The program interview policy form and guidelines may be obtained from the Office of Student Academic Services located in 106 Willard.

3. Orientation to Professional Education Course and Laboratory and Clinical Experiences. An appropriate orientation to Professional Education course must be completed with a grade of "C" or better. One semester credit hour of early laboratory and clinical experiences must be completed with a grade of "C" or better or grade of "P".

4. Minimum Overall Cumulative GPA of 2.50. A minimum overall cumulative GPA of 2.50 must be earned, based on no fewer than 40 credit hours of courses to include lower-division general education requirements as specified in the student's program.

Criteria for Admission to Graduate (Post-baccalaureate) Professional Education Programs

Graduate (post-baccalaureate) students must file the form Declaration of Intention to Pursue a Professional Education Program-Post-baccalaureate and meet one of the following criteria for full admission to Professional Education.

1. The student must have completed an approved Professional Education program and hold a valid Oklahoma license or Provisional, Standard, or Professional Certificate; or
2. Students in a master's program must (a) satisfy the departmental requirements for unqualified admission to the master's degree program; (b) have a minimum overall GPA of at least 2.50; (c) complete the interview for Professional Education; and (d) complete one semester credit hour of early laboratory and clinical experiences with a grade of "C" or better or a grade of "P"; and (e) complete an orientation to Professional Education course with a grade of "A" or better or a grade of "P".

3 Students classified by the Graduate College as "special" or "provisionally admitted" must (a) have a minimum overall GPA of at least 2.50; (b) complete the interview for Professional Education; and (c) complete one semester credit hour of early laboratory and clinical experiences and an orientation to Professional Education course with a grade of "C" or better or a grade of "P".

Transfer Students

Transfer students must work toward meeting the criteria for full admission to Professional Education established by Oklahoma State University as soon as possible during the first semester at OSU.

Calculating Grade-point Average for Teacher Education

The 2.50 GPA for all Professional Education purposes is calculated based on the University graduation and retention GPA policy. Grades of "I," "NP," "P," "X," "W" or the mark of "AU" or "N" do not affect the overall GPA.

Retention in Professional Education

For participation in all courses requiring full admission to and for continued acceptability in the Professional Education unit, an undergraduate student must maintain a grade-point average required for graduation of at least 2.50. If this GPA falls below 2.50, the student is placed on probation. When the required graduation GPA is raised above 2.50, the student is removed from probation. If the student fails to meet the graduation GPA requirements in that probationary semester or fails to have at least a 2.50 GPA for that semester, the student will be suspended from the Professional Education unit. A student not satisfying the probation requirements at the end of the semester following the initial probationary semester will be administratively withdrawn from the Professional Education program and all courses having full admission as a prerequisite. Readmission to the Professional Education unit will require a new application. Advisers are available to assist the student in regularly reviewing continuing retention or reinstatement in Professional Education programs. A retention review prior to enrollment and again prior to the beginning of classes.
each semester is encouraged when continuing retention is in question.

Graduate students, including those classified as graduate special students, admitted to the Professional Education unit must meet and maintain the requirements of the Graduate College to remain in good academic standing with the Professional Education unit. This will require that graduate students earn and maintain a 3.00 GPA at Oklahoma State University following admission to Professional Education.

Student Teaching Requirements

In order to participate in student teaching, all teacher candidates must complete the Student Teaching Profile Application form during the semester prior to the student teaching semester. Student teaching information is distributed at a meeting called by the coordinator of field relations and through the Office of Professional Education. Students are notified of this meeting through consultation with advisers, the "Official Bulletins" section of The Daily O'Collegian student newspaper, signs on bulletin boards across campus and in residence halls, and by announcements made in Professional Education classes. Students must submit their Student Teaching Profiles to the Office of Professional Education prior to specified dates in October and February. These dates will be announced to students in the same manner as mentioned above. Students will be notified in writing of their placements as soon as the coordinator of field relations has received confirmation from the cooperating schools. Students are encouraged to take all appropriate teacher certification tests after the completion of at least 90 semester hours of course work. (See 'Oklahoma Teacher Certification Testing Program'.)

Criteria for student teaching placement for all Professional Education students are:

1. Full admission to a Professional Education program;
2. A current overall grade-point average of at least 2.50;
3. A grade-point average of at least 2.50 in courses listed on the current approved program for licensure/certification in the areas of professional core, major, and college/departmental requirements. No grade lower than a "C" or a "P" in either of these areas;
4. Completion of all preprofessional education course work that includes at least one course in sociological foundations, all early laboratory and clinical experiences (45 clock hours mini-

Required Grades in Student Teaching

A student must receive grades of "P" in all sections of student teaching in order to be recommended for a teaching license. A student assigned a grade of "F" in any section of student teaching will not qualify for a recommendation for a license or any level of certification.

Out-of-Area/Out-of-State Placements

A student requesting an out-of-area/out-of-state placement due to extenuating circumstances must have the approval of the coordinator of field relations and the department program coordinator, and is required to pay the following fees:

1. All necessary and appropriate fees required in securing and finalizing the placement (e.g., reimbursement for cooperating teacher, supervisor, etc.). These fees are payable to the Office of Professional Education and/or out-of-state university at the beginning of the semester in which the placement is sought.
2. If a recommendation for licensure/certification is to be made by Oklahoma State University, the student is responsible for reimbursing visits performed by the cooperating institution. All other criteria pertaining to in-state student teaching placements apply as previously stated.

Appeals

By enrolling in Professional Education programs at Oklahoma State University, students accept the responsibility for complying with all applicable Professional Education Council policies and procedures that allow students to maintain good academic standing. If the student believes that the established policies of the Professional Education Council have not been fairly or consistently followed, the student has the right to pursue an appeal to the Admission, Retention and Diversity Committee. For more detailed information pertaining to the appeals process, students are encouraged to contact the Office of Undergraduate Studies.

Certification Examinations for Oklahoma Educators

All students who graduate or are seeking endorsement from a Professional Education program are required to complete the Certification Examinations for Oklahoma Educators before a license or endorsement can be issued. The examinations, which include a General Education Test, a Subject Areas Test, and a Professional Teaching Exam, are administered by the National Evaluation Systems for the Oklahoma Commission for Teacher Preparation five times each year. Registration booklets are available in the Office of Professional Education. To qualify to take the Oklahoma Subject Area Test (OSAT) the student must:

1. be fully admitted to Professional Education;
2. have 90 hours of college credit completed on his or her transcript; and
3. meet minimum requirements for the standard teaching certificate or endorsement teaching credentials required by the Oklahoma State Department of Education.

Copies of the Objectives and Study Guides for the Oklahoma Teacher Certification Testing Program have been placed in the Reserve Room of the Library and are listed as "Objectives for Oklahoma Certification Testing Program."

Policies and requirements are being developed for the Oklahoma General Education Test (OGET) and the Oklahoma Professional Teaching Examination (OPTE). Candidates for these tests are individuals who enroll in Oklahoma teacher preparation programs on or after September 1, 1997.

Teacher candidates should plan to take the OGET during their sophomore/junior year and the OPTE and OSAT at or near completion of their program.

Registration deadlines are indicated on the registration booklet and are generally due about seven weeks prior to the testing date.

Personnel in the Office of Professional Education will process and deliver the registration form and required fees to the National Evaluation Systems.

Recommendations for License, Certificate, or Endorsement

Oklahoma State University will not make a recommendation for a license, certificate or endorsement until all criteria have been met for the Professional Education program and a passing score has been achieved on the Oklahoma Teacher Certification Test(s). Applicants recom-
mended by Oklahoma State University for a license, certificate or endorsement must have achieved grades of "P" in all sections of student teaching. A successful recommendation for certification by the Residency Committee will result in a recommendation for the standard certificate. A student assigned the grade of "F" in any section of student teaching will not qualify for a recommendation for a license or any level of certification. Applications for an Oklahoma license or certificate can be obtained in the Office of Professional Education. Students seeking advisement concerning teacher licenses or certificates can be assisted by the coordinator of teacher certification in the Office of Professional Education.

Residency Program
A candidate with a license will serve at least one, and in some cases two years, as a resident teacher under the guidance of a Residency Committee consisting of a mentor teacher and an administrator within the local district where the beginning teacher is employed, and a higher education representative. Upon completion of the residency experience (120-180 days) the candidate may be recommended either for certification by the Residency Committee or for an additional year of teaching under the guidance of either the same or a new Residency Committee. If the candidate does not satisfactorily complete the second year as a resident teacher, the Residency Committee will recommend noncertification for the candidate.
Engineers, engineering technologists, and architects, working side by side, constitute one of the most powerful agents for change in our society. New ways are found to control the environment, to utilize the resources and forces of nature and to increase productivity of needed goods and services, in short, to improve the quality of life for all.

Most of the work of engineers, technologists and architects is concerned with the conception, design, fabrication, maintenance and testing of devices, processes, installations, and systems that serve human needs. This work provides ample opportunity to express creativity. It requires an ability to make decisions.

The professionals and semi-professionals who will be largely responsible for the shape of the world in the year 2000 and beyond include those now in higher education. The power they will exercise makes an exciting prospect and presents a sobering responsibility. The easy problems are usually solved first and are now a part of history. Many difficult problems remain. The need for talented and highly trained people is obvious; one will be embarking on a lifetime of challenge if he or she decides to prepare for a career in engineering, engineering technology or architecture at Oklahoma State University.

The College of Engineering, Architecture and Technology (CEAT) offers a complete spectrum of educational opportunities designed to give graduates the capability and the flexibility to meet the ever-changing requirements of society—a society heavily committed to technological innovation. To be prepared to make continuing contributions, engineers, architects and technologists must have at their command not only the modern tools and processes of industry, but a firm and rigorous education in mathematics and the physical sciences. In order that those contributions be sensitive to genuine human needs, the engineer, architect or technologist must also be schooled in the social sciences and humanities that provide the understanding of non-technical factors that must shape technological innovation. With this firm foundation and a commitment to lifelong learning, graduates make contributions to society throughout their professional careers.

The curricula in each of the programs seek to provide the optimum combination of breadth in the enduring fundamentals that undergird technologically based society, and specialization in the branch or discipline in order to equip the student to contribute to solutions at the cutting edge of the science or technology involved. Curricula are continuously evolving to include current applications of the principles. With such a bridge between theory and practice, the educational experience should support one’s following diverse interests and opportunities throughout the productive years of his or her life span.

Academic Programs

Academic programs offered in the College of Engineering, Architecture and Technology culminate in the following degrees:

Schools of Engineering:

Bachelor of Science in aerospace engineering (an option in Mechanical Engineering), Biosystems Engineering, with options in agricultural, biomechanical, environmental and natural resources, and food and bioprocessing; Chemical Engineering with options in environmental and premedical; Civil Engineering with an environmental option; Electrical Engineering with a computer engineering emphasis area; General Engineering; Industrial Engineering and Management; and Mechanical Engineering with an option in premedical.


Accreditation

Undergraduate engineering programs are each separately accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC of ABET). Specifics of accreditation are found in the sections devoted to specific programs on the following pages.
The Bachelor of Architecture program is accredited by the National Architectural Accrediting Board.

The undergraduate engineering technology programs are separately accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (TAC of ABET). Specifics of accreditation are found in the program descriptions in the section "Division of Engineering Technology -".

Special College Programs

Cooperative Education. The Cooperative Education program provides students work opportunities in a supervised environment that assures professional development. Work periods alternate with academic studies. Students enter the program at the end of their sophomore year and complete at least three work periods prior to graduation.

Scholars Enrichment Program. This program provides developmental experiences for a select group of gifted students that will develop their technical competence, world view, professional and public responsibility, and leadership skills. About 25 students are selected by application each year and interview to enter this four year program, based on demonstrated academic and leadership potential. Students participate in special lectures, tours, residence hall programs, seminars, personal development activities, faculty mentoring, and summer tours in the U.S. and abroad.

CEAT Research Scholars Program. This program provides opportunities for accelerated intellectual development of a select group of students. Approximately 12 new freshmen students are identified from applications and interviews annually to participate in this four year program. Each student is assigned to a research faculty mentor, participates in a research program, travels to one or more major research facilities and participates in a national professional society meeting.

Phillips Engineering Scholars Program. The Phillips Petroleum Company sponsors this program to increase the number of outstanding graduates in engineering from Oklahoma State University. Freshman students are identified for this program from applications and interviews with both Oklahoma State University faculty and Phillips employees. The program includes a number of experiences to help students develop professionally, build leadership and teamwork skills, assess personal capabilities, achieve academic excellence, enhance interpersonal relationships, and increase the student's awareness of career opportunities. Special features include the assignment of a Phillips engineer to mentor each student, focused national and international trips and financial support.

Women in Engineering. Programs and resources are in place to develop and support female enrollment in the CEAT. Special counseling and advisement, an active Society of Women Engineers, summer programs in engineering for high school students, a Women in Engineering (WIE) Conference for high school and OSU students, and a vigorous recruiting effort are all directed at recruitment and retention of women in engineering, architecture and technology. Female faculty and a coordinator of WIE programs provide support to this program.

Multicultural Program. These programs are directed at increasing the number of minority graduates from the CEAT, and increasing the understanding of diverse cultures on the part of all students. Included are programs for recruitment and retention of qualified minority students. Industrial support provides scholarships, summer employment, and supplemental funds for recruitment and retention of minority students. Cultural awareness programming is designed to increase understanding of and sensitivity to the diverse cultures with which students will have to interact in today's world.

Employment Service. A placement office supports the University Career Services and assists students with on-campus interviews and job referrals for summer and permanent employment. Job vacancy listings, reference files, and resource materials on resume preparation, interviewing, and job search techniques, are available for student reference. Orientation meetings and various workshops are provided to prepare students for the process of seeking employment.

CEAT Residence Hall Program. Ceat floors have been established in the Kerr-Drummond residence hall for both men and women CEAT students. Students on these floors have access to computers, reference materials and test files. CEAT student staff live on the floors to provide programming and monitoring. Supplemental instruction is provided for selected math, science and engineering courses. Special activities are planned for the floors including events with faculty and other resource persons. This arrangement provides a community where students can study together, have access to tutoring, and serve as role models for other students. The atmosphere on these floors is very conducive to study.

Departmental Clubs and Honor Societies

Alphabetic Pi Mu (industrial engineering and management honor society)
Alphabetic Pi Mu (industrial engineering and management honor society)
American Indian Science and Engineering Society
American Institute of Architecture Students
American Institute of Aeronautics & Astronautics
American Institute of Chemical Engineers
American Society of Agricultural Engineers
American Society of Civil Engineers
American Society of Mechanical Engineers
American Society of Safety Engineers
CEAT Student Council
Chi Epsilon (civil, architectural or general engineering honor society)
Construction Management Society
Construction Specifications Institute
CEAT Student Council
Eta Kappa Mu (electrical engineering honor society)
Fire Protection Society
Institute of Electrical & Electronics Engineers (two student branches)
Institute of Industrial Engineers
National Society of Architectural Engineers
Omega Chi Epsilon (chemical engineering honor society)
Pi Tau Sigma (honorary mechanical engineering society)
Sigma Gamma Tau (honorary mechanical engineering society)
Society of Automotive Engineers
Society of Black Engineers, Technologists & Architects
Society of Fire Protection Engineers
Society of Hispanic Engineers
Society of Manufacturing Engineers
Society of Women Engineers
Tau Alpha Pi (technology students honor society)
Tau Beta Pi (engineering students honor society)

CEAT Honors Program

The Honors Program provides opportunities for challenges for undergraduate
students of unusually high ability, motivation, and initiative. Honors classes, seminars, and independent study courses are structured to put interested students and teachers together in ways which encourage discussion and a mature approach to learning.

Each honors course completed with an "A" or "B" grade is identified on the student's transcript as such. A special bachelor's degree honors diploma is conferred upon graduation for successful completion of all Honors Program requirements.

Qualified high school scholars are eligible for the Honors Program beginning with their first enrollment at OSU as freshmen. Eligibility is based on a composite ACT score of 27-29 and a high school grade-point average of 3.75 or higher, or an ACT score of 30 or higher with a 3.50 high school grade-point average. Students other than new freshmen may enter the Honors Program if they have a cumulative grade-point average of at least 3.25. Students should contact the OSU Honors Program, 509 Edmon Low Library, for eligibility forms.

Honors Recognition. The General Honors Award is earned by completing a minimum of 21 honors credit hours with grades of "A" or "B." At least three honors credit hours must be completed in each of four of the following areas: (1) English, speech communication and foreign languages (2000 level or higher), (2) humanities, (3) mathematics, statistics and computer science, (4) natural science, (5) social science, and (6) other courses with honors credit. Three of the 21 credit hours must be in a special honors seminar or an interdisciplinary honors course. A 3.50 or higher cumulative grade-point average is required at the time of the award. Completion of the General Honors Award is noted on the student's official transcript.

The College Honors Award is earned by completing a minimum of 12 honors credit hours in upper-division courses with grades of "A" or "B." The 12 credit hours must include a senior honors thesis or senior honors project with a public presentation of the results. A 3.50 or higher cumulative grade-point average is required at the time of the award. Completion of the College Honors Award is noted on the student's official transcript.

Students who complete a minimum of 39 honors credit hours with grades of "A" or "B" and have received both the General Honors Award and the College Honors Award will be granted the bachelor's degree with honors. This recognition is reflected on the student's official transcript and on a special honors diploma.

Scholarships
Several scholarships are funded through private donations, alumni gifts, and industries, and vary in amounts from $400 to over $2,000 per year.

These scholarships are available for freshmen through senior students, and are awarded primarily on the basis of academic achievement and leadership potential. However, during the selection process consideration may be given to financial need and other factors. Freshman students should normally have an ACT composite score of 29 or higher and be in the top 10 percent of their high school graduating class to be competitive for CEAT scholarships.

Each school or department within the College normally has scholarship funds available. These are administered through that school or department rather than through the College's scholarship committee. However, a separate application form is not required.

Scholarship application forms for transfer students may be obtained by contacting the Office of Student Academic Services, CEAT, 101 Engineering North, OSU, Stillwater, OK 74078.

Freshman scholarship applications should be completed and on file by February 1 preceding the academic year for which the student expects to receive the scholarship in order to assure full consideration. The OSU Freshman Fee Waiver and Scholarship form should be submitted to the Office of University Scholarships. Since copies of these applications are forwarded to CEAT, a separate application is not required.

Continuing students should submit scholarship applications to the head of the school in which they are majoring prior to May 1. In this manner they will also be considered for any departmental scholarships for which they may be eligible as well as for any CEAT scholarship. Students who have not selected a major should submit their applications to the Office of Student Academic Services.

Concurrent Enrollment
If a student expects to apply credits toward a degree at OSU that are to be earned at another institution or through correspondence or extension, while enrolled in one of the programs of the College of Engineering, Architecture and Technology, permission must be obtained in advance. It is the belief of the faculty of the College that such enrollment detracts from the educational process at this institution, and can be justified only in the most unusual circumstances. Normally, if the material for which such permission is sought is available at OSU, permission will not be granted, nor will retroactive permission be granted in any circumstances.

Calculators and Computers
An engineering, architecture or technology student is expected to be equipped with an appropriate calculator or computer. Necessary functions include exponential functions, the logarithm and inverse logarithmic functions in both natural base and base 10, and the trigonometric and inverse trigonometric functions.

While students may find their own personal computers to be a convenience, computer classrooms and labs are available to meet student needs.

High School Preparation
Beginning engineering students who have completed two units of algebra and one each in plane geometry and trigonometry/analysis in high school should be prepared to enter at the expected level in mathematics. In addition, students who can should obtain high school credit in one unit of general chemistry and one unit of general physics, and students will benefit from taking calculus, if available.

Oklahoma State University offers course work in algebra, trigonometry and preparatory chemistry for students who were unable to obtain this work during high school. However, such credit does not count toward the minimum number of semester hours specified for the B.S. degree in engineering.

General chemistry, college algebra and trigonometry credits may count toward B.S. degrees in engineering technology, and general chemistry may be used as an elective in architecture.

General Education Requirements
For students in Engineering, Architecture and Technology, courses in the humanities and social sciences provide both a broadening of the education and essential background for addressing the critical issues in society. Students should contact an adviser in the CEAT Office of Student Academic Services to select sequences of courses that meet both of these objectives and satisfy the OSU general education requirements.
Schools of Engineering

Each of the schools of engineering offer bachelor’s, master of (designated) engineering, master of science, and doctor of philosophy degree programs. The curricular objectives in each engineering program are to develop each student's: (1) capability to delineate and solve in a practical way the engineering problems of society, (2) sensitivity to the socially-related technical problems which confront the profession, (3) understanding of the ethical characteristics of the engineering profession and practice, (4) understanding of the engineering responsibility to protect both occupational and public health and safety, and (5) ability to maintain professional competence through life-long learning.

The Professional School Concept

In accord with the professional nature of a career in engineering, a student entering OSU is admitted into the pre-engineering program, consisting of the course work normally taken the first two years of an engineering curriculum. Near the completion of the pre-engineering course work, the student is considered for admission to one of the professional schools of the College to continue in the upper-division program. Upon meeting admission standards the student then pursues a curriculum leading to the B.S. degree with an optional additional year leading to a master's degree in his or her discipline.

re-engineering Program. The content of the pre-engineering program is similar for most engineering specialties, and includes course work devoted to mathematics through calculus and differential equations, communication skills, general chemistry, general physics, engineering sciences, social sciences, and humanities.

Bachelor of Science. Upon formal admission to the professional school of his choice, the student proceeds through the junior and senior years of the degree program, fulfilling "Major Requirements" as listed on the degree requirements sheet in the publication Undergraduate Programs and Requirements that is considered a companion document to the Catalog.

mester of Engineering. The Master of specific school) Engineering degree programs are designed to prepare the graduate for the practice of the engineering profession in industry and government. They are distinguished by particular emphasis on developing in students the ability to perform effectively in design and development work; the programs normally include internship experiences as a part of the academic process.

Admission to one of these programs also depends upon being accepted by one of the professional schools. The total program consists of all undergraduate degree requirements, and a 32-semester-credit-hour study program in graduate-professional status meeting Graduate College requirements for a Plan III master’s degree. At least 24 semester hours must be at the 5000 level, including six to eight hours of professional practice.

The professional school plan of study when filed with the Graduate College becomes the preliminary plan of study for the graduate portion of the program. A separate final plan of study must be filed with the Graduate College by the end of the second week of the term during which all requirements for graduation are to be completed.

Master of Science and Doctor of Philosophy. These degree programs are available in each engineering school to prepare engineers for careers in advanced engineering, research and development. The programs are described under each school's headings, and in the "Graduate College" section of the Catalog.

Admission Requirements

All new engineering students are first admitted to the pre-engineering program. Regardless of previous background all new engineering students must enroll in ENGR 1111. Transfer students will not be admitted if performance in the most recent semester of transfer credit, would have placed the student on probation if enrolled in pre-engineering at Oklahoma State University.

Nonresident transfer students will be admitted directly to pre-engineering if they appear to have the ability to make satisfactory progress toward an engineering degree as indicated by the following:

1. An overall GPA of at least 2.70, and
2. A GPA of at least 2.50 over all mathematics, physical science, engineering science and engineering courses, and
3. A GPA of at least 2.00 (in at least 12 hours if a full-time student) in the most recent semester completed.

For these purposes, all GPAs are calculated using only the last grade in any repeated course.

Nonresident transfer students not directly admissible to pre-engineering but those who meet OSU requirements for admission may be admitted to University Academic Services for one or two semesters in order to fully evaluate their qualifications for admission to pre-engineering. After grades are received each semester, such students may be evaluated and, if qualified, will be admitted to pre-engineering.

Students transferring to pre-engineering from another major at OSU or University Academic Services must meet the same requirements for admission as a student transferring from another college or university.

Transfer students who have completed all lower-division course requirements may, with the school head's permission, be allowed to take selected 3000-level engineering courses while in pre-engineering status.

International student applications must be received by June 15, November 1 and April 1 for the fall, spring and summer terms, respectively, to be considered for admission to pre-engineering.

Admission to the Professional Schools. In each school of engineering the lower-division course work is devoted to qualifying the student for admission to the professional school.

To be admitted to one of the professional schools of engineering, the student must have:

1. Completed a minimum of 60 semester credit hours in an accredited institution of higher learning.
2. Demonstrated an acceptable level of competence in subject material comparable to that covered in Pre-engineering, i.e., General Education and Common Pre-engineering. Such demonstration may be by completion of course work or by examination with not more than half the requirements satisfied by examination.
3. Been formally accepted by a professional school.

An acceptable level of competence for admission to a professional school may be demonstrated by:

a. Completion of the Pre-engineering requirements as designated on the flow chart corresponding to the student's matriculation date and major, with an overall grade-point average of 2.30 or higher in these courses. Students may be deficient in no more than nine of these hours, and must have completed the required sequences in calculus, general physics, general chemistry, English composition, and at least two engineering science courses.

b. Final grades of "C" or better in all required English composition courses.

c. Completion at OSU of at least 12 semester credit hours of courses.
required for the degree, with a grade-point average of 2.30 or higher in these courses. This must include at least nine hours of technical subjects with a GPA of 2.50 or higher.

d. Achievement of an overall grade-point average of 2.50 or higher in the required mathematics, physics, chemistry, engineering science and engineering courses completed prior to admission to a professional school and final grades of “C” or better in each of these courses.

For these purposes, all GPAs are calculated using only the last grade in repeated courses. Individual schools may impose higher standards for admission. Currently, the School of Electrical and Computer Engineering requires a 2.60 and 2.70 respectively where 2.30 and 2.50 are indicated in a, c., and d. above.

In addition, if the number of qualified professional school applicants to a given professional school exceeds the number that can be provided a quality program with the resources available, the number admitted each semester to that professional school will be limited. In that event, priority for admission will be given first to Oklahoma resident pre-engineering students on a best qualified basis as determined by the grade-point average in courses taken and completed at OSU. This practice will preserve the high standards demanded of a quality educational experience sought by students and is necessary so that OSU graduates will continue to be highly regarded.

Admission to Graduate-Professional Status. To be admitted to graduate-professional status in a professional school in the CEAT, a student must have satisfied requirements for a B.S. degree in engineering, meeting the criteria of the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology. Students with B.S. degrees in physics, chemistry, etc., must complete work to meet ABET undergraduate requirements before gaining graduate-professional status. Scholastic performance as an undergraduate at a level that indicates a high probability of success in a graduate program requiring a 3.00 minimum GPA on a 4.00 scale is also a requirement.

Class Placement

The selection of the initial chemistry and mathematics courses for an entering student in the College of Engineering, Architecture and Technology is determined by the amount of and grades in mathematics or chemistry completed in his or her high school program, and ACT test scores. When appropriate, students with a strong background can obtain academic credit by advanced standing examination or by College Level Examination Program (CLEP) tests.

Academic Advising

The College’s Office of Student Academic Services provides advisement for all pre-engineering students. When a student has gained admission to a professional school of engineering, he or she will be assigned a faculty adviser in the school.

Each student is personally advised in the planning and scheduling of his or her course work and is counseled and advised individually on matters of career choice, his or her activities at OSU, and on other academic matters. An academic file is created for each student at the time of initial enrollment.

Each student and his or her adviser must carefully select elective courses to meet the curriculum objectives and accreditation criteria. Specific criteria include appropriate computer-based experiences, knowledge of probability and statistics, competence in written and oral communications, an understanding of ethical, social, economic and safety considerations, and engineering design experiences that are integrated throughout the curriculum. The engineering design experiences begin with ENGR 1322 and culminate with a major engineering design experience specified on the degree requirement sheet. The adviser assists the student in this effort and tries to assure accuracy and compliance; however, the ultimate responsibility for meeting degree requirements rests with the student.

General Education Requirements

Opportunities to satisfy General Education requirements with required courses in the schools of engineering include:

English. Students are required to complete a course in technical report writing. Thus, students making an "A" or "B" in the first English composition course (ENGL 1113), need not take ENGL 1213, and may take ENGL 3323, to meet both the General Education requirement for English and the College requirement for technical writing.

Humanities and Social Science. Engineering students must complete a total of 18 semester credit hours to meet this requirement. By taking American history and political science, six additional hours of social and behavioral sciences, and six hours of humanities, the 18 hours will meet the University’s requirements in these areas. Humanities and Social Science courses must be selected with the assistance of a CEAT adviser in order to assure compliance with accreditation requirements for both breadth and depth and the University’s requirement for an International Dimension.

Bio systems and Agricultural Engineering

Professor and Head Billy J. Barfield, Ph.D., P.E.

The School of Biosystems and Agricultural Engineering is administered jointly by the College of Engineering, Architecture and Technology and the College of Agricultural Sciences and Natural Resources.

Biosystems engineers are professionals who create and adapt engineering knowledge and technologies for the efficient and effective production, processing, storage, handling, and distribution of food, feed, fiber and other biological products, while at the same time providing for a quality environment and preserving natural resources. Specialization is provided in emphasis areas or options of food and bioprocessing, environmental and natural resources, biomechanical, and general agricultural engineering.

Biosystems engineering courses integrate the engineering sciences with biological sciences and teach students to design solutions to real problems of society. Students work both as individuals and in teams to solve real world design problems provided by industrial firms who hire biosystems engineers.

The goal of the biosystems degree programs is to produce graduates who possess broad-based knowledge, skills and judgment that prepare them to succeed in the profession of engineering or in further studies at the graduate level. To achieve this goal, the specific objectives listed below are integrated throughout the program.

In the preprofessional portion of the biosystems engineering program (usually equivalent to two years of study) the focus is on the underlying biological, physical, chemical and mathematical principles of engineering, supplemented by appropriate general education courses in English, social sciences and humanities. Students who demonstrate proficiency in this portion of the program
are eligible for admission to the professional school in biosystems engineering.

The professional school of biosystems engineering curriculum (typically two years) builds systematically upon the scientific knowledge acquired in the preprofessional curriculum. In professional school, students have the opportunity to focus on the option areas given above. Regardless of the option area, the degree is accredited at the basic level by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology under agricultural engineering and similarly named programs.

Each professional school course builds upon preceding engineering courses to develop in the student the ability to identify and solve meaningful engineering problems. The course work is specifically sequenced and interrelated to provide design experience at each level, leading to progressively more complex, open-ended problems. The course work includes sensitizing students to socially-related technical problems and their responsibilities as engineering professionals to behave ethically and protect occupational and public safety. The course culminates in senior year design courses in which students integrate the analysis, synthesis and other abilities they have developed throughout the earlier portions of their study into a capstone experience. At this point, they are able to design components, systems and processes that meet specific requirements, including such pertinent societal considerations as ethics, safety, environmental impact and aesthetics. The students have also developed and displayed the ability to conduct experiments essential to specific studies and to analyze the experimental results and draw meaningful conclusions.

An integral part of this education continuum from basic science through comprehensive engineering design are learning experiences that facilitate the students’ abilities to function effectively in both individual and team environments. Moreover, the program provides every graduate with adequate learning experiences to develop effective written and oral communication skills. State-of-the-art computational tools are introduced and used as a part of their problem-solving experiences. Finally, the students’ experiences in solving ever-more-challenging problems enable them to continue to learn independently throughout their professional careers.

A wide variety of employment opportunities are available for biosystems engineers in industry, public service and education. Some of these opportunities include positions in governmental agencies, consulting, machinery industry, manufacturing and installation, and electric power management industries. Biosystems engineers have careers in foreign countries as well.

Students interested in a degree in biosystems engineering may initially enroll in either the College of Engineering, Architecture and Technology or the College of Agricultural Sciences and Natural Resources. Students who enroll in the College of Agricultural Sciences and Natural Resources should request a biosystems engineering adviser and transfer to the College of Engineering, Architecture and Technology by the end of their first semester.

Graduate Programs

The School of Biosystems and Agricultural Engineering offers three programs leading to post-baccalaureatedegrees: Master of Biosystems Engineering, Master of Science and Doctor of Philosophy. The Master of Biosystems Engineering program places emphasis on design and internship in engineering experience. The Master of Science and Doctor of Philosophy degrees emphasize research and development.

Excellent facilities are available for students to explore research and design in bioprocessing and food engineering, physics of plant and animal environments, non-point-source pollution control, hydrology, water resources, water quality, air quality, wind erosion, machine development for biological systems, microelectronics, intelligent machines for biological production, irrigation design, and hydraulics.

Research projects are supported by the Agricultural Experiment Station and by state and federal grants. A well-trained faculty, many of whom are registered professional engineers with research, consulting and design experience, guide the graduate students’ activities and plan programs to meet students’ needs. Graduate students design experiments and special equipment to conduct their work. They are expected to demonstrate, by supporting research or by designs, the ability to identify a problem, define alternatives, propose a solution, organize a design or an experimental investigation, carry it to completion and report the results.

Admission Requirements. Admission to either the Master of Science or Doctor of Philosophy degree program requires graduation from an engineering curriculum accredited by the Accreditation Board for Engineering and Technology. Students without accredited degrees may be admitted provisionally and may be required to take additional courses.

Admission to the Master of Biosystems Engineering degree program is permitted for students who meet the prerequisites as stated in the "Master of Engineering" section in the Catalog. The departmental graduate committee evaluates the applicant’s credentials to determine equivalency and specify requirements to overcome deficiencies. A student must be accepted by an adviser in the School prior to official admission to the graduate program.

Degree Requirements. A candidate for any of the graduate degrees listed above follows an approved plan of study which must satisfy at least the minimum University requirements for that particular degree.

Chemical Engineering

Professor and Head R. Russell Rhinehart, Ph.D.

Chemical engineers apply chemical, physical, engineering, economic and safety principles to solve important problems and to supply vital materials for technology-based civilization. Chemical engineers work in industries such as pharmaceuticals, fuels, industrial chemicals, bioengineering semi-conductors, materials and much more. Chemical engineering also includes energy conservation and pollution control. The emphasis on chemistry and the chemical nature of everything people use is what makes chemical engineers different from other engineers.

Chemical engineers often find themselves defining a problem or product, developing a process to do what is needed, and then designing the plant to carry out the process. After the plant is started, chemical engineers commonly manage operations, oversee equipment maintenance, and supervise control of product quality. They trouble-shoot the problems which hinder smooth operations, and they plan for future expansions or improvements. Their training and knowledge make them well qualified to market the products from a plant, the processing equipment for plants, or even the complete plant itself. The varied background and experience of chemical engineers make them ideally suited for advancement into top-level managerial and executive positions.

The goal of the B.S. degree program is to produce graduates who possess broad-based knowledge, skills and judgment that prepares them to succeed in the profession of engineering or in further
studies at the graduate level including medical school. To achieve this goal, the objectives described below are integrated throughout the program.

In the preprofessional portion of the chemical engineering program (usually equivalent to two years of study), the focus is on the underlying scientific and mathematical principles of engineering, supplemented by appropriate general education courses in English, social sciences and humanities. Students who demonstrate proficiency in this portion of the program are eligible for admission to the professional school.

The curriculum in the professional school (typically two years) builds systematically upon the scientific knowledge acquired in the preprofessional curriculum. In professional school, students have the opportunity to focus in one of three emphasis areas: (1) the regular course prepares a graduate for a wide range of employment opportunities; (2) the premedical emphasis is for those who wish preparation for medical school or seek employment in medically-related professions; and (3) the environmental emphasis is for those who wish to emphasize environmentally-related studies. Each emphasis area is accredited under the basic level ABET criteria for chemical engineering programs and each prepares a student for success in M.S. or Ph.D. study at OSU or other universities. A more complete description of exact degree requirements for the bachelor’s level curricula is given in the publication Undergraduate Programs and Requirements at OSU.

Each professional school course builds upon the preceding chemical engineering courses to develop in the student the ability to identify and solve meaningful engineering problems. The course work is specifically sequenced and interrelated to provide design experience at each level, leading to progressively more complex, open-ended problems. The course work includes sensitizing students to socially-related technical problems and their responsibilities as engineering professionals to behave ethically and protect occupational and public safety. The program culminates in the senior-year design courses in which the students integrate the analysis, synthesis and other abilities they have developed throughout the earlier portions of their study into a capstone experience. At this point, they will be able to design components, systems and processes that meet specific requirements, including such pertinent societal considerations as ethics, safety, environmental impact and aesthetics. The students will have also developed and displayed the ability to design and conduct experiments essential to specific studies and to analyze the experimental results and draw meaningful conclusions.

An integral part of this educational continuum from basic science through comprehensive engineering design are learning experiences that facilitate the students’ abilities to function effectively in both individual and team environments. Moreover, the program provides every graduate with adequate learning experiences to develop effective written and oral communication skills. State-of-the-art computational tools are introduced and used as a part of their problem-solving experiences. Finally, the students’ experiences in solving ever-more-challenging problems give them the ability to continue to learn independently throughout their professional careers.

Upon completing the B.S. studies the qualified student is encouraged to continue in the master's program.

**Graduate Programs**

The School of Chemical Engineering offers programs leading to the post-baccalaureate degrees of Master of Science and Doctor of Philosophy. A program of independent study and research on a project under the direction of a member of the Graduate Faculty will be satisfactorily completed by all graduate students. For the Master of Science candidate, the project may result in a thesis. For the Doctor of Philosophy candidate, the project will result in his or her dissertation.

**Admission Requirements**

Admission to either the Master of Science or Doctor of Philosophy degree program requires graduation from a chemical engineering curriculum approved by the Accreditation Board for Engineering and Technology (ABET). Graduates from other curricula should submit transcripts to the head of the School of Chemical Engineering for evaluation.

**The Master of Science Degree**

General requirements for the Master of Science degree in chemical engineering are 30 semester credit hours beyond the B.S. degree of course work and an acceptable thesis. Twenty-four hours must be in class work and a minimum of six hours of credit is required for thesis research. The courses taken must include CHENG 5123, 5213, 5743, 5843, and 5423, 5633, 5793 or 5853.

**The Doctor of Philosophy Degree**

The general credit requirement is a minimum of 90 semester credit hours beyond the B.S. degree including at least 30 hours of credit for research. The courses must include 18 hours of credit in 5000- and 6000-level CHENG courses of which at least six hours must be CHENG 6000 level. In addition 12 semester hours of course work is required that is approved by the student’s advisory committee, approved for graduate credit, and includes at least six semester hours outside of chemical engineering. Each student is responsible for consultation with his or her advisory committee in preparing the study plan.

**Civil and Environmental Engineering**

Professor and Head Robert K. Hughes, Ph.D., P.E.

The exceptional diversity of professional practice in civil engineering presents many career opportunities for students well-founded in the physical sciences, mathematics, geology and biology.

The concern of civil engineers is a person's environment—its control, alteration and utilization. Civil engineers engage in planning, designing and constructing highways, waterway and railway systems, harbors and shipping facilities, systems for the treatment and distribution of water and for the collection and treatment of sewage and industrial waste, dams and hydroelectric works, airports and terminals, structures of every kind including buildings, bridges, towers, industrial plants, tunnels and subway systems, schemes for the control of water and air pollution, and many other works of general benefit to society.

The professional curriculum in civil engineering is based on the pre-engineering courses in mathematics, physical sciences and engineering sciences. On this foundation, required courses train the student in the basic skills needed for the professional practice of civil engineering and provide the tools for more advanced study. Engineering theory and principles are developed in a way that will encourage their application to the solution of practical problems. Elective courses give experience in the solution of typical problems and develop the judgment and confidence of the student engineer.

The goals of the School are to provide a curriculum that is well balanced among the six major areas of civil engineering practice; to provide access and exposure to laboratory, computational and design experiences that will enhance performance in the practice of civil engineering; to enhance communicative skills and an understanding of management principles; to encourage
the development of social relationships
and experience in team participation;
and to ensure student understanding of
the ethical and societal responsibilities of
professional practice. Program curricula
requirements are outlined in the publica-
tion Undergraduate Program and Re-
quirements that is considered a compan-
ion document to the Catalog. The civil
and environmental program is accred-
ited by the Engineering Accreditation
Commission of the Accreditation Board
for Engineering and Technology under
the criteria for civil and similarly named
engineering programs.

Design talents are developed through
series of courses in which the design
compent is integrated into course
instruction. The first design experience
occurs in the freshman year with a com-
puter-aided design course. Concrete,
steel, geotechnical and environmental
design experiences occur in junior and
senior level courses. The design compo-
nent is culminated by a senior design
experience using previous design expo-
sure. The design requirements are pro-
vided in the publication Undergraduate
Programs and Requirements.

Engineering ethics, occupational and
public health and safety issues; team-
work; contemporary issues involving
state, federal and local government
issues; and professional practice are
integrated into the course curriculum.

Some degree of specialization is pro-
vided through the choice of elective
courses in structures, engineering me-
chanics, transportation engineering, soil
mechanics and foundations, construc-
tion engineering and management, envi-
ronmental engineering and water re-
sources. There is a designated emphasis
for those students wishing to concentrate
more heavily in the environmental area
of practice. The environmental emphasis
is accredited as a civil engineering pro-
gram. Strong support for various parts of
the program are given by the depart-
ments of Industrial Engineering and
Management, Mechanical and Aero-
Space Engineering, Agronomy, Chemis-
ty, Geology, and Microbiology.

Graduate Programs

The School of Civil and Environmental
Engineering offers five programs leading
to post-baccalaureate degrees—the
Master of Civil Engineering degree, the
Master of Environmental Engineering
degree, the Master of Science degree in
civil engineering, the Master of Science
degree in environmental engineering,
and the Doctor of Philosophy degree.
The Master of Civil Engineering and the
Master of Environmental Engineering
degrees are graduate professional de-
grees with increased emphasis on pro-
fessional practice through a broad spec-
trum of management, economic and
technical studies and the incorporation
of actual engineering design experience
before graduation. The Master of Sci-
ence degree, on the other hand, is char-
acterized by a higher degree of technical
specialization in a particular area of
study. The Doctor of Philosophy degree
is designed to prepare a student for
research and for the teaching profession
in engineering.

Major areas of study in the School are
applied mechanics, structural analysis
and design, transportation, construction
engineering and management,
geotechnical engineering, water re-
sources, and environmental engineering.
Research in all major fields is continu-
osely pursued. Master of Civil Engineer-
cing candidates may choose either to
specialize or to engage in a broadly
based program of study, in accordance
with an approved and purposeful plan of
study.

Admission Requirements. Candidates
for the Master of Science or Doctor of
Philosophy degree must have graduated
from a civil engineering curriculum ac-
credited by the Accreditation Board for
Engineering and Technology. Graduates
from other curricula and schools should
submit transcripts to the head of the
School of Civil and Environmental Engi-
neering for review. Admission to the
Master of Science in environmental
engineering degree program is permitted
for students who meet the minimum
prerequisites as established by the
School of Civil and Environmental Engi-
neering.

Degree Requirements. All degree pro-
grams follow an approved plan of study
that must be submitted at a designated
time. All programs are characterized by
the flexibility available in a study plan that
is designed to satisfy the particular needs
of the student, while conforming to the
general requirements implied by the title
of the degree and specified by the Uni-
versity.

The Master of Science degree in ei-
ther civil or environmental engineering
requires the completion of at least 30
semester credit hours beyond the
bachelor's degree, including a research
thesis or equivalent for which not more than six semes-
ter credit hours may be granted. The
non-thesis option (32 semester credit hours) described in the "Graduate Col-
lege" option may be permitted at the
discretion of the student’s advisor.

The Doctor of Philosophy degree
requires the completion of at least 90
semester credit hours of course work
beyond the bachelor's degree, including
not more than 30 semester credit hours
for the research thesis. In addition, the
candidate must complete six semester
credit hours of course work in an area
such as languages, mathematics, statis-
tics, experimental techniques, research
methodology, or simulation, (as specified
by the advisory committee) that will facili-
tate his or her research effort. Generally,
official admission as a candidate for the
Doctor of Philosophy degree in any pro-
gram offered by the School will not be
granted until a member of the Graduate
Faculty in the School agrees to serve as
major (or thesis) advisor for the prospec-
tive candidate.

Electrical and Computer
Engineering

Professor and Interim Head Bennett
L. Basore, Sc.D., P.E.

Electrical Engineering

The electrical engineering program
provides the fundamentals for a career
in many related areas. All around is seen
the astounding impact of microelectron-
ics on consumer products such as cal-
culators, electronic watches, TV games,
home computers and microwave ovens,
but the future impact will be even more
astounding on worldwide satellite com-
munications, energy conservation, auto-
mation of industrial plants, oil and gas
exploration, electrical power generation
and distribution, to mention a few.

The curriculum is planned to provide
skills in the analysis of engineering prob-
lems and the design of solutions to those
programs. It provides experience in
working as a team member on design
projects. Emphasis is placed on the
development of both written and oral
communications skills and the concept
of professionalism including the impor-
tance of lifelong learning.

The School of Electrical and Computer
Engineering offers a full range of under-
graduate and graduate program choices.
A degree in electrical or computer engi-
neering is also an excellent foundation
for graduate work in other professional
fields such as medicine and law. Many
graduates also pursue advanced pro-
grams in business and management
after earning a degree in engineering.

The undergraduate electrical and
computer engineering program at Okla-
ahoma State University prepares each
graduate for a life-long professional
career. During the first two years, students complete a carefully designed pre-engineering program consisting of mathematics, physical sciences, engineering sciences and selected courses in the humanities and social sciences. During the final two years of the program, each student concentrates his or her study on electrical and computer engineering subjects and can elect from the following areas: computer engineering, electronics, energy systems, communications, control systems, electromagnetics, solid state devices, optics, and network theory/signal processing. Specific elective courses must be selected to assure that the design experience is integrated throughout the curriculum, culminating in the two major design courses at the senior level.

Computer Engineering

A special emphasis area in computer engineering is offered by the School of Electrical and Computer Engineering. This area is designed for students who have a strong interest in computers and desire to gain a full understanding of both the electronic hardware and the programming software aspects of modern computer systems. A student in computer engineering will also gain a detailed knowledge of one or more applications where computers are being used as integral components of advanced engineering systems; examples are instrumentation and test facilities, communication systems, power systems and process control systems. Students in computer engineering will work directly with microprocessors, microcomputers, and minicomputers and develop special electronic circuits for interfacing these computers to various peripheral devices.

In addition to the laboratories devoted to research, separate instructional laboratories give students "hands-on" experience in microcomputers, minicomputers, digital logic design, electronics, electrical machinery, networks, instrumentation and electromagnetics. In most instances, the student is guided through laboratory exercises which are closely related to classroom lectures. Here the student has the opportunity to verify theoretical principles and design concepts presented in the lectures. In other courses, the laboratory formats are more open-ended, allowing the student to experiment freely and exercise individual discretion in discovering experimental results.

This program, including the computer engineering emphasis area described above, is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology under the criteria for electrical and similarly named engineering programs.

Graduate Programs

The School of Electrical and Computer Engineering offers two graduate degrees: Master of Science and Doctor of Philosophy. Students interested in a Master of Electrical Engineering degree program should contact the department head.

The Master of Science degree is designed for students interested in careers in industry and government service that emphasize advanced design, development, and research methods for high technology. This degree incorporates additional advanced course work and on-campus creative activities.

The Doctor of Philosophy degree is designed to prepare the student for high-level research and development positions in industry and government and for the teaching profession in engineering, and is distinguished by the emphasis on research and by the incorporation of a doctoral thesis.

Students may select course work and participate in research and design projects in the following areas: computer engineering, energy systems, control theory, communications, signal/speech/image processing, electromagnetics, electronics, network theory, solid-state devices, artificial intelligence, parallel processing, optoelectronics and lasers.

In addition, students may elect a multidisciplinary program that crosses departmental lines and emphasizes the application of electrical engineering and systems theory to complex problems involving the interaction of engineering systems and technology with social, economic and environmental processes.

Admission Requirements. Admission to the Graduate College, as described under "General Regulations" in the "Graduate College" section of the Catalog is the first step for those students proceeding toward advanced degrees. Graduation with high scholastic performance from an electrical engineering curriculum accredited by the Accreditation Board for Engineering and Technology qualifies the student for admission to the School of Electrical and Computer Engineering as a candidate for the advanced degrees offered.

Graduates from non-engineering fields such as mathematics, physics and computer science are also admitted to the School of Electrical and Computer Engineering M.S. and Ph.D. graduate programs, if an evaluation of their transcripts indicates they are prepared to take graduate-level course work in electrical engineering, or can be expected to do so after a reasonable amount of remedial course work. This condition also applies to graduates of unaccredited engineering programs and engineering technology programs.

Degree Requirements. The Master of Science degree is awarded to those students who successfully complete an approved plan of study under one of two possible options. If a thesis is written, 30 semester credit hours are required, including six hours credit for the thesis. If no thesis is written, 32 semester credit hours are required, including two hours credit for a creative activity. To be approved, a plan of study will include, as a minimum, 18 hours of 5000-level courses in electrical and computer engineering. Most plans of study include additional 5000-level courses, depending upon the background and particular educational goals of the student, and the minimum stated above is allowed only when a specific interdisciplinary plan of study is approved by the faculty. Each student is encouraged to include courses in supporting disciplines such as mathematics, computer science, statistics, business or other engineering fields. As mentioned above, some remedial work in undergraduate electrical and computer engineering may be required in addition to the 30-32 hours specified above.

The Doctor of Philosophy degree is granted in recognition of high achievement in scholarship in course work selected from the broad field of electrical engineering, and an independent investigation of a research problem in a chosen field of specialization that leads to a contribution to knowledge, as presented in a dissertation. For this degree the Graduate College requires a minimum of 90 credit hours for acceptable academic work beyond the bachelor's degree, including credit for the dissertation.

The School of Electrical and Computer Engineering also participates in the Master of Manufacturing Systems Engineering program. (See "Graduate Programs" under "Industrial Engineering and Management," and "Telecommunications Management" in the "Graduate College" section.)

Industrial Engineering and Management

Professor and Head C. Patrick Koelling, Ph.D.

Industrial engineering and management is a broad field concerned with designing, analyzing and operating a wide range of systems including people, materials, money and equipment. Industrial engineering and management is the
only engineering discipline specifically concerned with the role of the human being in the processes by which goods and services are produced and as such is often called the "people-oriented engineering discipline." The industrial engineer's position in an organization is usually as a management adviser in contact with every phase of the organization. Because of the breadth of their backgrounds, industrial engineers are specially well qualified to rise to positions of leadership.

The goal of the industrial engineering and management program is to produce graduates who possess broad-based knowledge, skills and judgment that prepares them to succeed in the profession of engineering management or in further studies at the graduate level. Specific educational objectives derived from this goal are available from the undergraduate adviser.

The curriculum explicitly provides course work useful in dealing not only with the physical elements of systems, but also with organizational, economic, environmental and human aspects. Such problems are found in traditional industry as well as in service organizations and governmental agencies, e.g., manufacturing facilities, hospitals, airlines, railroads, banks and management consulting firms. In all of these capacities, the industrial engineer is concerned with improving productivity and quality, and providing safe and efficient working conditions.

The curriculum blends a basic group of common engineering science courses with specialized courses containing engineering topics in the major areas of industrial engineering-design of human/machine systems, design of management control systems and improvement of operations (both manufacturing and service). The course offerings stress mathematical and statistical techniques of industrial systems analysis, quantitative methodologies of operations research, computers as a tool for problem solving and simulation, economic considerations of alternatives, control of product or service quality and quantity, specifications of the manufacturing process including equipment and tooling, planning, scheduling and control of work flow, and behavioral sciences in the organization, management of human endeavor, ethics, and environmental and safety concerns.

Students gain valuable hands-on laboratory experience in manufacturing processes, work methods, computer simulation and human factors engineering. This experience, combined with the Course work described above, provides a firm foundation for the capstone design course during the senior year. Specific courses containing these engineering topics and the major engineering design course are identified in the publication Undergraduate Programs and Requirements.

The course work is specifically sequenced and interrelated to provide design experience at each level, leading to progressively more complex, open-ended problems. The course work includes sensitizing students to socially-related technical problems and their responsibilities to engineering professionals to behave ethically and protect occupational and public safety. The program culminates in a senior year design course in which the students integrate the analysis, synthesis and other abilities they have developed throughout the earlier portions of their study into a capstone experience where they identify, delineate and solve engineering problems. Students are able to design components, systems and processes that meet specific requirements, including such pertinent societal considerations as ethics, safety, environmental impact and aesthetics. The students also develop and display the ability to design and conduct experiments essential to specific studies and to analyze the experimental results and draw meaningful conclusions.

An integral part of this educational continuum from basic science through comprehensive engineering design are learning experiences that facilitate the students' abilities to function effectively in both individual and diverse team environments. Moreover, the program provides every graduate with considerable learning experiences to develop effective written and oral communication skills. State-of-the-art computational tools are introduced and used as a part of their problem-solving experiences. Finally, the students' experiences in solving ever-more-challenging problems gives them the ability to continue to learn independently throughout their professional careers.

The program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology under the criteria for industrial and similarly named engineering programs.

Graduate Programs
The School of Industrial Engineering and Management offers graduate programs leading to the Master of Industrial Engineering and Management degree, the Master of Science degree, and the Doctor of Philosophy degree. The School is also one of the joint sponsors of the Master of Manufacturing Systems Engineering degree.

The Master of Industrial Engineering and Management degree is a graduate professional degree with increased emphasis on professional practice, incorporating an engineering design experience during the final year of study.

The Master of Science degree is characterized by a higher degree of technical specialization in a particular field of study. This degree program is designed to prepare men and women for technical positions such as research and consulting, as well as professional practice, in various kinds of organizations.

The Master of Science degree and the Master of Industrial Engineering and Management degree are intended to be especially attractive to all engineering graduates, including non-industrial engineers, and to many science majors. The two degree programs include a strong, technical component and an orientation to business and management which is complementary to other technical backgrounds.

The Doctor of Philosophy degree is designed to carry the student to the leading edge of knowledge in the profession of industrial engineering and management. It is intended to prepare men and women for highly specialized positions, such as research and consulting in industry, government and service organizations, and for teaching and research positions in colleges and universities.

The Master of Manufacturing Systems Engineering degree emphasizes a broad exposure to manufacturing from the perspective of the industrial, electrical and mechanical engineering disciplines. Students select courses from all three engineering disciplines. The program is oriented toward engineering practice in integrated manufacturing systems. Structured as a terminal degree, it prepares individuals with knowledge of all aspects of manufacturing systems, including management as well as hardware aspects of manufacturing.

The basic consideration in graduate education in industrial engineering and management at this institution is the most effective and efficient utilization of human, physical, and economic resources. Instruction in management embraces both qualitative and quantitative concepts, including analytical methodologies and social considerations pertinent to organizations of many kinds.

Staff and facilities are available for the study and practice of several phases of industrial engineering. Advanced degree programs may be arranged with major emphasis in fields of interest such as industrial management, manufacturing systems analysis and design, operations research, simulation, ergonomics, production control, quality assurance,
Clinical education is an economic analysis, energy and hazardous waste management and other qualitative and quantitative facets. Students may complement industrial engineering and management courses with work in several other branches of engineering, as well as economics, business administration, computer science, statistics, mathematics, psychology, and sociology.

Admission Requirements. Graduation from an accredited engineering curriculum with scholastic performance distinctly above average qualifies the student for admission to the Master of Science or Doctor of Philosophy degree programs. Applicants not meeting these criteria should submit transcripts to the director of graduate programs for the School of Industrial Engineering and Management for evaluation.

Admission to the Master of Industrial Engineering and Management degree program is permitted for students who meet the minimum prerequisites as stated in "Master of Engineering." A student may enter the program at a point for which he or she is qualified provided the minimum admissions criteria are met and the student is accepted by the School of Industrial Engineering and Management.

Degree Requirements. The Master of Industrial Engineering and Management degree requires the completion of at least 33 semester credit hours beyond the bachelor's degree, including an internship or professional practice of six semester credit hours.

The Master of Science degree in industrial engineering and management requires the completion of at least 30 semester credit hours beyond the bachelor's degree, including a research thesis of six semester credit hours. A 32 semester-credit-hour option is also permitted and must include a six credit hour creative component.

The Doctor of Philosophy degree requires the completion of at least 90 semester credit hours of course work beyond the bachelor's degree or 60 semester credit hours of course work beyond the master's degree, including normally about 20 semester credit hours for a research thesis. In addition, the candidate must complete six semester credit hours of course work in an area such as mathematics, statistics, experimental techniques, or research methodology (as specified by the advisory committee).

The Master of Manufacturing Systems Engineering degree requires the completion of 33 semester credit hours beyond the bachelor's degree and normally includes six credit hours based upon an internship in industry.

The School of Industrial Engineering and Management also participates in the health care administration specialization, offered through the natural and applied sciences masters degree program. (See the "Graduate College" section of the Catalog.)

**Mechanical and Aerospace Engineering**

Professor and Head Lawrence L. Hoberock, Ph.D., P.E.

Mechanical engineering and aerospace engineering are professional disciplines that involve the invention, design, and manufacture of devices, machines and systems that serve the ever-changing needs of modern society.

Mechanical engineering is an exceedingly diverse field that covers an exceptionally wide range of systems, devices and vehicles. Mechanical engineers are vitally concerned with all forms of energy production, utilization and conservation. They deal with everything mechanical, whether it is small or large, simple or complex—from power lawn mowers to automobiles, fuel cells to nuclear power plants, gas turbine engines to interplanetary space vehicles, artificial limbs to life support systems, robotic manipulators to complex automatic packaging machines, precision instruments to construction machinery, household appliances to mass transit systems, and heating and air-conditioning systems to offshore drilling platforms. In virtually every organization where engineers are employed, mechanical engineers will be found.

The B.S. degree program in mechanical engineering, together with the premedical option in mechanical engineering, is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology under the criteria for mechanical and similarly named engineering programs.

Aerospace engineering, an option in mechanical engineering is concerned with the science and technology of flight, and the design of air, land and sea vehicles for transportation and exploration. This exciting field has already led people to the moon and continues to lead in the expansion of frontiers deeper into space and into the ocean's depths. Because of their unique backgrounds in aerodynamics and lightweight structures, aerospace engineers are becoming increasingly involved in solving some of society's most pressing and complex problems, such as high-speed ground transportation and pollution of the environment. Aerospace engineering, an option in mechanical engineering, is separately accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology under the criteria for aerospace and similarly named engineering programs.

The goals of the mechanical engineering B.S. degree programs, including the aerospace engineering and premedical options, are to educate engineers who are both well prepared to practice engineering upon graduation and who have sufficiently rigorous development to undertake graduate work. Because mechanical engineering is perhaps the broadest of all engineering disciplines, the program provides not only excellent grounding in all engineering fundamentals, but also some flexibility in selecting controlled technical electives to suit the student's interests. However no one area may be unduly emphasized at the expense of another. For the aerospace engineering and premedical options, prescribed course work has been selected to provide students with more focused development. Graduates of these programs are fully competent as mechanical engineers, including their abilities in design, but also competent in their areas of concentration.

As a fundamental component of all B.S. programs, engineering design is strongly emphasized in the junior and senior years. A minimum of 16 credit hours of design, integrated throughout the curriculum, must be taken by each student. In fact, with the exception of only a few courses, each MAE course at the 3000 and 4000 levels includes some design content, ranging from a minimum of one-half to a maximum of four credit hours of design content. Each professional school course builds upon the preceding mechanical and aerospace engineering courses to develop in the student the ability to identify and solve meaningful engineering problems. The course work is specifically sequenced and interrelated to provide design experience at each level, leading to progressively more complex, open-ended problems. The course work includes sensitizing students to socially-related technical problems and their responsibilities as engineering professionals to behave ethically and protect occupational and public safety. The program culminates in a senior-year design course in which students integrate analysis, synthesis, and other abilities they have developed throughout the earlier portions of their study into a capstone experience. The design experiences include the fundamental elements and features of design with realistic constraints such as
Graduate Programs

The School of Mechanical and Aerospace Engineering offers programs leading to the Master of Science degree, and the Doctor of Philosophy degree. These degrees prepare the graduate for research and development positions in industry and government, or for the teaching profession in engineering. They are distinguished by the incorporation of a research component.

Students may select course work and participate in research or design projects in the following areas: advanced manufacturing processes, aerodynamics, design, computational mechanics, dynamic systems and controls, fluid mechanics, materials processes, solid mechanics, and thermal systems. Students are encouraged to take courses in mathematics and science and in other fields of engineering which fit into their programs.

Admission Requirements. Admission to the Graduate College is required of all students pursuing the M.S. or Ph.D. degree. Graduation from a mechanical or aerospace engineering curriculum accredited by the Accreditation Board for Engineering and Technology, with scholastic performance distinctly above average, qualifies the student for admission to the School of Mechanical and Aerospace Engineering as a candidate for the M.S. and Ph.D. degrees. Graduates from disciplines other than mechanical or aerospace engineering may be admitted if an evaluation of their transcripts by the School of Mechanical and Aerospace Engineering indicates they are prepared to take graduate-level course work in mechanical engineering, or can be expected to do so after a reasonable amount of prerequisite work.

Degree Requirements. All degree programs follow an approved plan of study designed to satisfy the individual goals of the student, while conforming to the general requirements of the School of Mechanical and Aerospace Engineering and the Graduate College.

The Master of Science degree program with the thesis option requires 24 semester credit hours of approved graduate-level course work, and a suitable research thesis of six semester credit hours. The non-thesis option requires 35 semester credit hours of which two must be for an acceptable, directed research activity that results in a written and oral report to the faculty.

Graduate Programs require a minimum of 90 semester credit hours beyond the bachelor's degree, including a dissertation for which no more than 30 semester credit hours may be awarded.

The School of Mechanical and Aerospace Engineering participates in the Master of Manufacturing Systems Engineering degree program. (See "Graduate Programs" under "Industrial Engineering and Management.")

School of Architecture

Professor and Head J. Randall Seitsinger, M.Arch., AIA

The School of Architecture, founded in 1909, offers professional degree programs in both architecture and architectural engineering. The integration of these programs through shared faculty, facilities and course work is a major strength of the School. It is one of the few such integrated programs in the United States, and as such produces graduates who are particularly prepared for the integrated team processes used in professional practice. The School of Architecture is a primary unit in the College of Engineering, Architecture and Technology, and therefore benefits from excellent state-of-the-art resources which significantly enhance the School's professional programs.

The School of Architecture is dedicated to providing a high quality and focused professional education to students whose career goals are to enter the practice of architecture or architectural engineering. Professional and liberal study electives provide opportunities for educational breadth or depth and a possible double degree in both architecture and architectural engineering.

The employment demand for OSU graduates consistently exceeds the supply potential of the School. Oklahoma State University graduates are recruited by the leading architectural and architectural engineering firms both in Oklahoma and nationally. The Oklahoma State University School of Architecture is particularly proud of having among its alumni many of the leaders of the best firms in the country, an AIA Gold Medalist (the highest award given to an architect), and presidents of the American Institute of Architects (AIA) and the National Architectural Accreditation Board (NAAB).

Mission and Goals. Architecture is the difficult and complex art and science of designing and building a setting for economics, safety, reliability, social and environmental impact, and other factors. At this point, students are able to design components, systems and processes that meet specific requirements, including such pertinent societal considerations as ethics, safety, environmental impact and aesthetics. Students develop and display the ability to design and conduct experiments essential to specific studies and to analyze the experimental results and draw meaningful conclusions.

An integral part of this educational continuum from basic science through comprehensive engineering design are learning experiences that facilitate the students’ abilities to function effectively in both individual and team environments. Moreover, the program provides every graduate with adequate learning experiences to develop effective written and oral communication skills. State-of-the-art computational tools are introduced and used as a part of their problem-solving experiences. Finally, the students’ experiences in solving ever-more-challenging problems gives them the ability to continue to learn independently throughout their professional careers.

The broad background and problem-solving ability of mechanical and aerospace engineers make them suited to engage in one or more of the following activities: research, development, design, production, operation, management, technical sales and private consulting. Versatility is their trademark. A bachelor's degree in mechanical engineering or the aerospace engineering option is also an excellent background for entering other professional schools such as medicine, dentistry, law or business (M.B.A.). The premedical option in mechanical engineering is available for students wishing to enroll in medical school.

In the professional school, (essentially the junior and senior years of the program) mechanical and aerospace engineering students extend their study of the engineering sciences and consider applications of fundamental principles and analysis tools to the solution of real technological problems of society. Students make extensive use of modern electronic digital computers in many courses in their programs. Some design courses involve students in the solution of authentic, current and significant engineering problems provided by industrial firms, such as 3M, General Dynamics, Schlumberger, Seagate, Hilli, Mercury Marine, Purolator, Moore Business Forms, and Mobil. Students may also help smaller firms that need assistance with the development of new products.

The student designs, with the guidance of an adviser, an individualized program of study consistent with his or her interests and career plans. Some students terminate their studies with a bachelor's degree, while others receive one of several graduate degrees.
human life. It is unique among today’s professions in that its successful practice requires a blend, in roughly equal shares, of traits normally considered less than compatible: human empathy, artistic creativity, technological competence, and organizational and economic acumen. In contrast to other fine arts, architecture is rarely self-generated; it is rather a creative response to a stated or perceived human need. It must, therefore, be more user-oriented than fine art alone and more humane than pure science. Its design solutions must avoid the total subjectivity and detachment of other arts while striving to be functionally, technically and economically objective and sound. Yet, in a seemingly insoluble contradiction, the keenest technological and economic functionality will fall far short of becoming architecture unless it also strongly appeals to human spiritual and emotional values. When one thinks of the environment, one cannot help but see or recall architectural images: pyramids in Egypt, Greek and Roman temples, gothic cathedrals, medieval castles, industrial cities, modern skyscrapers and dwellings or entire cities which significantly express the culture and values of the people who live or have lived there.

The fundamental mission of the School of Architecture is to focus its unique combination of accredited programs in architecture and architectural engineering to prepare and inspire students for the vital professional leadership roles and responsibilities required to shape the physical environment and to have a positive impact on the social, economic and cultural qualities of life in Oklahoma and the entire international context.

The School of Architecture endeavors to instill in each individual a sensitivity to human needs for quality, integrity and high ideals, a positive attitude for life-long learning, and an appreciation for one's own self-esteem.

The School's primary goal is to provide excellence in professional education for students preparing to enter the private practice of architecture or architectural engineering. This professional focus is to educate not just qualified candidates for the degree, but graduates who, during their careers, will be licensed professionals and will assume positions of leadership within the profession and society.

Accreditation. The School of Architecture offers two separately accredited professional degree programs. The Bachelor of Architecture degree, B.Arch., is accredited by the NAAB. The Bachelor of Architectural Engineering degree, B.Arch.E., is accredited by the Accreditation Board for Engineering and Technology (ABET) as an engineering program. Both programs require a minimum of five years of study to complete.

Architecture

Architecture is the complex synthesis of creatively solving problems involving both art and science through the disciplined orchestration of image making, activity organization, technological applications, legal constraints, and budgetary parameters which together express culture, enhance quality of life and contribute to the environment.

Education in architecture consists of campus-oriented classroom and studio courses, as well as off-campus studies. It is conducted in an intellectual climate which stimulates inquiry, introduces principles and values, and teaches the disciplines necessary to work in collaboration with others. The goal of the program is the education of future leaders within the architecture profession.

The design studio is the center of the School's educational program. It is the setting where students and faculty work most closely together, and where all specialized study and knowledge comes together and is synthesized in design. The record of OSU students' achievements in the design studios is evidenced through the United States in these prestigious competitions.

The program has long been known as one of the strongest professional programs in the United States. OSU graduates are consistently offered employment opportunities in many of the best architectural offices in Oklahoma and throughout the United States. The program is fully accredited by the National Architectural Accrediting Board.

Most states require that an individual intending to become an architect hold an accredited degree. There are two types of degrees that are accredited by the National Architectural Accrediting Board: (1) the Bachelor of Architecture, which requires a minimum of five years of study, and (2) the Master of Architecture, which requires a minimum of three years of study following an unrelated bachelor's degree or two years following a related preprofessional bachelor's degree. These professional degrees are structured to educate those who aspire to registration/licensure as architects.

The four-year, preprofessional degree, where offered, is not accredited by NAAB. The preprofessional degree is useful for those wishing a foundation in the field of architecture, as preparation for either continued education in a professional degree program or for employment options in architecturally related areas.

Architectural Engineering

Architectural engineering is a profession that combines the art and science known as architecture with a detailed background in fundamental and applied engineering principles. In its broadest sense, it involves the creative application of science and technology to the design of structures meant for human occupancy. Architectural engineering differs from architecture in its focus upon the design of elements, systems and procedures for buildings, rather than the design of buildings themselves. Architectural engineers practice in a wide variety of professional engineering settings such as consulting firms, architectural firms, industrial or commercial organizations and governmental agencies.

The goal of the architectural engineering program is to produce graduates who possess broad-based knowledge, skills and judgment that prepares them to succeed in the profession of architectural engineering or in further studies at the graduate level.

The primary focus of the architectural engineering program at OSU is the safe and economical design of structural systems used in buildings. These structural systems must withstand the various forces of nature such as gravity, winds and earthquakes, as well as the forces of man. These systems require a working knowledge of the mechanics of those materials commonly used for building structures such as steel, timber and reinforced concrete.

The study of architectural engineering is an integrated mix of liberal studies, design and technical education. Architectural engineers need to be able to conceptualize aesthetic issues and design complex technical systems.

In the preprofessional portion of the architectural engineering program (approximately two years of study), the focus is on the underlying scientific and mathematical principles of engineering and the basic design principles of architecture supplemented by appropriate general education courses in English, social sciences and humanities. These courses allow students to assimilate a beginning knowledge base in architecture and engineering along with a broader liberal based component to their education. Students who demonstrate proficiency in
this portion of the program by meeting a specific set of admission criteria are eligible for admission to the professional program in architectural engineering.

The professional program in architectural engineering (typically three years) builds systematically upon the scientific and architectural knowledge acquired in the preprofessional curriculum. Students acquire detailed structural and architectural knowledge and problem-solving abilities through a series of progressively more detailed and comprehensive courses and studios.

Each architectural engineering course builds upon the preceding architectural engineering courses to develop in the student the ability to identify and solve meaningful architectural engineering problems. The course work is specifically sequenced and interrelated to provide design experience at each level, leading to progressively more complex, open-ended problems. (See the publication Undergraduate Programs and Requirements.) This course work includes sensitizing students to socially-related technical problems and their responsibilities as engineering professionals to behave ethically and protect public safety. The program culminates in a fifth year course (ARCH 5119) in which the students integrate analysis, synthesis, and other abilities they have developed throughout the earlier portions of their study into a capstone experience.

An integral part of this educational continuum from basic knowledge through comprehensive architectural engineering design are learning experiences that facilitate the students' abilities to function effectively in both individual and team environments. Students are exposed to a wide variety of problems dealing with contemporary issues in an international context. Moreover, the program provides every graduate with an opportunity to study abroad. The opportunity to continue to learn independently and to study in an international context not only deepens and broadens the student's cultural experience but also sensitizes students to socially-related problems.

Foreign Study. The School of Architecture is housed in the Architecture Building, the original University Gymnasium and Armory, built in 1918. This structure was extensively remodeled in 1976 and contains all studios, laboratories, galleries and offices of the School. Specialized facilities include the Cunningham Library, containing all of the University's holdings on architecture and a fully-equipped Computer-assisted Design Laboratory. The faculty and students are especially proud of the Architecture Building, for it serves as an example of innovative architectural design and the adaptive reuse of an important building.

Student Work. Projects submitted for regular class assignments may be retained by the School. All projects not retained will be available to the student.

Student Body. With the curriculum based upon extensive and personalized student-faculty interaction, the student-faculty ratio in studio courses is set at approximately 15 to one. Annual student enrollment is approximately 300 students of whom 22 percent are women, and 18 percent are international students, thus providing a rich and diverse educational environment. A variety of student organizations and activities are available.

Academic Advising

The College's Office of Student Academic Services provides advisement for all pre-architecture students. When a student has gained admission to the upper-division of architecture, he or she will be assigned a faculty adviser.

Each student is personally advised in the planning and scheduling of his or her course work and is counseled and advised individually on matters of career choice, his or her activities at OSU, and on other academic matters. An academic file is created for each student at the time of initial enrollment.
Division of Engineering Technology

Professor and Director James E. Bose, Ph.D., P.E.

Engineering technology education is concerned with the practical application of engineering achievement with emphasis upon the end product rather than the conceptual process. Whereas the development of new methods is the mark of the engineer, effective use of established methods is the mark of the technologist. Often the technologist will be expected to achieve what the engineer conceives.

Curricula

Engineering technology curricula at OSU are four-year programs which lead to the Bachelor of Science in Engineering Technology. Graduates of the program are known as "technologists" and are trained either to assist engineers or to provide independent support for engineering activities. The technologist receives an intensive education in his or her technical specialty and great depth in mathematics and technical sciences. The program provides breadth in related technical, communication and socio-humanistic studies. A "master of detail," he or she is capable of independent action in performance of technical activities and is frequently involved as a coordinator, expediter or supervisor of other technical personnel. His or her capability in technical sales and other public-contact positions is enhanced by his or her background in selected liberal studies.

Bachelor of Science in Engineering Technology Degree Programs

Construction Management
Electronics (computer option)
Fire Protection and Safety
Mechanical Engineering
The Bachelor of Science in Engineering Technology degree requires either 128 or 129 credit hours.

The engineering technology graduate is qualified to select from a broad array of engineering-related positions. Job titles of engineering technology graduates include field engineer, test engineer, associate engineer, product engineer, sales engineer, tool designer, production engineer, engineering technologist, estimator, scheduler, and project engineer.

Those less intrigued with theoretical concepts but who have the interest and aptitude toward applications are likely engineering technology majors. These students particularly appreciate the engagement of technical specialty courses beginning with the first semester and continuing throughout the course of study. The relevance of the technical science and related technical courses adds further satisfaction.

The Bachelor of Science in Engineering Technology program is composed of the following curricular subdivisions:

- Mathematics and science-algebra, trigonometry, applied calculus, general physics, and chemistry or other science.
- Technical specialty-technical science and related technical courses.
- Communication-English composition, and written and oral technical communication.
- Social sciences and humanities-history, government, religion, literature, art, music.
- Electives-controlled and general.

Co-op Program. The College of Engineering, Architecture and Technology offers an experience-based program, Cooperative Education (Co-op). Co-op allows technology students to achieve a balanced education through the combination of theoretical and practical knowledge during their early years of professional development. The student's education is a cooperative effort between the University and industry. Students alternate semesters on campus with work semesters in industry during their junior and senior years. The periods of employment constitute an essential element in the educational process. Students gain practical knowledge which is carried back to the classroom, giving academic programs a sense of reality. By the time they receive their degrees, students have accumulated the equivalent of a year-and-a-half of progressively challenging work experience.

Participation in Co-op is voluntary; transfer students must successfully complete at least one semester at OSU prior to their first placement. Students may obtain further information about the program from the coordinator, 101A Engineering North.

Transfer Students

An important, contemporary educational development is the "two-plus-two" bachelor's program. Those completing an associate degree in technology-oriented curricula at other institutions are generally admissible to the junior year with a minimum loss of academic time. The "two-plus-two" concept provides the attractive feature of two occupational-entry levels-technician or technologist.
Required course work in mathematics and basic science is utilized to meet up to 18 semester hours of General Education requirements also. The Scientific investigation requirement is met as a part of the course work meeting professional requirements for basic science.

Construction Management Technology

Associate Professor and Head
Charles A. Rich, M.S., P.E.

The construction industry is the largest industry in the world. Leadership in this field requires a broad knowledge of labor, materials, equipment, capital and construction procedures. The interdisciplinary approach of the construction management program offers the student specialized course work in all phases of construction, designed to prepare him or her for responsible positions in industry.

One of the primary goals of the Department of Construction Management is to enhance the quality of the instructional program through effective management of the curriculum, teaching assignments and fiscal and physical resources. This goal includes providing instructional facilities, equipment and support services for faculty and students which maintain an excellent learning environment.

Faculty with excellent credentials, including a balance of formal education, teaching ability and appropriate industry experience, are recruited nationwide and are provided opportunities for individual professional development and regular contact with the industry. Faculty members are encouraged to become involved in extension and research programs relating to the department's areas of strength or growth and to serve the needs for continuing education within the industry, particularly in the southwestern construction community.

These needs and opportunities for service are assessed regularly through close cooperation with local and regional construction professionals and industry associations. An active Industry Advisory Committee, representing a broad cross-section of the industry, meets regularly to offer support and guidance necessary to preserve uncompro-mising excellence.

The modern constructor must have a great deal of technical knowledge to keep abreast of rapidly changing equipment, materials and methods of construction. Specialized courses in estimating, surveying, structures, construction planning and scheduling, construction law and insurance, field and office management and construction procedures provide students with the background necessary for today's construction industry. These specialized courses, in addition to a blend of the basic sciences, business, and general studies, produce a well-balanced curriculum for students in construction. Special attention is given to computer applications in construction estimating, and the development of graphic, written and oral communications skills is emphasized throughout the curriculum.

Students with an interest in building structures may select courses in the "building" option of construction management which provides them with a knowledge of working drawings, mechanical and electrical equipment of buildings, and other course work for a career in building construction.

Students with an interest in civil engineering structures may select courses in the "heavy" option of construction management which provides them with a knowledge of highways, soils, foundations and other course work for a career in the heavy and industrial construction industry.

The department attempts to identify and recruit highly qualified students who will benefit from the instructional program, and faculty members promote retention and ultimate graduation of construction management students through effective instruction and advice. An active program of outcome assessment among graduates and their employers assures that the program continues to provide the academic training required for success. As one method of program assessment, each student, in the final semester, is expected to sit for the Level I Constructor Qualification Examination given once each semester. The student is responsible for the application process, including the appropriate fees. The test fee is reimbursed to the student through the Office of University Assessment upon completion of the examination.

Graduates of construction management have shown the curriculum to be successful in their development as productive members of the construction industry, holding responsible positions as project managers, estimators, material and equipment salespersons, and construction managers at all levels.

The bachelor's program in construction management technology is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (TAC/ABET).

Electronics and Computer Technology

Professor and Head Thomas G. Bertenshaw, Ed.D., P.E.

The electronics technology curriculum provides preparation for outstanding career opportunities not only in the electronics industry itself but also in many other areas in modern industry which depend upon electronics for control, communications or computation. Many opportunities exist for graduates to work in diverse areas of electronics and computers.

The work of the electronics graduate may range from assisting in the design and development of new equipment in the laboratory, applying modern microprocessors in the field, to the operation or supervision of production operations, technical writing, customer service and sales.

The program provides the Bachelor of Science in Engineering Technology degree with an electronics major. To meet these diverse needs the program is laboratory-oriented and provides a strong foundation of mathematics and science, specialized course work in electronics technology and related technical areas, and courses in the area of communications and the social studies.

The electronics technology-computer option curriculum provides the preparation for graduates to enter the growing field of computer hardware and software. The demand for graduates having both computer hardware and software skills is quickly developing as the importance of automation, robotics, and artificial intelligence is recognized. Graduates of this program will be prepared for those opportunities in industry requiring considerable knowledge of both computer hardware and software.

The program provides the Bachelor of Science in Engineering Technology degree with an electronics major, and with a computer option. To meet the diverse needs that graduates will have, the program provides a strong foundation of mathematics, science, and specialized courses. Related courses in the humanities and social sciences are included to give the graduate an appreciation of the world in which the graduate will live and work.

The bachelor's program in the electronics major is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (TAC/ABET).
Fire Protection and Safety Technology

Associate Professor and Interim Head James D. Brown, M.S., P.E., C.S.P.

The fire protection and safety curriculum provides preparation for assessing and reducing the loss potential in the industrial setting with respect to fire, safety, industrial hygiene, and hazardous material accidents. With respect to fire, reducing the loss potential might involve setting design criteria with a special emphasis on life safety or fire resistivity or specifying automatic detection or extinguishing systems. When considering safety, reducing accidents may require special protective equipment or clothing, or the redesign of machinery or processes. Reducing losses caused by environmental problems may require sampling air for contaminants, such as asbestos or toxic chemicals, or monitoring noise levels, and the development of procedures to address practical approaches to compliance with state and federal regulations. Addressing the problems of handling and disposing of hazardous chemicals, such as spill control, is often required. Managing risk and compliance with federal laws and regulations relative to occupational safety and health and hazardous materials is an increasingly important job activity.

The fire protection and safety engineering technology program has existed at Oklahoma State University since 1937. The demand by business and industry for loss control specialists has resulted in the evolution of the program into one that now also places emphasis upon industrial fire protection, safety, and occupational health in addition to fire services. The program is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (TAC/ABET) and concludes with the Bachelor of Science in Engineering Technology degree in fire protection and safety.

The curriculum is designed to immediately introduce the student to studies in fire protection and safety. Therefore, students are able to measure their interest in a fire protection and safety career early in their academic program. The curriculum is rigorous in the areas of mathematics and the physical sciences. Two semesters of calculus are required as well as two semesters of chemistry and one semester of physics. Computer usage is an essential component of most fire protection and safety courses. Interested high school students should design their high school programs to prepare themselves for college level mathematics and science classes.

The graduates of the fire protection and safety engineering technology program at Oklahoma State University are consistently recruited by the major businesses and industries of the United States. Graduate placement, salary offers, and advancement into managerial positions have been excellent due to the uniqueness and high technical quality of the OSU fire protection and safety technology program.

Mechanical Engineering Technology

Professor and Head James E. Bose, Ph.D., P.E.

Mechanical engineering technology (MET) is that component of engineering that specializes in design and application. It includes the broad areas of mechanical design, mechanical power and manufacturing. Mechanical engineering technology is applied in robotics, automotive manufacturing, computer-aided drafting and design, computer-aided manufacturing, agricultural machinery and processing, mining, shipbuilding, spacecraft, electronics manufacturing, food processing, aircraft metals and plastics production-nearly the entire spectrum of the industry. In the power areas MET graduates are involved in vapor power cycles, gas power cycles, air conditioning, fluid power and power transmissions. Manufacturing areas involving MET graduates include tool design, cost evaluation and control, plant operations, production planning and manufacturing methods.

An important element in MET is the use of laboratory experience as a teaching tool. The MET program has laboratories in fluid power, materials, fluid mechanics and applied thermal sciences, basic instrumentation, computer-aided design (CAD), and manufacturing. A senior capstone design course composed of student teams integrates the knowledge and skills learned during their course of study. These laboratories are supported with the latest computer software that supports the design function. Where appropriate, laboratories with modern computer data acquisition systems and on-screen displays are available.

In addition to the required mechanical engineering technology courses, students are provided a solid foundation in algebra, trigonometry and calculus, physics, chemistry, statics, dynamics, instrumentation, thermodynamics and computer science.

Preparation for a specific industrial function can be accomplished by selecting courses that emphasize a given design area, such as fluid power, mechanical design, computer-aided design (CAD) power generation, and air conditioning and heating. Because the program focuses on the application of engineering principles to the pragmatic solution of problems, graduates are immediately productive with minimal on-the-job training, thus increasing their value to industry. Graduates of the MET program are prepared to function in the areas of product design, testing, and evaluation; product application and maintenance; field engineering; and technical sales and liaison. Industries employing MET graduates include manufacturing companies of all types, (aircraft, automobile, compressor and turbine, fluid power manufacturers and others); energy companies (such as natural gas, electrical power generation, and the oil and gas industries); and service companies (transportation industry, architecture and professional engineering firms, and those supporting the oil and gas industry).

Companies utilizing the talents of MET graduates are diversified in their products, as well as geographical location, thus providing a variety of choices in respect to both type of work and place of residence and in diverse industrial, governmental and educational institutions.
College of Human Environmental Sciences

Patricia K. Knaub, Ph.D., Dean
Margaret J. Weber, Ph.D., Associate Dean for Academic and Research Services
Lynda Harriman, Ph.D., Associate Dean for Cooperative Extension
Debra C. Engle, M.S., Director of University Extension and Development

The College of Human Environmental Sciences (CHES) is composed of three departments—Design, Housing and Merchandising; Family Relations and Child Development; and Nutritional Sciences—and the School of Hotel and Restaurant Administration. Each science-based program focuses on the reciprocal relationship between people and their natural, constructed or social environments. Graduates pursue professional careers in business, health, communications, education, international service, research, social welfare and a variety of agencies, organizations and institutions. Preprofessional options and advisement are offered for students interested in pursuing graduate education in law, medicine, dentistry or in their major fields of study.

Interdisciplinary, multicultural and global in perspective, the College programs link knowledge of individual development and environmental quality. The Colleges graduates are prepared for people-centered professions that develop solutions to many of today’s most pressing issues. These issues include promoting and contributing to human development and family functioning, improving nutrition and health, designing and managing environments that address human needs where people live, work and play, and effectively managing and delivering products and services critical to the betterment of the environment.

Further information may be found on the World Wide Web (www.okstate.edu/hes).

Academic Advising

The CHES Office of Undergraduate Programs provides advisement for all freshmen enrolling in the College and coordinates advising in the College. When a student has identified a major area of study, the student transfers to the department of his or her choice. The student is assigned a faculty adviser in that department.

Each student is advised in the planning and scheduling of his or her course work. Advising sessions include discussions on career choice and internship opportunities. The student is encouraged to maintain a close relationship with the adviser throughout the college career and to visit the adviser at times other than enrollment when only brief meetings may be possible. Students are also encouraged to participate in the Career Empowerment Opportunities (CEO) program.

Scholarships

Oklahoma State University has an extensive scholarship program for entering freshmen, and applications should be sent to the University Scholarships Office by February 1. College of Human Environmental Sciences scholarships are due for continuing students in January and scholarship awards are made in April. Freshmen and transfer student scholarships are awarded prior to the fall semester. Criteria for and the amount of the scholarship awards vary.

Academic Programs

Undergraduate Programs. The Bachelor of Science in Human Environmental Sciences degree is offered by three departments and one school of the College. The majors are:

- Design, Housing and Merchandising, with options in apparel design and production, apparel merchandising and interior design.
- Family Relations and Child Development, with options in early childhood education, individual, family and community services, and a preprofessional program with options in child development, youth and adult, or gerontology.
- Hotel and Restaurant Administration, with options in hotel administration and restaurant management.
- Nutritional Sciences, with options in dietetics, foods and nutrition, and human nutrition.

A minor may be pursued in some of the College’s programs.

Additional details about specific requirements in any of the departments or in the School may be obtained by contacting the specific offices.

Graduate Programs. The Master of Science degree is available in design, housing and merchandising; family relations and child development; hospitality administration; and nutritional sciences.

Students seeking admission to a master’s degree program in any of the departments must have completed 30 semester credit hours in human environmental sciences or closely-related subject matter. A student with background...
CHES Graduate Student Association
CHES Student Council
Club Managers Association of America
Eta Sigma Delta (hotel and restaurant administration honor society)
Family Relations and Child Development Club
High Society Catering
Hotel and Restaurant Society
International Facility Management Association Student Chapter
Kappa Omicron Nu (scholarship and leadership honor society)
Nutritional Sciences Club
Phi Upsilon Omicron (scholarship and leadership honor society)
Sigma Phi Omega (gerontology honor society)

Design, Housing and Merchandising

Professor and Head Donna H. Branson, Ph.D.

The mission of the Department of Design, Housing and Merchandising is to continuously improve the development and delivery of future-oriented, integrated instruction, research and outreach programs in design, housing and merchandising that focus on the individual-environment interaction, that are globally oriented, scientifically based and that enhance quality of life in a socially responsible manner. Three undergraduate options are available: interior design, apparel merchandising and apparel design and production.

Students in interior design are preparing for careers as professionals who assist businesses and families in planning interior spaces and solving problems relative to the function and quality of interior living and work space. Course work includes fundamentals of design, design analysis, space planning and programming, design of interior space, CAD and related aspects of environmental design. Career opportunities include professional practice in interior and architectural firms, historic restoration and preservation, product design and sales, and facility management. The Foundation for Interior Design Education Research (FIDER) has accredited the undergraduate interior design program. An emphasis in facility management prepares students to work in the facility planning and management department of a large firm such as a corporation, hotel or health care facility.

Students in apparel merchandising are preparing for careers with major firms in the apparel and related retail fields. The focus is on developing competencies associated with merchandising and management in the apparel industry. Course work includes retailing, marketing, merchandise planning and analysis, buying practices, promotion, visual merchandising, fashion and market trend analysis, quality assurance and international sourcing. Career opportunities include merchandise manager for retailers and manufacturers, marketing manager for manufacturers, merchandise sourcing manager, visual merchandiser, fashion coordinator, mall manager, and manufacturer's representative.

Students in apparel design and production are preparing for careers in the apparel, textiles, and sewn products industry. The program emphasizes the integration of design principles, fabrication, the needs and desires of the ultimate user, and mass production capabilities toward creation and production of apparel and other sewn products. Course work includes principles of design, apparel production, quality assurance, functional apparel design, properties and performance evaluation of textiles, pattern making, CAD and entrepreneurship. Career opportunities include fashion and functional designer, apparel engineer, product development manager, accessory designer, pattern maker, pattern company or manufacturer's representative, textile designer, sourcing manager, quality assurance manager, and production manager.

Students in all three options will develop business management, communication, creative problem solving and administrative skills. An internship is required for all undergraduate students. Minors are available in apparel merchandising and apparel design and production.

Graduate Programs

The Department of Design, Housing and Merchandising offers graduate work leading to the Master of Science in design, housing and merchandising and the Doctor of Philosophy in human environmental sciences degrees. The programs are scientifically based and research-oriented. Graduate degrees in the department are tailored to departmental areas of expertise, professional goals of the candidate and College of Human Environmental Sciences and Graduate College requirements. Graduate programs may focus on either merchandising or environmental design. Students may investigate environmental design

Departmental Clubs and Honor Societies

American Society of Interior Design Student Chapter
Apparel, Merchandising, and Design Association
CHES Ambassadors
CHES Freshman Council
and merchandising from the following perspectives: product development and evaluation, consumer and supplier behavior, business development and management, and constructed environmental and individual interrelationships.

**The Master of Science Degree**. The Master of Science degree is designed to prepare individuals for careers in business, industry, extension and post-secondary or college teaching. The program is built around the academic background, experience, needs, special interests and professional goals of the student. The selection of courses that meet departmental requirements is made in consultation with the advisory committee. If the undergraduate degree is not in the area of specialization, specific undergraduate courses in design, housing and merchandising will be required as prerequisites. A minimum of 21 credit hours is required in the department. Additional courses may be selected from other areas of human environmental sciences or from supporting areas such as marketing, sociology, communications, and architecture. A thesis or creative component is required of all students.

**The Doctor of Philosophy Degree**. The Ph.D. prepares individuals for research positions in universities, business and industry, for university teaching and for administrative or management level positions. The student will be expected to have a master's degree or equivalent in design, housing and merchandising or in a closely-related area from a college or university of recognized standing. A student may be required to demonstrate competence in the area of specialization and in related areas, and further course work may be required before admission will be granted.

The plan of study is individually determined for the student in cooperation with an advisory committee. Each plan of study will be an integrated combination of courses and research providing for specialization within an area of design, housing and merchandising, including synthesis of knowledge drawn from departments within and outside of human environmental sciences. Emphasis is on attainment of competence rather than on the completion of specific numbers of credits; however, a minimum of 60 credit hours beyond the master's must be completed. Each student will develop competence in the area of specialization which includes courses in the major and the support area. A global or international dimension and a management dimension are included. The program includes strong emphasis on research and application of statistical procedures.

More detailed information on graduate study in the Department of Design, Housing and Merchandising can be obtained by writing the head of the department.

## Family Relations and Development

Professor and Head David Balk, Ph.D.

Courses in family relations and child development assist men and women in preparing for people-oriented and service-oriented professions, in preparing teachers, and in developing attitudes and skills that are fundamental to satisfying relationships between people and their physical, constructed, and social environments.

The department has three major goals:

1. To offer professional preparation for graduate and undergraduate students in fields related to human development, early childhood education, family sciences, and marriage and family therapy;
2. To contribute to the available knowledge of human and family development through basic and applied research;
3. To improve the opportunities for all University students to enjoy wholesome and satisfying personal and family lives through an improved understanding of concepts of human development and family sciences.

The department offers undergraduate students five options (1) child development-preprofessional, (2) early childhood education (teacher certification), (3) gerontology-preprofessional, (4) individual, family and community services, and (5) youth and adult-preprofessional. All options emphasize integration of theory and research with practice.

The **child development-preprofessional** option is for individuals planning to continue their education in graduate programs, medical school, medical school, law school or other specialized graduate programs. The curriculum focuses on developing skills in critical thinking, scientific investigation, and written and oral communication, in addition to gaining knowledge in gerontology. It prepares a student for a career as a specialist working with the elderly and provides flexibility to accommodate the student's particular area of interest, or to meet prerequisites for a professional school. Students also have the opportunity to receive valuable experience with assistantships and internships at Reflections Senior Day Treatment, housed in the Bartlett Independent Living Center located on the OSU campus.

The **individual, family and community services** option prepares individuals for careers in providing services to children, youth and adults, and their families. The course content focuses on individual development and family dynamics in the context of the community. Career opportunities are in social service agencies, and in business and industry.

The **youth and adult-preprofessional** option provides education for individuals planning to continue their education in graduate programs, medical school, law school or other specialized graduate programs. The curriculum focuses on developing skills in critical thinking, scientific investigation, and written and oral communication, in addition to gaining knowledge in youth and adult development. It prepares a student for a career as a family counselor, or marriage and family therapist, family law attorney, or medical field specialist with an emphasis in working with families. This option provides flexibility to accommodate the student's particular area of interest or to meet prerequisites for a professional school.

The **gerontology-preprofessional** option is for individuals planning to continue their education in graduate programs, medical school, law school, or other specialized programs. The curriculum focuses on developing skills in critical thinking, scientific investigation, and written and oral communication, in addition to gaining knowledge in gerontology. It prepares a student for a career as a specialist working with the elderly and provides flexibility to accommodate the student's particular area of interest, or to meet prerequisites for a professional school.

The B.S. degree requires a minimum of 124 semester credit hours. A minor is also available in the department; information on requirements may be obtained from the department head.

Further information may be found on the World Wide Web (www.okstate.edu/hec/frcd).
Graduate Programs

Graduate study in the Department of Family Relations and Child Development (FRCD) is designed to prepare students in the creation, dissemination, and application of knowledge that enhances the quality of life for individuals and families. The Department of FRCD offers a marriage and family therapy specialization that is accredited by the Commission on Accreditation for Marriage and Family Therapy Education (COAMFTE) of the American Association for Marriage and Family Therapy (AAMFT). The Child Development Laboratory is licensed by the state of Oklahoma, Department of Human Services. The department has a 50-year history of providing quality graduate education in family relations and child development.

The Department of Family Relations and Child Development offers graduate study leading to the Master of Science degree and the Doctor of Philosophy. Both the Master of Science degree and the Doctor of Philosophy degree programs develop the theoretical and research foundation for further graduate study or for the application of new knowledge. The graduate programs are tailored to the candidate's professional goals, expertise of faculty members, Department of Family Relations and Child Development, and College of Human Environmental Sciences and Graduate College requirements. Graduate programs are central to the department's research and generation of knowledge efforts. Faculty and students share an obligation to make significant contributions to the store of knowledge and share this knowledge with various audiences.

The Master of Science Degree. Admission to the graduate program is selective and based on a variety of criteria including grade-point average, Graduate Record Examination (GRE) scores, letters of recommendation, and student goals. Students need not have majored in family relations and child development but should have 12 upper-division semester credit hours in child or human development, family sciences or closely-related areas. Students not meeting these criteria may be required to complete prerequisite undergraduate courses in order to be fully admitted to the graduate program.

A minimum of 18 credit hours of core departmental course work is required. Depending upon the program area, additional courses are required in each specialization area as described below. Students are admitted into one of the following specializations for the Master of Science degree: (1) child development, (2) family science, and (3) marriage and family therapy.

Beyond the departmental core courses, students within each specialization take course work determined in consultation with their advisers and advisory committees. The child development and family science specializations require a total of 30 semester hours for the thesis option and 36 semester hours, including a written creative component, for the non-thesis option. The marriage and family therapy curriculum is designed to meet the COAMFTE accreditation guidelines and requires 51-60 semester hours.

The child development specialization includes courses in child development to provide the background for working with young children and parents. This specialization emphasizes a balance of academic knowledge for current research and theory and opportunities for experience in the child development laboratory or classroom environment. This specialization is designed for individuals who desire further education in child development and is the natural extension of an early childhood education degree. It provides the background for working with young children in a variety of settings. Students in this specialization gain a core theoretical and research base and could choose to build a program which leads to partial fulfillment of requirements for state certification in early childhood programs, parent education, child development specialist, and curriculum specialist.

The family science specialization is designed for students who desire to work with families in family life education, or in family and community service settings, or to pursue doctoral studies in family science. The curriculum provides the research and theoretical foundations and opportunities to develop the professional skills necessary to work in a variety of family-oriented careers or to pursue further graduate studies. Career opportunities include administrator of family and community services agencies, family life educator, family consultant, and parent educator.

The marriage and family therapy specialization provides students with basic knowledge, skills and a professional identity essential for entry-level practice of marital and family therapy. This program is accredited by the Commission on Accreditation for Marriage and Family Therapy Education of the American Association for Marriage and Family Therapy. This program has restrictive admission requirements. The curriculum includes course work in individual development, marital and family systems, marital and family therapy, professionalism and ethics, research and statistics and supervised practicum. Graduates practice in controlled settings and under supervision, with methods for determining how couple and family problems develop and can be resolved.

Students completing an M.S. degree in family relations and child development may work toward the Graduate Certificate in gerontology. Students design plans of study that meet both the requirements for a degree in one of the FRCD specializations and the gerontology certificate. The certificate allows students to receive specialized instruction, experience, and research opportunities working with older adults. Oklahoma State University is an institutional member of the Association for Gerontology in Higher Education.

The Doctor of Philosophy Degree. The Doctor of Philosophy degree is awarded in human environmental sciences with specialization in family relations and child development. The objective of the program is to offer an integrated interdisciplinary combination of courses and research with a specialized focus on family relations or child development. The program is designed to prepare competent researchers and educators who will make contributions to the scientific literature in child development and family sciences. Throughout the program, students work toward establishing competencies in: (1) an area of specialization within family relations and child development; (2) the design and implementation of research, including computer analysis and contributions to theory development; (3) the ability to function as a member of an interdisciplinary team and to synthesize knowledge from a variety of academic specialties, and, (4) the performance of professional leadership roles within a specific area of specialization.

Admission to the Ph.D. program is selective and requires the completion of an M.S. in family relations, child development or a related area. Admission decisions are based on a variety of criteria including grade-point average (3.00 grade-point average in undergraduate work and 3.50 in previous graduate study preferred; 3.25 in previous graduate study is required), GRE scores (450 or higher in each of the Verbal, Quantitative and Analytical sections preferred), letters of recommendation, student goals, and TOEFL scores (required for students for whom English is a second language, 575 minimum).

Students work with their advisers and advisory committees to develop flexible, yet rigorous programs that meet both degree requirements and the professional needs of specialization within family relations and child development. The program requires 60 hours beyond the master's degree including 18-30 hours in FRCD and supporting areas, 18-30 hours in research methods and statis-
Nutritional Sciences

Professor and Head Barbara J. Stoecker, Ph.D.

The Department of Nutritional Sciences prepares graduates for positions in health professions including nutrition and dietetics. Requirements for admission for most medical schools can be met through the human nutrition option. The dietetics option prepares students for a diverse and dynamic profession that integrates human nutrition, food service administration, food science, chemistry, physiology, management and interpersonal skills.

Two degree options and a minor are offered through the department.

The dietetics option meets the Didactic Program in Dietetics (DPD) academic requirements and is approved by the American Dietetic Association. The department requires a minimum of a 2.50 GPA for enrollment in professional courses in dietetics. With appropriate electives, minors may be obtained in restaurant administration, business administration or health. The human nutrition option is ideal for students desiring greater depth in the physiological and biochemical sciences in preparation for medical and other professional schools, graduate study and research in human nutrition.

When students successfully complete the academic requirements (DPD) and experience component (dietetic internship) they are eligible to write the Registration Examination for Dietitians which is administered in April and October each year by the Commission on Dietetic Registration of the American Dietetic Association. Individuals who are successful on the examination become registered dietitians and are entitled to use the initials "R.D." to signify professional competence. Many states including Oklahoma also require a license to practice dietetics in the state.

Nutrition professionals work in a wide range of settings, in both the public and private sector and assume an array of challenging responsibilities. Career opportunities for a registered/licensed dietitian include: health care dietitian and administrator, nutrition or food science researcher, fitness/wellness consultant, food service design consultant, dietary products or equipment representative, public health nutritionist, entrepreneur in dietetic programs and services, and corporate dietitian/nutritionist.

Some of the specialized careers and college teaching require additional course work or advanced degrees.

The dietetic internship at Oklahoma State University requires prior completion of the DPD requirements and meets the American Dietetic Association's supervised practice requirements for registration eligibility. Its mission is to provide students with the knowledge and skills necessary to practice as an entry-level dietitian.

All students admitted to the internship must be enrolled concurrently in the graduate program of the Department of Nutritional Sciences. Students successfully completing the program may, if desired, continue to work toward a graduate degree and may apply graduate course work from the internship to their degree programs.

Further information may be found on the World Wide Web (www.okstate.edu/hes/nsci)

Graduate Programs

The Master of Science Degree. Admission to the graduate program is selective and is based on a variety of factors including grade-point average, Graduate Record Examination (GRE) scores, letters of recommendation and student goals. The master's degree requires a minimum of 30 semester credit hours with six semester credit hours for research and thesis. Students may emphasize human nutrition, food service management, nutrition education, or food science. Each student prepares a thesis which is defended in a final oral examination.

The plan of study is individually planned with an adviser who is designated after entry into the program. An advisory committee gives final approval of the plan.

Students may also apply to the master's internationalist program which combines international experience and language training through the Peace Corps with academic study for an M.S. in nutrition. These students begin their academic study in the summer session to prepare them for their Peace Corps assignments one year later.

The Doctor of Philosophy Degree. The Ph.D. degree is awarded in human environmental sciences with specialization in nutritional sciences. To be admitted, applicants will be expected to provide evidence of academic ability and preparation, and a statement of goals and letters of recommendation. An emphasis in human nutrition or in food systems administration and management is available depending on the student's interests and qualifications. The department also participates in OSU's interdisciplinary food science program. To acquire the competencies required, the candidates will need to study in their areas of emphasis and in selected areas within and outside the department.

More detailed information on graduate study in the Department of Nutritional Sciences can be obtained by writing the head of the department.

School of Hotel and Restaurant Administration

Assistant Professor and Interim Director Bill Ryan, Ed.D., R.D., L.D.

The School of Hotel and Restaurant Administration is accredited by the Accreditation Commission for Programs in Hospitality Administration (ACHA), a specialized accrediting body. The mission of the OSU School of Hotel and Restaurant Administration (HRAD) is to provide education, research, and service in a globally sensitive, scientifically-based advanced level program for hospitality management careers and life-long learning based on ethical principles. This mission is accomplished by implementing instructional and operational components in the curriculum identified by industry leaders as requirements for success. The academic program is delivered with balanced emphasis on scientific principles and practical business applications. The school has a reputation for providing qualified and skilled managers in lodging, restaurants, clubs and institutional food service settings. An educational facility of more than 22,500 square feet houses laboratories, classrooms, exhibit areas and faculty offices. Specific accommodations include: quantity food preparation areas with state-of-the-art commercial equipment and diverse methods of meal preparation; dining room management and table service laboratory; two fast-food service laboratories for multi-unit fast-food operations; basic food preparation laboratory; classroom and demonstration area; and project room.

Career opportunities include tourism, food service operations, personnel administration, labor relations, sales and
As health care grows more complicated, primary care physicians will be needed more than ever. The College of Osteopathic Medicine is helping to fulfill a critical need by training physicians who are able to treat every member of the family and can simplify the health care process by applying his or her knowledge to treat the whole person.

Most graduates of OSU-College of Osteopathic Medicine practice in the primary care fields—family medicine, pediatrics, internal medicine and obstetrics/gynecology. Others continue their training in specialties and subspecialties—anesthesiology, neurology, psychiatry, radiology, surgery, emergency medicine, dermatology, and oncology, to name a few. Regardless of the field they pursue, students are trained to be excellent physicians, starting with a strong background in general medicine.

The College was founded in 1972 in response to a physician shortage in the small towns and rural areas in the state. The College opened its doors in 1974 and graduated its first class in 1977. In 1988, the College was merged with Oklahoma State University and continues to prepare students to be primary care physicians with emphasis in rural medicine. Nationwide, the greatest need is for doctors to care for people in small towns.

The main campus is located on 16 acres along the west bank of the Arkansas River with a full view of downtown Tulsa. The latest addition to the four-building complex is the Center for Advanced Medical Education. It houses extensive conference facilities, expanded classroom space and a medical bookstore. On the south campus, a half-mile away, is the OSU Health Care Center. First opened in 1981, this clinical teaching facility can accommodate up to 3,000 patient visits a month. It is both a teaching clinic for medical students, interns, and residents, and a health care resource for residents of the west Tulsa area. The Health Care Center provides comprehensive health care and is staffed by licensed physicians and other health care professionals who supervise students in the care of patients.

Osteopathic Medicine

Promoting a patient-centered approach to health care, osteopathic physicians are concerned with the entire patient and traditionally have excelled in general and family health care. The doctor of osteopathic medicine is a fully-trained physician who selectively utilizes all accepted scientific modalities to maintain and restore health. They are licensed to practice all phases of medicine, and offer their patients an added dimension of health care through osteopathic manipulation, a hands-on technique that uses palpation and manipulative procedures of the musculoskeletal system to diagnose illness and treat patients.

Minimum Admission Requirements

At the time of application, the applicant must have an overall grade-point average of at least 3.00 (on a 4.00 scale), a preprofessional science GPA of at least 2.75, and a minimum of 7 average score on the Medical College Admissions Test (MCAT). Applicants must take the MCAT.

They are encouraged to take the examination in the spring prior to applying. Under special circumstances, the College may use discretion to admit students who do not meet these minimum requirements.

At the time of entry, the applicant must have completed:

1. At least 90 semester hours and not less than 75 percent of the courses required for the baccalaureate degree at a regionally-accredited college or university;

2. Satisfactory completion of the following courses, including laboratory, with no grade below a "C" (2.00 on a 4.00 scale):
   - English (six to eight semester hours)
   - Biology (eight to 10 semester hours)
   - Physics (eight to 10 semester hours)
   - General chemistry (eight to 10 semester hours)
   - Organic chemistry (eight to 10 semester hours)

3. Applicants must have taken at least one of the following undergraduate courses: biochemistry, comparative anatomy or cellular biology, embryology, microbiology or molecular biology, histology, physiology, genetics.

An on-campus interview with the Applicant Interview Committee is by invitation only. Interviews are conducted by clinical and basic science faculty members, as well as alumni. Applicants must participate in the interview to qualify for further consideration. Interview results and other data submitted will be considered when determining which applicants have demonstrated appropriate levels of scholarship, aptitude, and motivation for admission to the program. Class size is limited to 88 students. Non-U.S. citizens must have a permanent resident visa ("green card") at the time of application in order to be considered for admission.

The annual application deadline is January 1.

College Curriculum

Divided into Basic Sciences and Clinical Sciences, the curriculum at the College emphasizes primary care. The four-year program uses a coordinated, spiraling systems approach in which subject matter is continuously re-introduced in greater depth and complexity.
During the first year students are introduced to core concepts in anatomy, physiology, biochemistry and microbiology. Students begin to develop competence in osteopathic clinical skills including physical examination, diagnosis and patient interviewing and recognition of normal and abnormal patterns of physical conditions and disease.

The second year emphasizes case-based learning, clinical problem-solving strategies and recognition and understanding of common diseases and conditions frequently seen in primary care settings. Small group learning and independent study are keys to students' development of the critical thinking for the clinical context. Students' clinical skills are honed through interactive lab sessions and simulated clinical experiences. Behavioral science courses provide students with an appreciation of the importance of preventative medicine, cultural sensitivity and mental health issues.

The final 24 months are clinically oriented and community based, consisting of clerkship experiences in hospitals and clinics where students observe patients on a daily basis under physician-faculty supervision.

The student rotates through primary care services including surgery, obstetrics-gynecology, pediatrics, psychiatry, internal medicine, family medicine and emergency medicine. The balance of the clerkship program consists of supervised patient contact in small towns and rural areas throughout Oklahoma. The student spends four weeks at each of several locations including a community hospital, primary care clinic, family practice clerkship, and elective locations.

Students graduate from the four-year program with the Doctor of Osteopathic Medicine (D.O.) degree. Following graduation, students complete a one-year rotating internship and then enter a residency program.

Detailed information on the College of Osteopathic Medicine can be found in the College's academic catalog, available from the College:

Oklahoma State University College of Osteopathic Medicine
1111 West 17th Street, Tulsa, Oklahoma 74107-1898
(918) 582-1972
Toll-free, 1-800-677-1972

Graduate Medical Education
The College administers internship and residency programs at Columbia Tulsa Regional Medical Center, Hillcrest Health Center in Oklahoma City and Jefferson Regional Medical Center in Pine Bluff, Arkansas. In addition, the College administers a two-year family practice residency program in Tulsa.

The College maintains close contact with its graduates and can offer assistance in setting up a practice following the graduate's internship and residency training.

The College recently added a graduate program in biomedical sciences. The six year program is an excellent option for students who wish to pursue careers in medical research or academic medicine.

The first two years are the basic science years of the program. The middle two years are graduate study, research and dissertation of the Ph.D. program. The final two years are the clinical science years of the D.O. program. At the end of six years, the student is expected to have completed the requirements for the D.O. degree and the Ph.D. program.

Selection Factors
The College considers applications for admission from all qualified candidates without regard to age, gender, creed, race, disability or national origin. Preference is given to Oklahoma residents. Those who have experienced unequal educational opportunities for social, cultural or racial reasons are particularly urged to apply. Applicants must be U.S. citizens or have obtained permanent resident status to be considered.

Accreditation
The College is accredited by the Bureau of Professional Education of the American Osteopathic Association, the recognized accrediting agency for institutions that educate osteopathic physicians. The Oklahoma State Regents for Higher Education are empowered by the Oklahoma Constitution to prescribe standards for higher education applicable to each institution in the Oklahoma State System of Higher Education.

Financial Aid
A financial aid officer works to ensure that students are not prevented from attending the College because of their financial situations. The primary purpose of the College's aid program is to provide financial assistance to students who would otherwise be unable to afford tuition. A computer search program allows students to systematically find available loans, grants and scholarships for which they may be eligible.

Tuition at the College of Osteopathic Medicine (for the 1997-98 school year) totals $8684 per year for Oklahoma residents and $21,460 per year for out-of-state residents.

Although the principal responsibility for financing an education remains with the student and his or her family, the College will work to offer campus-based aid to supplement that contribution.

Because the number of applicants and their total requests each year exceed the resources available, a selection process is necessary to see that the most deserving and best qualified students have first claim on available resources. Financial aid options include loans, scholarships, and grants, as well as work-study programs and return service agreements.

A Family Financial Statement and other required applications are available from the College.

Honor and Service Organizations
The College emphasizes community service, and many students volunteer their time in giving school and athletic physicals, visiting nursing homes, working with school children, and working at College-sponsored health fairs or the annual Osteopathic Run. Listed below are official student organizations.

American College of Family Practitioners-Undergraduate Chapter
American Medical Women's Association
Association of Military Osteopathic Physicians and Surgeons
Delta Omicron (national osteopathic sorority)
Geriatric Medicine Club
Inter-Club Council
Osteopathic Sports Medicine Society
Pinnacle Yearbook
Sigma Sigma Phi (honor society)
Society for the Advancement of Osteopathic Medicine
Student Associate Auxiliary
Student National Medical Association
Student Osteopathic Internal Medicine Association
Student Osteopathic Medical Association
Student Osteopathic Surgical Association
Student Senate
Undergraduate American Academy of Osteopathy
promotion, accounting, front office and
general management positions. Positions
as regional directors for lodging, restaur-
anteer, industrial, and fast food manage-
ment chains are excellent possibilities.
Airline catering, vending and individual
restaurant entrepreneurship are addi-
tional career areas.

To meet the needs of the industry and
provide sound academic preparation at
the undergraduate level, the curriculum
emphasizes professional and general
education. The professional area in-
cludes courses in accounting, law, fi-
nance, communications and economics.
Courses in service management, food
and beverage purchasing and control,
layout and design, sales and promotion,
front office management, tourism, and
advanced hotel and restaurant manage-
ment are also included in the specialized
area. The B.S. degree with an option in
hotel administration or restaurant man-
agement may be earned by completing a
minimum of 124 semester hours and
achieving a “C” grade in courses re-
quired in the major area. A minor is also
available in the School.

Successful completion of a manage-
ment internship is required. Internship
placement in hotels, restaurants, and
related establishments is arranged glo-
ally in cooperation with industry execu-
tives and the OSU faculty.

Further information may be found on
the World Wide Web (www.okstate.edu/
hes/hrad).

**Graduate Programs**

**The Master of Science Degree.** Admis-
sion to the graduate program in hospital-
ity administration is selective and is
based on a variety of factors including
grade-point average, Graduate Record
Examination (ORE) or Graduate Manage-
ment Admission Test (GMAT) scores,
letters of recommendation and goals of
the applicant. Applicants are required to
have a bachelor’s in hospitality adminis-
tration or allied field and a minimum of
two years of relevant work experience.
Prerequisite courses may be required for
students with undergraduate degrees in
areas other than hospitality administra-
tion. The master’s degree requires a
minimum of 30 credit hours for the thesis
option, 33 credit hours including a report,
or 38 credit hours including a creative
component.

The plan of study is individually devel-
oped with an adviser who is designated
after entry into the program. An advisory
committee gives final approval of the
plan.

Competitive graduate teaching and
research assistantships, graduate fellow-
ships and tuition fee waivers are avail-
able to qualified applicants.

**The Doctor of Philosophy Degree.** The
Ph.D. is awarded in human environmen-
tal sciences with specialization in hospi-
tality administration. This program fo-
cuses on research and prepares re-
searchers, educators and practitioners to
make contributions to the literature in the
hospitality field, and requires a minimum
of 60 hours beyond the M.S. degree.

More detailed information on graduate
study in the School of hotel and Restau-
rant Administration can be obtained by
writing the director of the School.
College of Veterinary Medicine

Joseph W. Alexander, D.V.M., M.S., Dean
Michael D. Lorenz, D.V.M., Associate Dean for Academic Affairs
Richard W. Eberle, Ph.D., Associate Dean for Research
Thomas R. Thedford, D.V.M., Assistant Dean for Outreach
James E. Creed, D.V.M., M.S., Assistant Dean for Service and Director of the Boren Veterinary Medical Teaching Hospital

The primary objective of the College of Veterinary Medicine is to educate veterinarians for private practice. However, the professional curriculum provides an excellent basic medical education in addition to training in diagnosis, disease prevention, medical treatment, and surgery. Graduates are qualified to pursue careers in many facets of veterinary medicine and health-related professions.

Accreditation

The College has full academic accreditation status approved by the Council on Education of the American Veterinary Medical Association. Accreditation is based on an assessment of 11 essential factors, namely, the college’s organization, its finances, physical facilities and equipment, clinical resources, library and learning resources, enrollment, admissions, faculty, curriculum, continuing and postgraduate education, and research.

Preparatory Requirements

Attainment of the degree of Doctor of Veterinary Medicine requires, at a minimum, six academic years of collegiate training. In preparation for the professional training the student must complete both prescribed and elective collegiate courses. The minimum prescribed preparatory studies, totaling 60 semester hours of course work, can be completed in two calendar years. Most of the entering veterinary medical students in recent years have had three to four years of preparatory training or a bachelor’s degree. It is recommended that the student undertake an appropriate regular bachelor’s degree program in the sciences, in the course of which he or she will complete the prerequisites for entry into the College of Veterinary Medicine by the end of at least the third year of preparatory training.

Admission Requirements

College course requirements for entry into veterinary medical college may be completed at any accredited university or college. Special pre-veterinary curricula are available at Oklahoma State University through the College of Agricultural Sciences and Natural Resources and the College of Arts and Sciences. Both colleges offer programs of study in pre-veterinary medical sciences which provide for the award of a bachelor’s degree after the first or second year of veterinary medical studies to those persons who gain early entry into a veterinary medical college.

Requests for information on pre-veterinary medical study programs and applications for admission to such programs should be addressed to the dean of either the College of Agricultural Sciences and Natural Resources or the College of Arts and Sciences.

Listed below are the minimum course prerequisites for consideration for admission to the College of Veterinary Medicine.

- English composition and technical/professional report writing-eight semester credit hours. An English elective may be substituted for the technical writing.
- Biology-9 semester credit hours. Comprehensive courses in biology will be considered but must be evaluated before credit is accepted.
- Chemistry-7 semester credit hours including five semester credit hours of organic chemistry designed for pre-veterinary, premedical and pre-dental students which must include both the aliphatic and aromatic series of organic compounds. Additionally three semester credit hours of biochemistry are required.
- Physics-four semester credit hours of descriptive physics or two semesters of general physics.
- Mathematics-three semester credit hours. Mathematics courses must include the fundamental operations of algebra, exponents and radicals, simple equations, graphs, simultaneous equations, quadratic equations and logarithms.
- Biological science-15 semester credit hours. Courses in zoology, microbiology and genetics are required. These courses must include laboratory work.
- Comprehensive courses in biology will be considered but must be evaluated before credit is accepted.
- Animal Nutrition-three semester credit hours of the basic principles of animal nutrition, including digestion, absorption and metabolism of the various food nutrients and ration formulation.
- English literature and composition-six semester credit hours.
- This information was current at the time of publication but is subject to change. The admission requirements are under annual review and changes may be made at any time.

Scholarships

The College has several scholarships which are available to veterinary medicine students, based on academic achievement and financial need. Special scholarships and awards are available for disadvantaged and minority students enrolled in veterinary medicine or in the pre-veterinary medicine program.

Veterinary Medical Studies

Enrollment in veterinary medicine is restricted. Applications for admission must be submitted by October 1, and a new class enters the College each year at the beginning of the fall semester.
Applicants who are legal residents of Oklahoma will be given first priority. However, a limited number of the first-year students may be selected from a pool of nonresident applicants. Questions about residency should be directed to the Office of Admissions, Oklahoma State University. Requests for application materials should be directed to the manager of veterinary medicine admissions, College of Veterinary Medicine.

Students are admitted as candidates for the Doctor of Veterinary Medicine degree on the basis of records of academic performance in preparatory studies, standard achievement tests, and references to determine personal characteristics and career motivation.

The College has an alternative admissions program. For further information, contact the Office of the Associate Dean.

The veterinary curriculum extends over four calendar years. The first two academic years conform to the normal semester system of the University. The last two academic years are continuous, with the fourth starting shortly after the third. The fourth year is clinical in nature and classes are primarily in the Boren Veterinary Teaching Hospital. The fourth year is organized into three-week rotations to provide for lower faculty-student ratio and more efficient use of clinical facilities and resources.

Veterinary Biomedical Sciences Graduate Programs

Graduate Coordinator Charles W. Qualls, Jr., D.V.M., Ph.D.

The veterinary biomedical sciences (VBS) graduate program is a multidisciplinary program intended to provide a broad base to address individual student interests. The program is administered within the College of Veterinary Medicine but may involve some faculty outside of the college. Programs of research and study leading to the degrees of Master of Science and Doctor of Philosophy are available within the broad areas of focus: infectious diseases, pathobiology and physiological sciences. The Master of Science degree is also available in the clinical sciences. The program is designed to prepare individuals for careers in teaching and research, and specialization is possible within each area dependent upon faculty interests, student needs and available funding.

Current areas of research include tick-transmitted diseases, bovine infectious diseases, ehrlichiosis, hepatozoonosis, environmental toxicology, antimicrobial activity and disposition, soft tissue infections and phagocytosis, axial skeletal development, marine mammal morphology, snake/spider venom characterization, braquytherapy of tendon and ligament repair, regulation of sperm function, laser applications, and equine gastric, orthopedic and infectious diseases. Additional areas include infectious and parasitic diseases of wild animals, vector transmitted protozoan and rickettsial diseases of wild and domestic canines, steroid hormone action, reproductive physiology, neoplasms, interferon, immunomodulators, and ruminant pestiviruses. Faculty and their specific areas of interest are available through the Graduate Coordinator or via the World Wide Web (www.cvm.okstate.edu/graduate).

Prerequisites. Candidates for admission must possess at least a bachelor's degree or equivalent, with a background in biological and physical sciences. While there are no absolute grade requirements, applicants with combined verbal, quantitative and analytical GRE total scores multiplied by their GPAs (last 60 hours) totaling 4,500 or greater, will receive strongest consideration. Provisionary status may be awarded to those not having these credentials with specific requirements dependent on recommendations of the departmental graduate faculty.

Internship and Residency Programs

Internships and residency programs in clinical medicine and surgery are offered through the Department of Veterinary Medicine and Surgery. Residency programs in pathology are offered through the Department of Veterinary Anatomy, Pathology and Pharmacology. Details of these programs appear in each of these departmental sections.

The Master of Science Degree. The M.S. may be earned with 30 credit hours beyond a bachelor's degree or 21 hours beyond the DVM degree, including not more than six credit hours for the thesis. The plan of study is designed to meet the student's needs and interests and typically includes one or two credits of seminar, one course in biochemistry and one course in statistics. The student must also pass a final oral examination covering the thesis and related course work.

The Doctor of Philosophy Degree. The Ph.D. requires a total of 90 credit hours beyond the bachelor's degree or 60 hours beyond the M.S. or D.V.M. degree, including a minimum of 30 credit hours for research and dissertation. The plan of study is designed to meet the student's needs and interests and typically includes courses in biochemistry, biochemistry techniques, statistics and seminar. Written and oral qualifying examinations are required. Students must prepare a research proposal and complete a dissertation based on original research.

Application Procedure. Applications are accepted at any time; however, all documents should be received prior to March 1 for admission to the summer session, July 1 for the fall semester, and November 1 for the spring semester. Applicants are required to submit scores for the Aptitude Test portion of the Graduate Record Examination. (The Advanced Test in Biology is also recommended.) International applicants are required to take the English Proficiency Exam (a passing score on the TOEFL of 550 or above), unless a student is from a country where English is a first language. The Test of Spoken English (a passing score on the TSE of 220 or above), is required for students receiving graduate teaching assistantships.

Applicants generally select a major professor before they are admitted to the VBS program. They are urged to correspond with a member of the faculty whose interests reflect their own before making application. Information about faculty research interests is available upon written request to the graduate coordinator. After acceptance to the graduate program, the student and major professor select an advisory committee and develop a plan of study consistent with the VBS graduate program requirements and subject to approval of the dean of the Graduate College.

Assistantships. A limited number of graduate teaching assistantships are available in the physiological sciences and infectious diseases areas.

Veterinary Anatomy, Pathology and Pharmacology

Food Animal Research Chair and Head
Anthony W. Confer, D.V.M., Ph.D.

Residency Programs

A two to three year residency in anatomical or clinical veterinary pathology is offered. Candidates must have the D.V.M. degree or equivalent. The residency program is designed to prepare individuals for careers in teaching, research and service pathology to fulfill the requirements of academics, animal diagnostic
facilities and industry. Pursuit of a graduate degree is encouraged for all residents. The M.S. is possible within the residency training program. The Ph.D. is available to qualified residents who wish to pursue experimental pathology training and requires an additional two to three years in the program. Trainees may omit the M.S. and pursue the Ph.D. directly.

Application Procedure. Applications for the residency program are accepted at any time. Usually one residency training position is available each year. Open positions are listed in the "Educational Opportunities" section of the Journal of the American Veterinary Medical Association.

Veterinary Infectious Diseases and Physiology

Professor and Head Robert W. Fulton, D.V.M., Ph.D.

Refer to "Veterinary Biomedical Sciences Graduate Program" above.

Veterinary Medicine and Surgery

Professor and Head Grant H. Turnwald, B.V.Sc., M.S.

Internship and Residency Programs

The department offers graduate professional programs (internships and residencies). Internships are one-year post-D.V.M. clinical programs in small or large animal medicine and surgery. Internships are designed in part to prepare students for residencies or graduate academic programs. Residencies are two- or three-year clinical programs in various disciplines designed in part to prepare for specialty board certification. Currently residencies are offered in small animal surgery, equine medicine, equine surgery, food animal medicine and surgery, and theriogenology. Graduate academic programs may be available in association with some residencies.

Application Procedure. Applications are accepted at any time and are considered as positions become available. Most open positions are listed in the Veterinary Internship/Residency Matching Program directory published each October.
Faculty

College of Agricultural Sciences and Natural Resources

Agricultural Economics

Professor and Head
Alan D. Barkema, Ph.D.

Regents Professor and Pat and Jean Neustadt Chair in Agricultural Economics
Harry P. Mapp, Ph.D.

Regents Professors
Barton W. Brousse, Ph.D.; Gerald A. Doeksen, Ph.D.; James N. Trapp, Ph.D.

Professor

Associate Professors
Brian Adam, Ph.D.; Michael R. Dicks, Ph.D.; Michael L. Hardin, Ph.D.; Phil Kenkel, Ph.D.; Notie H. Lansford, Ph.D.; David K. Lewis, D.Phil.; Derrell S. Peel, Ph.D.; Arthur Stoecker, Ph.D.; Marcia L. Tilley, J.D.

Assistant Professors
Rodney Holcomb, Ph.D.; Conrad Lyford, Ph.D.

Agricultural Education, Communications and 4-H Youth Development

Professor and Head
James G. Leising, Ph.D.

Professors

Associate Professors
Sheila Forbes, Ph.D.; H. Robert Terry, Jr., Ph.D.; William G. Weeks, Ph.D.

Assistant Professors
Billie Chambers, Ed.D.; Charles Cox, Ed.D.

Instructor
Shelly R. Sitton, M.S.

Agriculture (General)

Professor and Assistant Dean
C. Wesley Holley, Ed.D.

Animal Science

Professor and Head
Donald G. Wagner, Ph.D.

Professor and President Emeritus
John R. Campbell, Ph.D.

Professor, Dean and Director, College of Agricultural Sciences and Natural Resources
Samuel E. Cull, Ph.D.

Regents Professors
Don R. Gill, Ph.D.; Stanley E. Gilliland, Ph.D.; William G. Luce, Ph.D.; Fredric N. Owens, Ph.D.; Robert P. Wettemann, Ph.D.

Professors

Associate Professors
Archie C. Clutter, Ph.D.; Sally Dolezal, Ph.D.; Gerald Q. Fitch, Ph.D.; Mark Z. Johnson, Ph.D.; Peter Muriana, Ph.D.; Leon J. Spicer, Ph.D.

Assistant Professors
Scott Carter, Ph.D.; David L. Laiman, Ph.D.; J. Bradley Morgan, Ph.D.; Hebbie T. Purvis, Ph.D.; Daniel N. Waldner, Ph.D.

Biochemistry and Molecular Biology

Professor and Head
James B. Blair, Ph.D.

Regents Professors
Margaret K. Essenbarg, Ph.D.; Andrew J. Mort, Ph.D.; Chang-An Yu, Ph.D.

Professors

Assistant Professor
John C. Cushman, Ph.D.

Assistant Researchers
Steven P. Hartson, Ph.D.; Margaret Pierce, Ph.D.; Steven P. White, Ph.D.

Teaching Associate
Sharon T. Ford, Ph.D.

Instructor
Judy A. Hall, M.S.

Biosystems and Agricultural Engineering

Professor and Head
Billy J. Barfield, Ph.D., P.E.

Regents and Sarkeys Distinguished Professor
Franklin R. Leach, Ph.D.

Regents Professor
Gerald H. Brusewitz, Ph.D., P.E.

Professors

Associate Professors

Assistant Professors
Douglas W. Hamilton, Ph.D.; Gregory Hanson, Ph.D. (adjunct); Kerry Robinson, M.S. (adjunct)

Assistant Researchers
Paul Armstrong, Ph.D.; J.D. Carlson, Ph.D.

Lecturer
Brandon Clayborn, B.S.

Entomology

Professor and Head
Russell E. Wright, Ph.D.

Regents and Sarkey’s Distinguished Professor
John R. Sauer, Ph.D.

Regents Professor
Gerrit W. Cuperus, Ph.D.

Professor and Endowed Chair
Stephen K. Wikel, Ph.D.

Professors
Robert W. Barker, Ph.D.; Richard C. Berberet, Ph.D.; Jack W. Dillworth, Ph.D.; Jonathon V. Edelson, Ph.D.; Norman C. Elliott, Ph.D. (adjunct); Cluff E. Hops, Ph.D. (adjunct); S. Dean Kindler, Ph.D. (adjunct); Kenneth N. Pinkston, Ph.D.; Roger D. Price, Ph.D. (adjunct); James A. Webster, Ph.D. (adjunct)

Associate Professors
Jim T. Criswell, Ph.D.; Matthew H. Greenstone, Ph.D.; Melanie J. Palmer, Ph.D.; Thomas W. Phillips, Ph.D.

Assistant Professors
John D. Surd, Ph.D. (adjunct); Kristopher L. Giles, Ph.D.; Philip G. Mulder, Ph.D.; Thomas A. Royer, Ph.D.; Kevin A. Shufman, Ph.D. (adjunct)

Assistant Researchers
Douglas K. Bergman, Ph.D.; Alan S. Bowman, Ph.D.

Forestry

Professor and Head
Edwin L. Miller, Ph.D.

Professors
Fred S. Guthery, Ph.D.; Thomas C. Hennessey, Ph.D.; Charles G. Tauer, Ph.D.

Associate Professors
Lawrence R. Gering, Ph.D.; Stephen W. Hallgren, Ph.D.; David K. Lewis, D.Phil.; Thomas B. Lynch, Ph.D.; Ronald E. Masters, Ph.D.; Donald J. Turton, Ph.D.; Robert F. Wittwer, Ph.D.

Assistant Professor
Thomas Kuzmic, Ph.D.

Horticulture and Landscape Architecture

Professor and Head
Dale M. Maronek, Ph.D.

Professors
Jeffrey A. Anderson, Ph.D.; Brian A. Kahn, Ph.D.; Charles L. Leider, Ph.D.; B. Dean McCraw, Ph.D.; Charles E. Motes, Ph.D.; Michael W. Smith, Ph.D.

Associate Professors

Assistant Professors
Louis Anellia, Ph.D.; Matthew Kirkwood, M.L.A.

Plant Pathology

Professor and Head
Russell E. Wright, Ph.D.

Professors
Carol L. Bender, Ph.D.; Kenneth E. Conway, Ph.D.; Jacqueline Fletcher, Ph.D.; Robert M. Hunger, Ph.D.; Larry J. Littlefield, Ph.D.; Hassan A. Melouk, Ph.D.

Associate Professors
Sharon von Broembsen, Ph.D.; John P. Damicone, Ph.D.; Alexander B. Filonow, Ph.D.; Larry L. Singleton, Ph.D.

Assistant Professor
James A. Duthie, Ph.D.

Assistant Researcher
Astri C. Wayadande, Ph.D.
College of Arts and Sciences

Art
Associate Professor and Head
Nancy B. Wilkinson, Ph.D.

Professors
Larry C. Avrett, M.F.A.; Nicholas W. Bormann, M.F.A.; Robert E. Parks, M.F.A.

Associate Professors

Professor
Jeffrey W. Walker, Ph.D.

English
Associate Professor and Head
Jeffrey W. Walker, Ph.D.

Instructors
Anita Caldwell, M.A.; John Catsis, M.S.J.; Ravi Sheorey, Ph.D.; Martin Wallen, Ph.D.

Botany
Professor and Head
James D. Ownby, Ph.D.

Professors
Becky B. Johnson, Ph.D.; David W. Meinke, Ph.D.; Ronald J. Tylr, Ph.D.

Associate Professors
William J. Henley, Ph.D.; Michael W. Palmer, Ph.D.; Arnon Rikin, Ph.D.

Assistant Professors
Anne Fernald Cross, Ph.D.; Biao Ding, Ph.D.

Chemistry
Professor and Head
Neil Purdie, Ph.D.

Regents Professors
K. Darrell Berlin, Ph.D.; Warren T. Ford, Ph.D.; Lionel M. Raff, Ph.D.

Professors
John I. Gelder, Ph.D.; Elizabeth M. Holt, Ph.D.; Smith L. Holt, Ph.D.; Mark G. Rockley, Ph.D.; Donald L. Thompson, Ph.D.

Associate Professors
Richard A. Bunce, Ph.D.; Ziad El Rassi, Ph.D.; Edward T. Knobbe, Ph.D.

Assistant Professors
Allen W. Apblett, Ph.D.; Steven M. Graham, Ph.D.; Nicholas A. Kotov, Ph.D.; Isabelle L. Lagadic, Ph.D.; Mario E. Rivera, Ph.D.

Communication Sciences and Disorders
Associate Professor and Head
Arthur L. Pentz, Jr., Ph.D.

Professor
Cheryl Scott, Ph.D.

Associate Professor
Nancy Monroe, Ph.D.

Assistant Professors
Jean Ashland, Ph.D.; Gary J. Beeby, M.A.; Connie Stout, Ph.D.

Instructors
Jan Marks, M.A.; Nancy Payne, M.A.; Janet Pegues, M.S.; Kaye Strom, M.S.

Computer Science
Associate Professor and Head
Blayne E. Mayfield, Ph.D.

Regents Service Professor
George E. Hedrick, Ph.D.

Professors
John P. Chandler, Ph.D.; K. M. George, Ph.D.

Associate Professors
Jacques La France, Ph.D. (adjunct); HuiZhu Lu, Ph.D.; Mansur H. Samadzadeh, Ph.D.

Assistant Professors
Judith J. Edgmand, Ed.D. (adjunct); John Hatchiff, Ph.D.; William Nick Street, Ph.D.

History
Associate Professor and Head
William S. Bryan, Ph.D.

Professors

Associate Professors
James F. Cooper, Jr., Ph.D.; Neil J. Hackett, Ph.D.; James L. Huston, Ph.D.; Chung-Shin Park, Ph.D.; Ronald A. Petrini, Ph.D.; Richard C. Rohrs, Ph.D.; Elizabeth A. Williams, Ph.D.

Assistant Professors
Thabit A. Abdullah, Ph.D.; Laura Belmonte, Ph.D.; John P. Bischoff, Ph.D.; Jason E. Lavery, Ph.D.; Michael F. Logan, Ph.D.

School of Journalism and Broadcasting
Professor and Director
Paul Smeyak, Ph.D.

Professor
Charles A. Fleming, Ed.D.

Associate Professors
Marshall E. Allen, M.A.; Brooks Garner, M.S.; Thomas R. Hartley, M.A.; Maureen Nemec, Ph.D.; Steven Smethers, Ph.D.

Assistant Professors
Anita Caldwell, M.A.; John Catis, M.S.J.; Barbara DeSanto, Ph.D.; Donald Forbes, M.S.; Jack Hodgson, M.A.; Tom Weir, M.S.; Fritz Wirt, M.S.

Mathematics
Professor and Head
Benny Evans, Ph.D.

Professor and Associate Head
Douglas B. Alchele, Ed.D.

Associate Professor
Grayce B. Kerr Professor
William H. Jacob, Ph.D.

Noble Professor
James R. Choke, Ph.D.

Academic Counselor
Catherine Ware, M.S.

Geography
Associate Professor and Head
Thomas A. Wickle, Ph.D.

Professors
Stephen J. Stadler, Ph.D.

Associate Professor
Dale R. Lightfoot, Ph.D.

Assistant Professors
Brad A. Bays, Ph.D.; Jonathan C. Comer, Ph.D.; Carlos E. Cordova, Ph.D.; G. Allen Finchum, Ph.D.; Alyson L. Greiner, Ph.D.; Revel R. Hanks, Ph.D.; Deborah A. Salazar, Ph.D.; Youngsinn Sohn, Ph.D. (visiting); David A. Waits, Ph.D.

School of Geology
Brown Monnett Professor, Regents Professor and Head
Zuhair F. Al-Shaieb, Ph.D.

Professors
Ibrahim Cemen, Ph.D.; Arthur Hounslove, Ph.D.; Gary F. Stewart, Ph.D.; John D. Vitek, Ph.D.

Associate Professors
Darwin Boardman, Ph.D.; Arthur Cleaves, Ph.D.; Vernon Scott, Ph.D.

Assistant Professor
Michael Nicholl, Ph.D.

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Assistant Professors
Edward Dacus, M.M.; Thomas Lanners, D.M.A.; Michael Raiber, M.M.E.

Adjunct Instructors

Philosophy
Professor and Head
Edward G. Lawry, Ph.D.

Associate Professors
Doren A. Recker, Ph.D.; Mui-Hwa (May) Sim, Ph.D.; Michael R. Taylor, Ph.D.

Assistant Professors
James W. Cain, Ph.D.; Michael Rhodes, Ph.D.; Qingjie (James) Wang, Ph.D.

Physics
Regents Professor and Head
Steven W. S. McKeeve, Ph.D.

Regents Professors
Bruce Ackerson, Ph.D.; Jin-Joo Song, Ph.D.

Professors

Associate Professors
Donna K. Bandy, Ph.D.; Robert Hauenstein, Ph.D.; Peter O. Shull, Ph.D.; Penger Tong, Ph.D.; Xincheng Xie, Ph.D.

Assistant Professors
David Peakheart, Ph.D.; Al Rosenberger, Ph.D.; Alhua Xie, Ph.D.

Political Science
Associate Professor and Head
Michael W. Hirlinger, Ph.D.

Professors

Associate Professors

Assistant Professors
William J. Focht, Ph.D.; Patty Hipsher, Ph.D.; Jason Kirksey, Ph.D.; Fang Zhu, Ph.D.

Academic Counselor
Vincent Burke, M.A.

Psychology
Associate Professor and Head
Maureen A. Sullivan, Ph.D.

Professor
Frank L. Collins, Jr., Ph.D.

Associate Professors
John M. Chaney, Ph.D.; Trish Long, Ph.D.; Larry Mullins, Ph.D.; Richard Potts, Ph.D.; James Price, Ph.D.; Bill C. Scott, Ph.D.; David G. Thomas, Ph.D.

Assistant Professors
Charles Abramson, Ph.D.; Mary Devitt, Ph.D.; Douglas Hersey, Ph.D.; Gayle Iwamasa, Ph.D.; Brian Marx, Ph.D.; Bryan Neighbors, Ph.D.; Sue Orsillo, Ph.D.; Marc Pratarelli, Ph.D.

Academic Counselor
Craig Satterfield, M.A.

Coordinator, Minority Graduate Student Program
Patricia Alexander, B.S.

Religious Studies
Associate Professor and Head
Phoebe Young, Ph.D.

Professors
Robert L. Gate, Ph.D.

Assistant Professor
James S. Thayer, Ph.D.

Sociology
Associate Professor and Head
Patricia Bell, Ph.D.

Professors
George Arquit, Ph.D.; Donald Brown, Ph.D.; Richard Dodder, Ph.D.; Charles Edgley, Ph.D.; Larry Hynson, Ph.D.; Kenneth Kiser, Ph.D.; David Knottnerus, Ph.D.

Associate Professors
John Cross, Ph.D.; Lee Maril, Ph.D.

Assistant Professors
Margaret Johnson, Ph.D.; Thomas Shriver, Ph.D.; Jean Van Delder, Ph.D.; Donald Yates, Ph.D.

Research Associate
Barbara Murray, Ph.D.

Academic Counselor
Dahlia Gonzalez Molloy, M.S.

Speech Communication
Associate Professor and Head
Michael Stano, Ph.D., J.D.

Professor
James Hughey, Ph.D.

Associate Professors
Paul D. Harper, Ph.D.; Jeffrey McQuillen, Ph.D.; David Schrader, Ph.D.

Assistant Professors

Statistics
Professor and Head
P. Larry Claypool, Ph.D.

Professors
J. Leroy Folks, Ph.D.; Barry K. Moser, Ph.D.; William D. Warde, Ph.D.

Associate Professors
Mark E. Payton, Ph.D., J.D.; Sahadeb Sarkar, Ph.D.

Assistant Professors
Carla L. Good, Ph.D.; Brenda J. Masters, M.S.; Melinda H. McCann, Ph.D.

Theater
Associate Professor and Head
Bruce Brockman, M.F.A.

Professors
Kenneth Cox, Ph.D.; Peter Westerhoff, M.F.A.

Associate Professors
Rena Cook, M.F.A.; Heidi Hoffer, M.F.A.

Assistant Professor
Judith Cronk, M.F.A.

Zoology
Professors
John A. Bantle, Ph.D.; David Duval, Ph.D.; Anthony Echelle, Ph.D.; Margaret S. Ewing, Ph.D.; Stanley Fox, Ph.D.; Fred Guthery, Ph.D. (adjunct); David Leslie, Ph.D. (adjunct); Robert Lochmiller, Ph.D.; James Shaw, Ph.D.; Dale Toetz, Ph.D.

Associate Professors
Charles Abramson, Ph.D. (adjunct); Tracy Carter, Ph.D. (adjunct); William Fisher, Ph.D. (adjunct); Donald French, Ph.D.; Ron Masters, Ph.D. (adjunct); Karen McBee, Ph.D.; Larry Talent, Ph.D.
College of Business Administration

School of Accounting
Professor and Head
Lanny G. Chasteen, Ph.D., CPA

Professors
Patrick B. Dorr, Ph.D., CPA; Lawrence H. Hammer, D.B.A., CPA; Don R. Hansen, Ph.D., CPA; Amy H. Lau, Ph.D., CPA; Gary K. Meek, Ph.D., CPA; Dennis H. Patz, Ph.D., CPA; John W. Wilgues, Ph.D., CPA; Charlotte J. Wright, Ph.D., CPA

Associate Professors
Carolee Caffrey, Ph.D. (adjunct); Douglas Fort, Ph.D. (adjunct); Meredith Harilton, Ph.D. (adjunct); Eric Hellgren, Ph.D.; Roman Lanno, Ph.D.; Charles C. Peterson, Ph.D.; Emily Stanley, Ph.D.; Ronald Van Den Bussche, Ph.D.

College of Education

School of Applied Health and Educational Psychology
Associate Professor and Director
Jerry Jordan, Ph.D.

Professors

Associate Professors

Assistant Professors

School of Curriculum and Educational Leadership
Professor and Head
David England, Ph.D.

Professors

Associate Professors

Assistant Professors
Wen-Song Hwu, Ph.D.; Christine Moseley, Ph.D.; Kay Reinke, Ph.D.

College of Engineering, Architecture and Technology

Biosystems and Agricultural Engineering
Professor and Head
Billy J. Barfield, Ph.D., P.E.

Regents and Sarkeys Distinguished Professor
C.T. Haan, Ph.D., P.E.

Regents Professor
Gerald H. Brusewitz, Ph.D., P.E.

Professors
Ronald L. Elliott, Ph.D., P.E.; Raymond L. Huhnke, Ph.D., P.E.; Glenn A. Kranzler, Ph.D.; Ronald T. Noyes, M.S., P.E.; Charles E. Rice, Ph.D., P.E. (adjunct); Michael B. Smolen, Ph.D.; John B. Solie, Ph.D., P.E.; Marvin L. Stone, Ph.D.; Richard W. Whitney, Ph.D., P.E.

Associate Professors

Assistant Professors
Timothy J. Bowser, Ph.D.; Danielle Bellmer, Ph.D.; Douglas W. Hamilton, Ph.D.; Gregory Hanson, Ph.D. (adjunct); Kerry Robinson, M.S. (adjunct)

Assistant Researchers
Paul Armstrong, Ph.D.; J.D. Carlson, Ph.D.

Lecturer
Brandon Claborn, B.S.

Chemical Engineering
Professor and Head
R. Russell Rhinehart, Ph.D.

Amoco Chair
Robert L. Robinson, Jr., Ph.D., P.E.

Professor and President
James E. Halligan, Ph.D., P.E.

Professor

Associate Professors
Martin S. High, Ph.D.; D. Alan Tree, Ph.D.; James R. Whiteley, Ph.D.
Assistant Professors
Karen A. High, Ph.D.; Randy S. Lewis, Ph.D.

Civil and Environmental Engineering

Professor and Head
Robert K. Hughes, Ph.D., P.E.

Professors

Associate Professors
William W. Clarkson, Ph.D., P.E.; Vernon A. Oberlender, Ph.D., P.E.; Mete Oner, Ph.D., P.E.; Gregory G. Wilbur, Ph.D.

Assistant Professors
Richard A. DeVries, Ph.D.; Dee Ann Sanders, Ph.D.; Bjong W. Yeigh, Ph.D.

Electrical and Computer Engineering

Professor Emeritus and Interim Head
Bennett L. Basore, Sc.D., P.E.

PSO/Albrecht Naeter Professor and Director, Engineering Energy Laboratory
Rama Ramakumar, Ph.D., P.E.

Henry and Shirley Bellmon Chair in Optoelectronics
Daniel R. Grischkowsky, Ph.D.

Professors
H. Jack Allison, Ph.D., P.E.; Rao Yarlagadda, Ph.D.

Associate Professors

Assistant Professor
Gary Yen, Ph.D.

General Engineering

Associate Professor
Stephen S. Bell, Ph.D., P.E.

Industrial Engineering and Management

Professor and Head
C. Patrick Koellinger, Ph.D.

Regents Professors
Kenneth E. Case, Ph.D., P.E.; Wayne C. Turner, Ph.D., P.E.

Professors
Timothy J. Green, Ph.D.; Allen C. Schuermann, Ph.D.

Associate Professors
Michael H. Branson, Ph.D.; Manjunath Kamath, Ph.D.; David E. Mandeville, Ph.D.; John W. Nazemitz, Ph.D.; David B. Pratt, Ph.D., P.E.

Assistant Professors
Camille F. DeYang, Ph.D.; Sanjay Melkote, Ph.D.

Mechanical and Aerospace Engineering

Professor and Head
Lawrence L. Hoborock, Ph.D., P.E.

Professor and MOST Chair in Intelligent Manufacturing
Ranga Komanduri, Ph.D., D.Sc.

Professor and Noble Research Fellow
James K. Good, Ph.D., P.E.

Professors
Ronald L. Dougherty, Ph.D.; Bruce A. Feiertag, B.S. (adjunct); Afshin J. Ghajar, Ph.D., P.E.; David G. Lilley, Ph.D., D.Sc., P.E.; Frank Richard Lowery, Ph.D., P.E.; Don A. Lucoco, Ph.D., CMfgE; Peter M. Moretti, Ph.D., P.E.; C. Eric Price, Ph.D., P.E.; Karl N. Reid, Sc.D., P.E.; John J. Shelton, Ph.D., P.E. (adjunct); Gary E. Young, Ph.D., P.E.

Associate Professors
Frank W. Chambers, Ph.D., P.E.; Ing-tsann Hong, Ph.D., P.E. (adjunct); Eduardo A. Misawa, Ph.D.; Jeffrey D. Spitler, Ph.D., P.E.

Assistant Professors
Andrew S. Arena, Jr., Ph.D.; Young-Bae Chang, Ph.D. (adjunct); Hongbing Lu, M.S.; Prabhakar R. Pagilla, Ph.D.

Lecturer
Ronald D. Delahoussaye, Ph.D.

School of Architecture

Professor and Head
J. Randall Seitsinger, M.Arch., AIA

Regents Professor
Alan W. Brunken, M.Arch., AIA

Professors

Associate Professors
Suzanne D. Bilbeisi, M. Arch., AIA; Nigel R. Jones, M.Arch., RIBA; Thomas D. Jordan, Ph.D., P.E.; Steve E. O'Hara, M.Arch, Engr., P.E.; Jeffrey K. Williams, M.Arch., AIA

Assistant Professors

Division of Engineering Technology

Professor and Director
James E. Bose, Ph.D., P.E.

Construction Management Technology

Associate Professor and Head
Charles A. Rich, M.S., P.E.

Associate Professor
Dana Hobson, Jr., Ph.D.; Mark H. Pruitt, M.S., M.Arch.

Electronics and Computer Technology

Professor and Head
Thomas G. Bertenshaw, Ed.D., P.E.

Associate Professors
John W. Cartinhour, Ph.D., P.E.; Samuel I. Kraemer, M.S., P.E.

Assistant Professor
Ellis C. Nuckolls, M.S., P.E.

Fire Protection and Safety Technology

Associate Professor and Interim Head
James E. Brown, M.S., P.E., C.S.P.

Associate Professors
Larry Borgelt, M.S., C.S.P., P.E.; Pat D. Brock, M.S., P.E.; Jim L. Hanson, M.S., C.S.P.; Howard M. Johnson, Ph.D.

Mechanical Engineering Technology

Professor and Interim Head
James E. Bose, Ph.D., P.E.

Professors
Don Adams, Ph.D.; Bill; L. Cooper, Ed.D.; Gary G. Hansen, Ph.D., CMfgE; Marvin D. Smith, Ph.D., P.E.

Associate Professors
D. Jack Bayles, Ph.D., P.E.; Kenneth Belanus, M.S.E.M., P.E.

Assistant Professor
Larry D. Simmons, M.S.

College of Human Environmental Sciences

Design, Housing and Merchandising

Professor and Head
Donna H. Branson, Ph.D.

Professors
M. Lynne Richards, Ph.D.; Margaret J. Weber, Ph.D.

Associate Professors
Carol Bormann, M.S.; Cheryl Farr, Ph.D.; Shireta Ownbey, Ph.D.

Assistant Professors
Rula Awad-Rafferty, Ph.D., P.E.; Rick Bartholomew, M.S.; Janetta M. McCoy, M.S.; Glenn Muske, Ph.D.; Jan Park, Ph.D.; Lona Robertson, Ed.D.; Nancy Stanforth, Ph.D.

Family Relations and Child Development

Professor and Head
David E. Balk, Ph.D.

John and Sue Taylor Professor of Human Environmental Sciences
Laura Hubbs-Tait, Ph.D.

Professors
Glennis Couchman, Ph.D.; David G. Fournier, Ph.D.; Dorothy Goss, Ph.D.; Lynda Harriman, Ph.D.; Carolyn S. Henry, Ph.D.; Beulah M. Hirschiene, Ph.D.; Patricia K. Nkaub, Ph.D.; Patricia Self, Ph.D.

Associate Professors
Kathleen Briggs, Ph.D.; Charles C. Hendrix, Ph.D.; Linda C. Robinson, Ph.D.; Joseph Weber, Ph.D.; Sue Williams, Ph.D.; Elaine Wilson, Ph.D.

Assistant Professors
Renee Daughtery, Ph.D.; Chip Donohue, Ph.D. (adjunct); Arlene Fulton, Ph.D.; Christine Johnson, Ph.D.; Monet Lane, Ph.D.; Kay Murphy, Ph.D.; Deborah Norris, Ph.D.; Scott Plunkett, Ph.D.; Jo Robertson, Ph.D.

Instructors
Paul Ann Presnal, M.S.; Susan Weaver, M.S.

Lecturers
Laura Hines, M.S.; Liana Teter, M.S.; Ginger Welch, M.S.

Nutritional Sciences

Professor and Head
Barbara J. Stoecker, Ph.D.

Professors
Lea L. Ebro, Ph.D.; Janice Hermann, Ph.D.

Associate Professors
Bahram H. Arjmand, Ph.D.; Gale Gates, Ph.D.; N. Sue Knight, Ph.D.; Donna Payne, Ph.D.

Assistant Professors
Andrea Arquitt, Ph.D.; Barbara Brown, Ph.D.; Elizabeth Droke, Ph.D.; Christa Hanson, Ph.D.; Kathryn Keim, Ph.D.

Assistant Extension Specialist
Glenna Williams, Ed.D.
College of Osteopathic Medicine

Basic Sciences and Graduate Studies
Professor and Associate Dean
David T. John, M.P.H., Ph.D.

Anatomy
Professor and Chairman
Kirby L. Jarolim, Ph.D.

Professors

Biochemistry and Microbiology
Professor and Chairman
Robert S. Conrad, Ph.D.

Professors
Martin W. Banschbach, Ph.D.; David T. John, Ph.D.; Charles G. Sanny, Ph.D.

Associate Professors
Joseph A. Price, III, Ph.D.; Ortinw Schmidt, Ph.D.; Gary H. Watson, Ph.D.

Assistant Professors
Earl L. Blevett, Ph.D.; Lee F. Rickords, Ph.D.

Physiology and Pharmacology
Professor and Chairman
George M. Brenner, Ph.D.

Professor
Loren G. Martin, Ph.D.

Associate Professors
Warren E. Finn, Ph.D.; Alexander J. Rouch, Ph.D.; Craig W. Stevens, Ph.D.

Assistant Professor
David R. Wallace, Ph.D.

Clinical Education
Professor and Associate Dean
Larry D. Cherry, D.O.

Family Medicine
Professor and Chairman
Charles E. Henley, D.O., M.P.H.

Professors
Larry D. Cherry, D.O.; Tom E. Denton, D.O.

Associate Professors

Clinical Associate Professors

Assistant Professors
Jenny L. Alexopoulos, D.O.; Diana L. DeFelice, D.O.; Jimmie Sue Hill, D.O.; Joan Stewart, D.O.

Clinical Assistant Professors

Medicine
Associate Professor and Chairman
Thomas J. Stees, D.O.

Professors
Thomas Wesley Allen, D.O.; James Seebass, D.O.

Clinical Professors

Clinical Associate Professors

Obstetrics and Gynecology
Professor and Chairman
Joseph A. Keuchel, D.O.

Clinical Professor
Richard R. Polk, D.O.

Clinical Assistant Professors

Pathology
Associate Professor and Chairman
Edward F. Goljan, M.D.

Professor
Dianne K. Miller-Hardy, Ph.D., J.D.

Clinical Assistant Professor
Steve E. Rose, D.O.

Pediatrics
Professor and Chairman
William R. Kennedy, D.O.

Associate Professor
Cynthia M. Berry, D.O.

Psychiatry and Behavioral Sciences
Associate Professor and Chairman
Susan K. Redwood, Ph.D.

Professor
Michael H. Pollak, Ph.D.

Associate Professors
Richard H. Bost, Ph.D.; Vivian M. Stevens, Ph.D.; Nancy Van Winkle, Ph.D.

Assistant Professor
Jackie L. Neel, D.O.

Radiology
Clinical Professor and Chairman
Dean R. Fullingim, D.O.

Surgery
Clinical Associate Professor and Chairman
Walter L. Wilson, D.O.

Professor
William E. Moore, D.O.

Clinical Professor
Harold L. Battenfield, D.O.

Clinical Associate Professor
Thad Taylor, D.D.S.

Clinical Assistant Professors

College of Veterinary Medicine

Veterinary Anatomy, Pathology and Pharmacology
Professor and Head, and Food Animal Research Endowed Chair
*Anthony W. Confer, D.V.M., Ph.D.

Regents Professor
Charlotte L. Ownby, Ph.D.

Professors

Associate Professors

Assistant Professors
Vickie L. Cooper, D.V.M. (adjunct); Jerry W. Ritchey, D.V.M., Ph.D.

Lecturer
Tanya Lemire, D.V.M.

Assistant Researchers
Edmou W. Bluin, Ph.D.; Mady Dabo, Ph.D.

Oklahoma State University 147
Residents
Connie Cummings, D.V.M.; Lilli Decker, D.V.M.; Nick Gatto, D.V.M.; Matt Starost, D.V.M.

Teaching Associates
Laura Cudd, M.S.; Danette Goodyear, M.S.; Joey Maier, B.S.; Tamara Mayo, D.V.M.; Sharon Ore, B.S.; Wei Li Tsai, B.S.

Graduate Research Assistants

Veterinary Infectious Diseases and Physiology
Professor and Head
*Robert W. Fulton, D.V.M., Ph.D.

Professors

Associate Professors

Assistant Professors

Teaching Associate
Jean M. Clarke, D.V.M.

Graduate Teaching Associates
Carole Barnett, M.S.; Ginger Daniels, B.S.; Susan Stacy, M.S.

Graduate Research Assistants
Jin Chang, M.S.; Rebecca Duncan, B.S.; David Good, M.S.; John Mathew, B.V.Sc., M.S.

Graduate Teaching Assistant
Haihui Huang, B.S.

Veterinary Medicine and Surgery
Professor and Head
*Grant H. Turnwald, B.V.Sc., M.S.

Professors

Associate Professors

Assistant Professors

Adjunct Assistant Professors

Adjunct Instructor
Petrina A. York, D.V.M.

Residents

Oklahoma Animal Disease Diagnostic Laboratory
Professor and Director
*William C. Edwards, D.V.M., M.S. (toxicologist)

Professor
*Ronald D. Welsh, D.V.M., M.S. (bacteriologist)

Associate Professors

Assistant Professors
Jeremiah T. Saliki, D.V.M., Ph.D. (virologist); *Vickie L. Cooper, D.V.M. (pathologist)

Resident
Karyn Bischoff, D.V.M. (toxicology)

*Board Certification in Specialty Area
Graduate College

Graduate College Calendar
(Refer also to the "University Calendar")

First Semester 1998-99, Fall 1998
August 17, Monday
Class work begins
August 28, Friday
Last day to file a diploma application
August 28, Friday
Applications for graduate credit for graduating seniors due
November 6, Friday
FINAL DRAFT copy of dissertations, theses and reports due
November 13, Friday
RESULTS of doctoral, Ed.S., and Plan I, Plan II or Plan III master's FINAL EXAMINATIONS due
November 20, Friday
Application for admission to spring candidacy due for doctoral and Ed.S. candidates
December 4, Friday
FINAL COPIES of dissertations, theses and reports due by fall candidates
December 6, Sunday
Graduate College Hooding Convocation
December 11, Friday
Class work ends

January 10, Monday
Class work begins
January 21, Friday
Last day to file a diploma application
January 21, Friday
Applications for graduate credit for graduating seniors due
March 24, Friday
FINAL DRAFT copy of dissertations, theses and reports due
April 7, Friday
RESULTS of doctoral, Ed.S., and Plan I, Plan II or Plan III master's FINAL EXAMINATIONS due
April 21, Friday
FINAL COPIES of dissertations, theses and reports due by spring candidates
April 21, Friday
Application for admission to fall candidacy due for doctoral and Ed.S. candidates
May 5, Friday
Class work ends
May 5, Friday
Graduate College Hooding Convocation
May 6, Saturday
University Commencement

Summer 2000
Regular 8-Week Summer Session
June 5, Monday
Class work begins
June 9, Friday
Last day to file a diploma application
June 9, Friday
Applications for graduate credit for graduating seniors due
October 29, Friday
FINAL DRAFT copy of dissertations, theses and reports due
October 29, Friday
Application for admission to spring candidacy due for doctoral and Ed.S. candidates
November 12, Friday
RESULTS of doctoral, Ed.S., and Plan I, Plan II or Plan III master's FINAL EXAMINATIONS due
November 26, Friday
FINAL COPIES of dissertations, theses and reports due by fall candidates
December 5, Sunday
Graduate College Hooding Convocation
December 10, Friday
Class work ends

First Semester 1999-2000, Fall 1999
August 16, Monday
Class work begins
August 27, Friday
Last day to file a diploma application
August 27, Friday
Applications for graduate credit for graduating seniors due
October 29, Friday
FINAL DRAFT copy of dissertations, theses and reports due
October 29, Friday
Application for admission to spring candidacy due for doctoral and Ed.S. candidates
April 9, Friday
RESULTS of doctoral, Ed.S., and Plan I, Plan II or Plan III master's FINAL EXAMINATIONS due
April 23, Friday
APPLICATION FOR ADMISSION TO FALL CANDIDACY DUE FOR DOCTORAL AND ED.S. CANDIDATES
May 7, Friday
Class work ends

Second Semester 1999-99, Spring 1999
January 11, Monday
Class work begins
January 22, Friday
Last day to file a diploma application
January 22, Friday
Applications for graduate credit for graduating seniors due
March 26, Friday
FINAL DRAFT copy of dissertations, theses and reports due
April 9, Friday
RESULTS of doctoral, Ed.S., and Plan I, Plan II or Plan III master's FINAL EXAMINATIONS due
April 23, Friday
APPLICATION FOR ADMISSION TO FALL CANDIDACY DUE FOR DOCTORAL AND ED.S. CANDIDATES
May 7, Friday
Class work ends

Summer 1999
Regular 8-Week Summer Session
June 7, Monday
Class work begins
June 11, Friday
Last day to file a diploma application
June 11, Friday
FINAL DRAFT copy of dissertations, theses and reports due
June 11, Friday
Applications for graduate credit for graduating seniors due
June 25, Friday
RESULTS of doctoral, Ed.S., and Plan I, Plan II or Plan III master's FINAL EXAMINATIONS due
July 9, Friday
FINAL COPIES of dissertations, theses and reports due by summer candidates
July 30, Friday
Graduate College Hooding Convocation
July 30, Friday
Class work ends

Oklahoma State University 149
Wayne Powell, Ph.D., Dean
Edward T. Knobbe, Ph.D., Associate Dean
Molly Tovar, Ed.D., Director of Student Academic Services
Mike Heppier, M.S., Assistant Director of Student Academic Services

The Graduate College is the hub of advanced study, research and creativity at Oklahoma State University. Faculty and students share an obligation to achieve greater knowledge and to present it to the scholarly community. Research is best done in an atmosphere where common goals exist. An esprit de corps exists in the OSU academic community where the goals are to maintain regional and national recognition, to provide an exciting research environment where students and faculty can make significant contributions to the store of knowledge, and to encourage each individual to reach his or her potential.

For additional information, the Graduate College may be reached at:
Phone: 1-405-744-6368 or 1-800-227-GRAD
FAX: 405-744-6244
E-Mail: GRAD-@okway.okstate.edu
URL: http://www.osu-ours.okstate.edu/gradcoll

Organization of the Graduate College

The Graduate College administers regulations and standards specified and established by the Graduate Faculty. The Graduate Faculty Council is elected by the Graduate Faculty to work with the dean of the Graduate College in development and administration of policy. The Graduate Faculty Council is the executive committee of the Graduate Faculty. It formulates and reviews policies concerned with the conduct of graduate study at OSU. All new policies are referred to the Graduate Faculty Council or the general Graduate Faculty for approval.

All departmental requests for permission to offer advanced degrees are referred to the Graduate Faculty Council for recommendation.

All requests for waiver of any rules or regulations as listed in the Catalog must be in the form of petitions to the dean of the Graduate College. A supporting letter from the major adviser is also required.

Graduate Council Members
Wayne Powell, Chair
Robert Wettemann, Vice-Chair

Group I - Biological Sciences
Robert Hunger
James Webster
Brian Kahl

Group II - Humanities
Elizabeth Grubgeld
Robert Mayer
Lisa Lewis

Group III - Physical Sciences and Technology
Eric Price
William Warde
Paul Westhaus

Group IV - Social Sciences
Brian Adam
Joe Weber
Carol Bormann

Group V - Teacher Education
Al Carlozzi
Steve Edwards
Adrienne Hyle

Research at Oklahoma State University

Research, a critical dimension of the mission of the University, is vital to the growth, health and progress of the state, the region and the nation.

Over the last several years, national attention has turned to economic development. This renewed emphasis on economic development and high technology has been spurred by the advances made by the Asian and European economic communities.

OSU is deeply involved in meeting this challenge. In recent years, significant strides have been taken in developing programs at the cutting edge of technology and basic research. The progress made by the establishment of the Noble Research Center for Agriculture and Renewable Natural Resources, the Food and Agricultural Products Research and Technology Center, the Center for Laser Research, the robotics and automated manufacturing laboratories, and the biotechnology programs underscore the University's commitment to find solutions to pressing problems.

The Environmental Institute was established at OSU to stimulate, coordinate and promote interdisciplinary research and education related to the natural environment. The Institute administers the activities of the University Center for Energy Research, the University Center for Water Research, the Spatial and Environmental Information Clearinghouse, and the environmental sciences graduate program. More information about the Institute and its activities is available on the home page on the World Wide Web (http://www.seic.okstate.edu/envinst/).

The University Center for Energy Research (UCER) encourages research and education in the fields of energy development, production, transmission, use, conservation and pollution. These areas are supported by a campus research grant program, fellowships, coordination of multidisciplinary projects, and transfer of information regarding research and educational opportunities results via publications, presentations and seminars.

The University Center for Water Research (UCWR) encourages research and education on national, state and local water issues. Support is provided through two research grant programs, fellowships, coordination of multidisciplinary projects, and transfer of information regarding research and educational opportunities via publication of newsletters, reports and special publications, and sponsorship of seminars.

The Spatial and Environmental Information Clearinghouse (SEIC) acts as an information link serving OSU researchers and the citizens of Oklahoma. Using World Wide Web and WAIS interfaces, SEIC provides a user-friendly method of locating and retrieving local (Oklahoma) and world-wide spatial and environmental data sets. Accessible on the World Wide Web (http://www.seic.okstate.edu/), the SEIC home page allows the user access to information and data on the Environmental Institute and SEIC, Oklahoma and the nation. SEIC also provides search and retrieval services for researchers on the OSU campus and throughout the state.

The Center for Laser and Photonics Research (CLPR) conducts cutting-edge research in critical new laser and photonics technologies. Its national and
international reputation is based on its leadership in lasers in basic science, industry, medicine, photonics and other high-tech arenas. The Center provides a focal point of expertise for the support of high-technology industries, research laboratories and medical institutions in Oklahoma and around the country. Faculty are involved in a broad spectrum of research activities including blue-light emitting semi-conducting lasers, development of an optoelectronic THz beam system, construction of a group-velocity matched ultrashort pulse nonlinear frequency conversion schemes, development of the first self-starting and self-mode-locking titanium-sapphire laser, research and development in laser-induced holographic gratings in rare-earth doped glasses and dynamic light scattering studies of colloidal suspensions. The efforts of the Center promote state-of-the-art education for tomorrow's scientists, engineers and technicians, provide important new research in emerging interest areas and significantly increase state and national high technology bases. New directions in the Center for Laser and Photonics Research involve a statewide, multidisciplinary clean room user facility for advanced technology materials and device processing and fabrication, a biophotonics initiative to link lasers and photonics to medical research and the health community, and the development of a new photonics advanced degree program, designed to attract high-quality students to OSU physics, chemistry and electrical engineering departments and better prepare them for the job market through interdisciplinary academic and research programs.

The Telecommunications Center has established the University as a world leader in telecommunications technology and has enhanced OSU's ability to disseminate research results.

Major research affiliations exist with the National Center for Groundwater Research, Oak Ridge Associated Universities and National Laboratories, and the Oklahoma Medical Research Foundation. Research facilities exist within each of the academic colleges. Well-equipped laboratories, teaching and diagnostic facilities, and various resource centers provide an excellent environment for creative scholarly research.

**University Research Council.** The University Research Council operates to assure proper consideration of research projects that are multidisciplinary in nature and to provide a mechanism for consideration of administrative problems and policies. The Council serves as an advisory group on all research matters for the president of the University. This Council is composed of the vice-president for research, a representative of the Faculty Council, a representative from Sigma Xi, the director of Grants and Contracts Financial Administration, the director of Computing and Information Services, the associate project director of EPSCOR, the dean of libraries, the director of Federal Relations, and the research directors of the various colleges.

**Accreditation**

Oklahoma State University is accredited by the North Central Association of Colleges and Secondary Schools. Programs within the colleges are also accredited by other agencies.

In the College of Agricultural Sciences and Natural Resources, the forestry program is accredited by the Society of American Foresters. The landscape architecture program (Bachelor of Landscape Architecture) is accredited by the American Society of Landscape Architects. The landscape contracting program is certified by the Association of Landscape Contractors of America. In addition, the College's teacher education program in agricultural education is accredited by the Oklahoma State Department of Education, and the Oklahoma State Department of Vocational-Technical Education.

In the College of Arts and Sciences, the medical technology program is accredited by the National Accrediting Association of Clinical Laboratory Science; the chemistry program is accredited by the American Chemical Society; the Ph.D. program in history is accredited by the American Historical Association; the School of Journalism and Broadcasting as well as the programs in advertising, broadcast journalism, news editorial, and public relations are accredited by the Accrediting Council on Education for Journalism and Mass Communications; the music program is accredited by the National Association of Schools of Music, the theater department by the National Association of Schools of Theater; and the public administration program in the Department of Political Science is accredited by the National Association of Schools of Public Administration. In the Department of Psychology, the doctoral program in clinical psychology is accredited by the American Psychological Association. The communication sciences and disorders program is accredited by the American Speech-Language-Hearing Association and the Oklahoma Speech-Hearing Association.

All programs in the College of Business Administration are fully accredited by the American Assembly of Collegiate Schools of Business, and the International Association for Management Education. The School of Accounting has separate accreditation by this body.

In the College of Education, the aviation programs are accredited by the Federal Aviation Administration the only nationally-recognized accrediting body for programs in aviation. OSU was the first university in Oklahoma with a program that received this designation. The counseling psychology program is accredited by the American Psychological Association. The leisure studies program is accredited by the National Recreation and Park Association and the American Association for Leisure and Recreation, with accredited options in leisure service management and therapeutic recreation. All professional education programs are accredited by the Oklahoma State Board of Education and the North Central Association of Colleges and Secondary Schools. Business education, as well as technical and industrial education are also accredited by the Oklahoma State Department of Vocational-Technical Education.

In the College of Engineering, Architecture and Technology, bachelor's degree programs are accredited by nationally recognized accreditation organizations. Programs in aerospace engineering (an option in mechanical engineering), architectural engineering, biosystems engineering, chemical engineering, civil engineering, electrical engineering, industrial engineering and management, and mechanical engineering are accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology, Inc. (ABET). Programs in construction management technology, electronics technology, and fire protection and safety technology are accredited by the Technology Accreditation Commission (TAC) of the Accreditation Board for Engineering and Technology, Inc. (ABET). The program in architecture is accredited by the National Architectural Accrediting Board (NAAB).

All programs culminating in a B.S. in the College of Human Environmental Sciences are accredited by the Council for Accreditation of the American Association of Family and Consumer Sciences. In addition, specialized agencies have approved or accredited specific programs in the College as follows: The Foundation of Interior Design Education Research (FIDER) has accredited the undergraduate interior design program. The Child Development Laboratory is licensed by the state of Oklahoma Department of Human Services. The American Association of Marriage and Family Therapists has accredited the master's program in marriage and family therapy. The American Dietetic Association (ADA) has approved the Dietetic Internship and the Didactic Program in
Research Centers

Agronomy Research Station
Rural Route, Perkins, OK 74059 547-2385
P.O. Box 42, Fort Cobb, OK 73038 643-2501
At. 1, Box 65, Haskell, OK 74436 918-482-3822
Route 1, Box 15, Altus, OK 73521 482-3459

Irrigation Research Station
At. 1, Box 228, Idabel, OK 74745 286-5175
RR 1, Bessie, OK 73622 331-8171

Kiamichi Forestry Research Station
Box 141, Laoma, OK 73754 796-2447

Oklahoma Fruit Research Station
Rt 2, Box 1030, Perkins, OK 74059 547-2672

Oklahoma Pecan Research Station
Sparks, OK 74869 547-2672

Oklahoma Vegetable Research Station
13711 S. Mingo Rd, Bixby, OK 74008 918-369-2441

Panhandle Research Station
12001 18th St., Woodward, OK 73801 256-7449

Sandyland Research Station
Mangum, OK 73554 482-3459

South Central Research Station
Send mail to Altus

Southwest Agronomy Research Station
Send mail to Altus

U.S. Southern Great Plains Field Station
2000 18th St., Woodward, OK 73801 256-7449

Wes Watkins Agricultural Research & Extension Center
Box 128, Lane, OK 74555 889-7343

Agricultural Experiment Station
139 Agricultural Hall 744-5398

Agronomy Research Station
Rt. 5, Box 150, Stillwater, OK 74075 624-7036

Center for Aerospace Education
Sensings
213 Scott 744-5178
Center for Environmental Education
408 Classroom Building 744-7233
Center for International Trade Development
204 Center for Intl Trade Development 744-7693
Center for Laser & Photonics Research
413 Noble Research Center 744-6575
Center for Local Government Technology
308 Center for Intl Trade Development 744-6049
Crystal Growth Laboratory
145 Physical Science 744-5796
Ecotoxicology Research Laboratory
426 Life Science West 744-5551

Educational Technology Center
Educational Technology Center
002 Willard Hall 744-7124

Electron Microscopy Laboratory
020 Veterinary Medicine 744-6765
Electronics Laboratory
398 Cordell South 744-5716

Engineering Energy Laboratory
216 Engineering South 744-5157
Environmental Institute
003 Life Science East 744-9994

Human Resources Development Center
145 Physical Science 744-5796

Human Nutrition Center
425 Human Environmental Sciences 744-5040

Industrial Assessment Center
204 Willard 744-6275
213 Willard 744-6275
322 Engineering North 744-6055

Manufacturing Processes and Materials Center
1724 W. Tyler, Stillwater, OK 74074 744-7375
Mass Spectrometry Laboratory
025 Physical Science 744-5937
Math and Reading Center
202 Willard 744-7119

Micro Raman Facility
145 Physical Science 744-5807
NMR400 MHz Laboratory
013 Physical Science 744-7999
NMR Oklahoma Statewide Shared Facility
005 Physical Science 744-5394

NMR Solids Laboratory
005 Physical Science 744-5834

NMR Solutions Laboratory
012 Physical Science 744-5950

Noble Research Center for Agriculture and Renewable Natural Resources
139 Agricultural Hall 744-5398

Oklahoma Center for Integrated Design and Manufacturing
203 Engineering North 744-6991

Plant Disease Diagnostic Laboratory
110 Noble Research Center 744-5643

Real-Time Distributed Systems Laboratory
413 Engineering South 744-5900

Recombinant DNA/Protein Resource Facility
349 Noble Research Center 744-9327

University Center for Energy Research
003 Life Science East 744-9996

University Center for Water Research
003 Life Science East 744-9996

Veterinary Medical Research Program
308 Veterinary Medicine 744-6663

Veterinary Research Station
139 Agricultural Hall 744-5398

Web Handling Research Center
1724 W. Tyler, Stillwater, OK 74074 744-7375

Dietetics (DPD). The School of Hotel and Restaurant Administration is accredited by the Accreditation Commission for Programs in Hospitality Administration (ACPHA).

The College of Veterinary Medicine is fully accredited by the American Veterinary Medical Association. The Oklahoma Animal Disease Diagnostic Laboratory is accredited by the American Association of Veterinary Laboratory Diagnosticians and the Boren Veterinary Medical Teaching Hospital is accredited by the American Animal Hospital Association.

Programs at OSU's branch campuses have also received accreditation from national agencies. The OSU College of Osteopathic Medicine is accredited by the Bureau of Professional Education of the American Osteopathic Association.

OSU-Oklahoma City is accredited by the Commission on Institutions of Higher Education of the North Central Association of Colleges and Secondary Schools. In addition, other programs are accredited or certified by the following institutions: Oklahoma Drug and Alcohol Professional Counselors Association, Rehabilitation Services for Deaf and Hearing Impaired, State Health Department for Emergency Medical Technicians, Council on Law Enforcement Education and Training, National League for Nursing, Oklahoma Board of Nursing, and American Veterinary Medical Association.

OSU-Okmulgee is accredited by the Commission on Institutions of Higher Education of the North Central Association of Colleges and Secondary Schools. In addition, programs in automotive service technology and automotive body technology are nationally certified by the National Automotive Technicians Education Foundation, Inc. (NATEF). The dietetic technology program is accredited by the American Dietetic Association.

Refer to the appropriate college sections in the Catalog for further information on accreditation of specific programs.

Services at OSU

Library
The Oklahoma State University Library contains more than 5.5 million books, documents, and microforms, and about 17,000 serials. The open-stack arrangement of books and periodicals and the computer-assisted literature search and retrieval system support the on-going academic and research programs. The library contains a complete set of U.S. patents and is a regional depository of the federal government. Graduate
students are entitled to a 120 day check-out period for books, and can use the interlibrary services.

Computing and Information Services
Computing and Information Services (CIS) is the central provider of computing, data networking, and telephone services for Oklahoma State University. CIS also provides a variety of other important services to the campus including computer training, publications, programming support for institutional information systems, desktop computing support on site, and a comprehensive Help Desk.

The CIS Help Desk, serving more than 4,000 customers each month, provides diagnostic support and remedial assistance by phone, by electronic mail at helpdesk@vml.ucc.okstate.edu, or in person at 113 Math Sciences.

All OSU students are given computer access and electronic mail upon enrollment. Students can also access some CIS computers from their homes via dial-up modem facilities. OSU’s extensive data communications network provides interfaces to OneNet, MIDNet, the Internet, and the World Wide Web.

CIS supports eight remote computing facilities in various locations around campus with more than 400 microcomputers. A SUN Workstation cluster is located in 113 Engineering South.

The central mainframe computer at OSU is an IBM 9672-R32 Enterprise Server operating MVS/ESA and VM/ESA. Two time-sharing systems, TSO and CMS, are available on the mainframe. CIS also has a DEC System 3000-600 VMS and a DEC 2100A-4/275 RISC DIGITAL UNIX machine.

Additional information about CIS and computing at Oklahoma State University can be found at the World Wide Web site on the Internet (www.okstate.edu/cis_info). It is updated frequently with timely announcements.

Living Accommodations
From high-rise residence halls to single-dwelling apartments, OSU has all types of housing to meet many preferences. Wentz residence hall is designated for students needing year round housing (12 months). This 10 story air-conditioned building offers single and double occupancy, with priority given to single graduate students. Wentz also offers room computer network access. Stout is an upper-class residence hall for students needing housing for the academic year (nine months). This four story non-air-conditioned hall offers inexpen-

sive single occupancy. Optional meal plans are offered in neighboring cafeterias. Other amenities include an open visitation policy, extensive study space and parking adjacent to the hall.

University Apartments are available primarily to married and graduate students and on a limited basis to juniors and seniors. The apartment complex features two-bedroom units. To be eligible, the student must be a full-time student (nine credit hours per semester) or be enrolled in six credit hours and be employed by the university 50 percent of the time.

To apply for either housing service, an application and deposit must be filed with the appropriate office. For further information, contact the Office of Residential Life or University Apartments. Early application is suggested.

Students with Children
Information on child care in the Stillwater community is available at the following locations on campus:
Family Resource Center-1207 W. McElroy
Nontraditional Student Services-060 Student Union
Student Life Center-Student Union
Student Government Association-040 Student Union

Health Care
Every student enrolled at OSU is eligible for health care at the University Health Center. Four agencies serve the University community to provide a wide range of mental health services. Low-cost life and health insurance is also available.

Recreation
Intellectual exercising involves complete development of the mind, body and spirit. Opportunities for students to use their free time include concerts, lectures, films, and other media forms. Many student organizations function to enhance the educational experience of the student. The Colvin Physical Education Center offers a wide variety of organized and informal recreational activities including intramural sports of many types.

The Student Union offers a host of programs and services. The facilities include a complete food service, a theater, hotel, game rooms, lounges and meeting rooms, bookstores, diverse specialty shops, banking facilities and a travel agency.

Graduate Student Association
The goal of the Graduate Student Association is to improve all aspects of graduate education and graduate student life at OSU. The Association has representatives from each department offering a graduate degree program. Members are nominated by the department heads with membership conferred by the dean of the Graduate College. Each representative is appointed for a term of one year if the student is in good academic standing and is enrolled in at least two credit hours.

Financial Aid
Tuition and Fees
Refer to the section on "Costs."

Tuition Waiver Policy for Graduate Assistants and Spouses
The University will waive the nonresident portion of tuition for graduate assistants who are enrolled full-time and who are employed at least one-fourth time for the entire semester in research or instruction related to their degree programs.

The nonresident tuition for summer will be waived even if the student is not employed as a graduate assistant for that period if the student held an assistantship for the preceding spring semester.

A spouse of a nonresident student employed as a graduate assistant for at least one-quartertime, is also eligible for a nonresident tuition waiver.

Teaching and Research Assistantships
The University awards numerous teaching and research assistantships with competitive stipends. Fellowship opportunities are available through several programs. Service expected and the number of hours of graduate work a student may take are governed by the terms of the appointment. Applications should be addressed to the head of the department in which the appointment is desired.

In-state Tuition Waiver Scholarships
This award is also referred to as the general fee waiver.
Eligibility: U.S. citizen or permanent resident; regular admission to a graduate degree program; cumulative grade-point average greater than 3.00.

Application: Successful completion of the Free Application for Federal Student Aid (FAFSA) annually (packet available in Office of Student Financial Aid, 110 Harmer Hall); apply directly to academic departments.

Award: Varies; awards granted by semester.

Deadline: Contact department for deadline.

OSU Foundation Graduate Fellowships

Eligibility: Grade-point average greater than 3.50; acceptance into a graduate degree program; no prior work completed on the particular degree being sought.

Application: Nominations are made by the student's department head.

Award: Variable.

Deadline: Variable.

Oklahoma Tuition Aid Grant (Need Based)

Eligibility: Oklahoma resident; enrolled in a graduate degree program; making satisfactory progress toward a degree.

Application: Successful completion of the Free Application for Federal Student Aid (FAFSA). Grants administered and awarded by Oklahoma State Regents for Higher Education.

Award: Varies according to need.

Deadline: Priority deadline is February 1 for consideration for the subsequent fall semester.

Minority Doctoral Study Grant Program

The Oklahoma State Regents for Higher Education have set aside special funds to underwrite assistance programs for minority graduate students who are studying in public higher education institutions in Oklahoma with college teaching as a career objective. The Doctoral Study Grant Program is for students pursuing the doctoral degree with a commitment to teach in Oklahoma colleges and universities. For further information, contact the Oklahoma State Regents for Higher Education, P.O. Box 54009, Oklahoma City, OK 74154-2054.

Minority Tuition Waivers

As part of a social justice policy enacted by the Oklahoma State Regents for Higher Education, minority nonresident graduate students are eligible for a waiver of their nonresident tuition whether or not they hold departmental assistantships. Eligible applicants should contact the associate dean or director of student academic services in the Graduate College prior to the beginning of each semester.

Presidential Fellowships for Water, Energy and the Environment

These awards are offered for doctoral level study and research in the areas of water resources, energy resources and environmental issues. Focus areas include, but are not limited to: resource development, production, use and management; biodiversity; innovative technology development; risk analysis and management; policy development and analysis; pollution prevention, assessment, reduction and clean-up. Current stipends are $19,200 annually and may continue up to three years.

To receive additional information concerning the fellowship program, contact the Environmental Institute, 003 Life Science East, Oklahoma State University, Stillwater, OK 74078.

Student Employment

University Placement provides assistance to OSU students seeking part-time employment. Students are informed of job opportunities on campus and in the Stillwater community. Applications are available in 360 Student Union. Jobs on campus usually offer 12 to 20 hours of work per week in clerical, technical, food service, or general labor positions. Rate of pay and work schedules vary.

Miscellaneous Sources of Financial Aid

1. Electronic data bases that may have information are:

   - Sponsored Programs Information Network (SPIN), a data base that provides access to funding programs from all types of entities-federal, foundations, professional societies, etc. and access to the current requests for proposals from those entities. The SPIN data base is located in 001 Life Science East and is available 8-12 and 1-5 Monday through Friday.

   - Community of Science (COS), databases of research information, including funding opportunities. COS can be accessed via the World Wide Web (http://cos.gdb.org/).

   - Federal Information Exchange, Inc. (FEDIX), an on-line data base of government information for colleges, universities and other organizations.

   - FEDIX can be accessed via the World Wide Web (http://www.fedix.com/), Science and Technology Information System (STIS), an electronic dissemination system that provides fast, easy access to National Science Foundation information and publications. STIS can be accessed via the World Wide Web (http://www.nsf.gov/nsf/homepage/infopub.htm).

2. University and public libraries have in formation on federal, state and private sources of aid. Factors other than financial need are often taken into account.

3. Many companies and labor unions have programs to help defray the cost of advanced education for their employees or members of their families.

4. Students should check foundations, religious organizations, fraternities or sororities, town or city clubs, community and civic organizations such as the American Legion, YMCA, 4-H Clubs, Kiwanis, Jaycees, Chamber of Commerce, and the Masonic Lodge.

5. Organizations connected with a student's field of interest often provide scholarships. These organizations may be listed in the U.S. Department of Labor's Occupational Outlook Handbook, or a student can often find out more about these by contacting faculty members in the major field.

Departmental Scholarships

These awards are controlled by specific departments or those which require nomination from the department on behalf of the student. Individual departments may know if particular awards or scholarships are available in the discipline.

National Fellowships

1. Fulbright-Contact Office of International Programs, 307 Center for International Trade Development, 405-744-6535.

2. National Science Foundation-Contact Office of University Research Services, 001 Life Science East, 405-744-9991.

Oklahoma State University Loans

OSU provides opportunities for students who need financial assistance. These funds are available to students who meet the eligibility requirements of the various programs and are making
satisfactory progress in their college work. The Short-term Loan program provides up to a maximum of $200 per semester for the purpose of meeting educationally-related expenses.

Additional information is available in the Office of Student Financial Aid in a data base program called FINDS. Additionally, the Office of University Research Services often has information on miscellaneous forms of financial aid. There is no centralized location for graduate student financial aid; therefore, the student should also contact the reference section of the library for information.

**Special Programs**

**Certification Programs**

Oklahoma State University offers Oklahoma State Department of Education-approved post-bachelor’s certification programs for school counselors, psychometrists, reading specialists, and library media specialists. Certification is also offered in speech and language pathology and audiology and in special education (emotionally disturbed and learning disabilities).

Master’s degrees are available in most of these programs and doctorates are available in many.

Post-master’s level certification programs are available in: elementary school principal; school superintendent; secondary school principal; school psychologist; and school counselor.

Inquiries concerning any aspect of the Teacher Education program should be addressed to the Office of Teacher Education or the head of the department offering the program.

**Off-campus Programs**

**University Center at Tulsa**

Oklahoma State University offers graduate courses at the University Center at Tulsa (UCT). All courses offered by OSU faculty are considered resident credit for degrees granted by Oklahoma State University. Courses offered by the other universities participating in UCT can be applied to OSU degree requirements as transfer credit.

The graduate and certification programs approved by the Oklahoma State Regents for Higher Education for Oklahoma State University to offer through UCT are:

- **College of Arts and Sciences**
  M.S. in Computer Science
  M.A. in English
  Teaching English as a Second Language

- **College of Business Administration**
  M.S. in Accounting
  Master of Business Administration
  M.S. in Economics

- **College of Education**
  M.S. in Applied Behavioral Studies
  Community Counseling
  Emotionally Disturbed
  Gifted and Talented
  Learning Disabilities
  M.S. in Curriculum and Instruction
  Curriculum/Supervision
  Elementary Education
  Reading
  Certification Program in Educational Administration
  Certification Program for School Superintendent
  M.S. in Occupational and Adult Education
  Adult and Continuing Education
  Human Resources Development
  Vocational Education
  M.S. in Trade and Industrial Education

- **College of Engineering, Architecture and Technology**
  M.S. in Chemical Engineering
  M.S. in Civil Engineering
  Construction Engineering and Management
  Environmental and Water Resource Engineering
  Geotechnical Engineering
  Transportation Engineering
  M.S. in Electrical Engineering
  M.S. in Environmental Engineering
  M.S. in Industrial Engineering and Management
  M.S. in Mechanical Engineering

- **Interdisciplinary**
  M.S. in Environmental Science
  M.S. in Natural and Applied Sciences
  Aviation and Space Sciences
  M.S. in Telecommunications Management

At present, OSU does not offer any doctoral programs at UCT. Courses offered by OSU at UCT may apply as residence credit to doctoral degree programs that are available in Stillwater. Prior to enrollment in UCT courses, students should secure approval from their advisers concerning the appropriateness of any courses relative to the degree objective. Students should also be aware that substantial portions of doctoral degree programs require attendance in courses and participation in departmental programs in Stillwater.

**Graduate Centers**

Students may take one-half of the requirements for the master’s degree at a Graduate Center provided they comply with the following conditions:

1. Each student working for a degree must comply with requirements for admission given in the Catalog.
2. At least 22 semester credit hours must be completed after the degree plan has been approved by the student’s advisory committee and the dean of the Graduate College, and filed in the Graduate College.
3. The thesis or report must be supervised and approved by resident members of the faculty teaching on the Stillwater campus.
4. Final examinations covering the entire graduate program are to be given by a committee selected by the major department and the dean of the Graduate College.
5. The last eight semester credit hours for the degree must be taken on the Stillwater campus unless a written request by the student to take the work at some other place is approved by the head of the major department and the dean of the Graduate College.

**Off-campus Program in Engineering**

A master’s degree in engineering may be obtained with all course requirements being met at off-campus centers of Oklahoma State University, the University of Tulsa, and the University of Oklahoma. At least one-half of the hours needed must consist of courses taught by Graduate Faculty members of Oklahoma State University. The remainder of the hours may be made up of transfer credits from the University of Oklahoma earned on campus or at its off-campus centers and/or the University of Tulsa, and a maximum of eight hours of transfer credits from other institutions with approved graduate programs. All other requirements of the regular master’s degree, as outlined in the Catalog, must be met.

Such a master’s degree has the same designations as the one earned on-campus, except that the transcript will show the wording “Off-campus.”

**Extension Credit**

Courses offered through the extension mode are considered equivalent to courses offered through traditional
research concept and a broader program than is normally available with the specialized research degree.

A baccalaureate degree in agriculture or a related field is required for admission. The candidate must meet requirements for acceptance into the Graduate College and be recommended by the departmental graduate committee responsible for the program.

Environmental Science
Program Coordinator Edward T. Knobbe, Ph.D.

The environmental science program at Oklahoma State University emphasizes that an understanding of, and solution to, many environmental problems involves the application of skills and knowledge of more than one of the traditional disciplines. Graduate Faculty members from the agricultural, biological, physical, or social sciences, education and engineering join for the purpose of offering graduate programs at the master’s and doctor’s levels.

The University has had nine decades of experience and development in the application of scientific knowledge to society’s problems. Important resources for graduate students are campus research and learning institutes and laboratories, cooperative programs with public and private agencies, and off-campus research and teaching facilities. Many of these are staffed by personnel drawn from more than one discipline, and many serve to address problems which are multidisciplinary or interdisciplinary in scope and solution. The environmental science degree programs at the University are designed to utilize these resources and serve students whose interests transcend the traditional demarcations of knowledge and whose goals include the broad understandings and skills obtained by crossing disciplinary lines in the classroom and laboratory.

Graduates from the environmental science program are expected to have skills and knowledge that are applicable to a wide range of research, management, and planning vocations. Government, industry, and private consulting firms offer employment opportunities for environmental science graduates.

Programs of Study. The breadth of offerings at Oklahoma State University affords flexibility to the student interested in specific aspects of the environment. A student can design a unique degree plan to target a particular focus area that meets his or her professional goals. The student’s graduate committee assists in this process to help ensure focus, breadth, and quality of the degree plan. Areas of concentration span a variety of areas such as political science, geography, geology, civil and environmental engineering, recreation, forestry, toxicology, biology, chemistry, agronomy, and agriculture. The flexibility of this program allows the student to focus on an environmental topic not normally addressed by a single discipline.

The Master of Science Degree. To obtain the M.S. degree in environmental science, a student must complete a 12-hour core curriculum consisting of an environmental problem analysis class (ENVIR 5100), an advanced environmental studies course (ENVIR 5300), and one course each in social science and physical science. A minimum of 18 additional credit hours are selected by the student and his or her committee and adviser. A thesis completes this 36-hour degree program. Specific requirements for the master’s degree can be obtained from the program coordinator.

The Doctor of Philosophy Degree. To obtain the Ph.D. degree in environmental science, a student must propose and undertake a minimum of a 60-hour plan of study. The plan of study must include a minimum of 36 credit hours of course work consisting of six hours of a skill component, a doctoral seminar (three credit hours), and 27 credit hours that are selected by the student and his or her committee that reflect the biological, social and physical aspects of the concentration area. In addition, this course work will include ENVIR 5100 and ENVIR 5300 as designated in the M.S. degree requirements. Research and courses should reflect the student’s professional goals. A dissertation is required and consists of a minimum of 15 credit hours. Specific requirements for the doctoral degree can be obtained from the program coordinator.

Admission. To participate in the environmental science program, a student must first make application to the Graduate College. Application materials specific to the environmental science program include a statement of academic, research and professional goals, three letters of recommendation, complete transcripts, and a Graduate Record Exam (GRE) report. A TOEFL score of at least 575 is required of all international students.

All applications to environmental science graduate programs should be submitted at least 60 days before the opening of the semester for which enrollment is first intended. International students should supply all application materials by March 1 for fall enrollment, and July 1 for spring enrollment. The Graduate College will provide the necessary forms.

Financial Assistance. Fee waiver scholarships are available through the Gradu-
ate College for environmental science students. Such scholarships are available for those who can qualify as Oklahoma residents. Priority is given to minority students, and those who can demonstrate financial need. To be considered, a FAFSA must be completed.

Graduate research assistantships and other funding opportunities are often available through faculty members participating in the environmental science program or through one of the several research institutions or centers on campus. The initial application should specify an interest in an assistantship.

Additional information about the environmental science graduate program can be found on the World Wide Web (http://seic.lse.okstate.edu/envsci).

Food Science
Program Coordinator Gerald Fitch, Ph.D.

The following departments participate in the food science program: Agricultural Economics, Agronomy, Animal Science, Biochemistry and Molecular Biology, Biosystems and Agricultural Engineering, Horticulture, Microbiology and Molecular Genetics, and Nutritional Sciences.

Food science is an interdisciplinary graduate program designed to provide an opportunity for students to acquire basic knowledge of food industry encompassing the biological and physical sciences. The increasing complexity of the problems involved in the production, processing, and utilization of food demands increased fundamental knowledge to solve these problems. There is a great demand for personnel with advanced training in the broad area of food science to staff research and quality assurance facilities of industry, universities and the federal government.

Admission Requirements. Admission to either the Master of Science or Doctor of Philosophy degree programs requires an undergraduate major in animal science, biochemistry, dairy science, food science, human nutrition, microbiology or poultry science. Students majoring in other curricula may qualify by remedying specific undergraduate deficiencies recognized by the student's graduate committee. A student enrolling in a degree program must have been accepted by an adviser prior to official admission.

Manufacturing Systems Engineering
Program Coordinator John W. Nazemetz, Ph.D.

This interdisciplinary master's degree is designed to address the needs of manufacturing managers, particularly those in small-to-medium-size firms, in all aspects of manufacturing systems, including management as well as the hardware aspects of manufacturing.

Jointly sponsored by the schools of Electrical and Computer Engineering, Industrial Engineering and Management, and Mechanical and Aerospace Engineering, this program produces graduates capable of direct contributions in the design, selection, and implementation of up-to-date computerized manufacturing systems.

To pursue this degree a student enrolls in one of the three schools listed above and is advised by a faculty member in that school. The student's advisory committee is composed of members from each of the three schools. For more information students should contact the program coordinator in the School of Industrial Engineering and Management.

Natural and Applied Sciences

Aviation and Space Sciences
Program Coordinator Steve Marks, Ed.D.

Gerontology
Program Coordinator Joe Weber, Ph.D.

Interdisciplinary Sciences
Program Coordinator Wayne Powell, Ph.D.

Health Care Administration
Program Coordinator Mike Branson, Ph.D.

Natural Sciences
Program Coordinator Wayne Powell, Ph.D.

The Master of Science in natural and applied sciences consists of four programs, each with different specializations designed to address the needs of students with specific interests. The four are aviation and space sciences, gerontology, interdisciplinary sciences and natural sciences. Within interdisciplinary sciences there is a well-defined specialization in health care administration. For detailed information on these programs of study, students should contact the program coordinators. Bulletins describing the requirements of each program are also available from the Graduate College.

Programs of Study. Aviation and Space Sciences. Students will take a minimum of 11 credit hours of core courses from research, organizational theory, and administration and management. The remaining courses, to total a minimum of 32 credit hours, will come from the multidisciplinary course list or additional courses from the core list. Other courses may substitute upon approval from the advisory committee. Students may select the research component-thesis, report, or creative component-with approval of the advisory committee. Six credit hours are allowed for the thesis option and two credit hours are allowed for the research report. Credit hours allowed for the creative component varies.

Gerontology. In addition to the general admission criteria, students in gerontology must meet three conditions to be eligible for admission:

1. Overall grade-point average of at least 3.00;
2. GRE score with a 900 minimum score (total verbal and quantitative) or an MAT score of at least 35.

Gerontology offers two plans to obtain a master's degree. The first plan requires 36 credit hours, including a creative component and/or an internship. The second plan includes a thesis and requires a minimum of 33 credit hours, including six hours for the thesis. The student's advisory committee will assist the student in selecting the courses for the plan of study which best address the student's professional and personal goals.

Gerontology Graduate Certificate. The graduate certificate in gerontology, approved by the Oklahoma State Regents for Higher Education, will provide documentation that students have completed a program of instruction and educational experiences in the field of gerontology at the graduate level.

Admission into the program is based on the following criteria:

1. Applicants must have met the University's graduate admission requirements and be currently pursuing a master's or doctoral degree from one of the academic departments at OSU.
2. A student who has already completed a master's or doctoral degree from Oklahoma State University or another accredited institution would also be eligible to complete the gerontology certificate requirements.
3. Students must complete a minimum of 21 graduate credit hours involving at least six different courses of formal instruction, in addition to three credit hours of creative or basic applied research activities related to aging populations.

Upon satisfactory completion of the program, students will receive a certificate and a notation on their transcripts. For more information, contact the Graduate College, 202 Whitehurst, or the Department of Family Relations and Child.
Interdisciplinary Sciences. This program is for students who desire to increase their competence in a particular thematic area by taking a series of courses in several disciplines. This multidisciplinary approach provides educational opportunities for a variety of careers.

Interdisciplinary sciences consists of no fewer than three separate fields of study with at least six hours in each field. No more than 15 hours may be taken in any one area. The advisory committee will assist the student in formulating the plan of study.

Health Care Administration. This specialization within interdisciplinary sciences is designed for individuals who seek to pursue a career in the field of health care management. The program requires students to take core courses in health care administration and research methods along with a series of electives selected from applicable courses in business and social sciences. The multidisciplinary approach to the health care administration discipline provides students with a unique perspective on the complex issues facing the profession today.

Natural Sciences. This program is for science teachers and other individuals who desire a broader program than that offered in departmental programs. The goal of the program is to provide the student with a breadth of training in science and related areas.

To enter the program, the student should have a minimum of 30 credit hours of science, with biological, physical, and earth sciences represented. An undergraduate grade-point average of 3.00 is required for unqualified admission. Students with a grade-point average below 3.00, but 2.50 or better, may be admitted on a probationary basis.

Particular courses are not specified for the degree, the student's advisory committee assists the student in selecting appropriate courses. However, not more than two-thirds of the courses for the degree may be taken in any one of the areas of biological, physical, or earth sciences.

Financial Assistance. In-state fee waiver scholarships are available on a limited basis for eligible students. Interested students should contact the program director in the Graduate College. Eligibility criteria include Oklahoma residency, enrollment in residence credit hours, admission into the program, and successful completion of the FAFSA form for the academic year in which the student is seeking aid. The FAFSA packets are available in the Office of Student Financial Aid, 110 Hanner Hall.

Plant Science
Program Coordinator Arron Guenzi, Ph.D.

Solutions to current problems in plant science often require integration of knowledge from a number of disciplines. The plant science program at Oklahoma State University provides the opportunity for the exceptional Doctor of Philosophy student to develop an academic and research program tailored to his or her individual interests and needs. Faculty participating in this program come from the departments of Agronomy, Biochemistry and Molecular Biology, Botany, Entomology, Forestry, Horticulture and Landscape Architecture, Microbiology and Molecular Genetics, and Plant Pathology. The multidisciplinary nature of this program allows students to experience many facets of plant science and affords them the flexibility to seek employment in a variety of settings in the plant sciences. Students, in consultation with their graduate committees, develop a program in one of three specialization areas (cellular and molecular, organismal or ecological), but are expected to develop a sound foundation across the disciplines of plant study.

Admission Requirements. Application for admission must first be made to the Graduate College. Additional information required by the plant science steering committee includes a statement defining plant science interests, a resume, three letters of reference, an abstract of the Master of Science thesis (if applicable), GRE scores (the Advanced Biology GRE is also desirable), and a minimum TOEFL of 570 (if applicable). A student must be accepted by a faculty adviser prior to official admission.

Financial Assistance. Students seeking financial assistance should inquire directly to the department(s) of interest within the plant science program.

Steering Committee
Aaron C. Guenzi, Agronomy
Biao Ding, Botany
Andrew J. Mort, Biochemistry and Molecular Biology
Jack W. Dillwith, Entomology
Stephen W. Hallgren, Forestry
Jeffrey Anderson, Horticulture and Landscape Architecture
David H. Demezas, Microbiology and Molecular Genetics
Jacqueline Fletcher, Plant Pathology

Telecommunications Management
Program Director Rick L. Wilson, Ph.D.

In response to industry's need for skilled and knowledgeable telecommunications management graduates, Oklahoma State University offers a Master of Science degree in telecommunications management. This program is offered not only through traditional means to on-campus students but also via distance learning technologies to students at remote locations.

The telecommunications management program draws on the combined expertise of three OSU colleges—the College of Arts and Sciences, the College of Business Administration, and the College of Engineering, Architecture and Technology. As a result the telecommunications management student will have a traditional home department to achieve a depth of knowledge in one discipline, while developing broad knowledge in business, technical and communication disciplines.

This program prepares graduates for managing the telecommunications technologies as well as managing in a competitive environment with telecommunications systems. The graduates of this program are likely to be employable by providers or users of telecommunications technologies.

Telecommunications Management Curriculum. The program curriculum consists of a minimum of 33 credit hours, including seven core courses, one laboratory, one practicum, and three electives. Students may choose either a part-time or full-time sequence. Full-time students can complete the program in one and one-half years while part-time students may be able to complete it in two years.

Students may choose electives from one of two tracks. Track I is the technical track consisting of computer science, electrical engineering, or management science and information systems courses. Track II is the management/mass communications track consisting of management, decision analysis, or mass communications courses.

Admission Requirements. Qualified graduates of colleges and universities of recognized standards are eligible to seek admission to the OSU Graduate College. Applicants must submit the completed application form to the Graduate College with official transcripts of all academic work and degrees received.

In addition to the OSU Graduate College's standard requirements, the telecommunications management pro-
gram admissions committee will consider students' letters of recommendation, GMAT or GRE scores, previous academic performance, and telecommunications experience.

Program information can be accessed via the World Wide Web (http://www.mstm.okstate.edu).

**General Regulations**

Full authority on all academic decisions within the Graduate College rests with the dean of the Graduate College. The Graduate College policies and procedures described in the Catalog are for informational purposes. They are subject to regular review and may be revised at any time by the dean of the Graduate College in consultation with the Graduate Faculty Council.

**Responsibilities**

All graduate students are expected to read and to comply with the written regulations. The regulations presented in the Catalog may be supplemented by written departmental or program requirements available at departmental offices. Admission to a specific graduate program obligates the student to adhere to the policies of that program.

General regulations in the following sections relate to requirements for admission, enrollment, and academic standing. Subsequent sections outline requirements for the following degrees: master's, Doctor of Philosophy, Doctor of Education, and Specialist in Education. Particular attention should be given to timing and substantive requirements for matriculation, especially admission, the plan of study, residence, language proficiency, research and thesis or report, and graduation. The regulations are prescribed by the Graduate Faculty with the intent of assuring high-quality graduate programs and effective interaction of Graduate Faculty members and graduate students.

A request for waiver of any regulation must be made in writing to the dean of the Graduate College for presentation to the Graduate Faculty Council for action. Such a request must be approved by the major adviser. The student and the major adviser should present sufficient information to allow the Graduate Faculty Council to evaluate reasons for requesting a waiver and to make a decision concerning departure from normal Graduate College regulations.

**Admission to the Graduate College**

Qualified graduates of colleges and universities of recognized standing are eligible to seek admission to the Graduate College. Applicants must submit the completed application form to the Graduate College, with official transcripts of all academic work and degrees received.

1. The student should request all institutions previously attended to send two copies of the official transcript to the Graduate College, Oklahoma State University.
2. To be official, the transcript must show the complete scholastic record, bear the official seal of the institution, and be signed by the issuing officer.

To assure adequate time, application forms and transcripts should be received by the Graduate College at least 30 days prior to expected enrollment. The application fee must accompany the Application for Admission. Transcripts and other documents become the property of Oklahoma State University.

**Standardized Test. Scores**

Many departments require standardized test scores, such as the Graduate Record Examination. Applicants must contact the appropriate department head for information regarding departmental requirements for these tests. (Refer to the table "Graduate Admission Requirements.")

**International Student Admission**

International applicants are expected to submit applications, financial aid packages, transcripts, and results of the Test of English as a Foreign Language (TOEFL) examination by March 1 for fall enrollment and by July 1 for spring enrollment.

**TOEFL**

As a condition of admission to regular graduate study at OSU, all persons for whom English is a second language are required to present a score of 550 or above on the TOEFL regardless of the number of semesters or terms completed in other institutions of higher education, including OSU, or prior enrollment in English language programs. Some departments require a score above 550. Students should contact the department for specific TOEFL requirements. Persons who present a TOEFL score of 500 or above and who demonstrate unusual academic promise may be admitted to graduate study on probationary status, but the number of such persons will not exceed two percent of the regularly enrolled graduate student population of the previous fall semester.

**Submission of the TOEFL score with the application is never waived.**

**English Proficiency Test for International Students.** Before international students who have no prior course work from a U.S. university can complete their first enrollment at Oklahoma State University, they are required to take the Test of English Language Proficiency (TELP) administered by the University Testing and Evaluation Service. This test, scheduled on campus before each semester and summer session, is required in addition to the TOEFL. International students are normally required to enroll in a section of English 0003 to enhance their English skills during their first semester of graduate study at OSU. A waiver of this course requirement can be granted to students who score sufficiently high on the TELP or who make both a 600 on the TOEFL and a 5.0 on the Test of Written English (TWE).

**Spoken English Proficiency for Employment.** OSU policy requires all persons for whom English is a second language to demonstrate an acceptable level of spoken English before being employed in an instructionally related capacity. Employment requires demonstrated proficiency on the Test of Spoken English (TSE) as determined by the University. Other spoken English examinations are not acceptable as substitutes for the TSE. This test may be taken on campus or at any of the many testing sites provided by the Educational Testing Service. This test score is used as a condition of employment, not a condition for admission to the Graduate College.

**International Teaching Assistant Program.** Any international teaching assistant who has not previously taught in the classroom is required to participate in the international teaching assistant orientation and evaluation workshop offered at the beginning of the fall and spring semesters. Students must receive an evaluation of "pass" prior to teaching in the classroom. For further information, contact the Office of the Dean of the Graduate College, 202 Whitehurst.

**Types of Admission**

Oklahoma State University uses the 4.00 scale to calculate grade-point averages; that is, an "A" yields four points per credit hour, a "B" yields three points, a "C" yields two points, a "D" yields one point, and an "F" yields zero points. If an applicant's prior college or university uses a different scale, the grade-point average must be converted to the 4.00 scale to determine whether the applicant meets Oklahoma State University grade-point admission requirements for one of the types of admission. Therefore, all references to grade-point averages are...
2. The student is responsible for filing a F-1 visa may not enroll as special student if he or she does not wish to become a degree candidate but wants to take graduate courses as a special student if he does not necessarily imply that the student will be permitted to enroll in courses through the Graduate College. It does not necessarily imply that the student has been or will be admitted to a program leading to an advanced degree or that the student will be able to obtain a graduate degree. Opportunities for receiving graduate credit and graduate degrees are dependent on the admission status granted to the student.

Unqualified Admission. Students planning to work toward a graduate degree in a recognized graduate program may be admitted without qualification provided they meet all Graduate College and departmental requirements.

1. Admission to full graduate status in a degree program is contingent on the presentation of an undergraduate degree from an accredited college or university, an acceptable academic record, and the recommendation of the major department and the dean of the Graduate College.

2. If a student fails to provide proof of the receipt of an undergraduate degree or fails to remain in good standing academically, academic participation may be terminated or the status may be changed to probationary or unclassified.

Special Student Status. An applicant may be admitted to the Graduate College as a special student if he or she does not have immediate plans to become a degree candidate but wants to take graduate courses, prerequisites or other courses. International students with an F-1 visa may not enroll as special students.

1. A special student must meet all of the academic requirements described for unqualified admission except that he or she need not be admitted or recommended for admission by a departmentor program.

2. The student is responsible for filing a new application for admission to the Graduate College should he or she wish to become a degree candidate. The application will be evaluated by

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Graduate Admission Requirements

Requirements are subject to departmental revision. 1 = Test is required, 2 = Test is recommended, 3 = GRE or Miller may be changed, with departmental consent, 4 = GRE or GMAT may be changed. Note: All applicants must submit references to department, (l.o.r. = letter of recommendation).

<table>
<thead>
<tr>
<th>Major</th>
<th>Degree</th>
<th>GRE</th>
<th>GMAT</th>
<th>Miller</th>
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See department admission requirements.

Audition, dept. application, 3.00 GPA.

3.00 GPA minimum & 3 l.o.t. (English is second language, TSE: 220.) (English is second language, TSE: 220; TOEFL: 550;); 3.00 GPA; 3 l.o.r.; interview.

3 l.o.r. & stmt of intent. Audition, dept. application, 3.00 GPA.

See department admission requirements.

3.00 GPA minimum & 3 l.o.t. (English is second language, TSE: 220.) (English is second language, TSE: 220; TOEFL: 550;); 3.00 GPA; 3 l.o.r.; interview.

See department admission requirements.

3.00 GPA minimum & 3 l.o.t. (English is second language, TSE: 220.) (English is second language, TSE: 220; TOEFL: 550;); 3.00 GPA; 3 l.o.r.; interview.

No entrance exam. No entrance exam. No entrance exam.


160 Graduate College
### Transfer of Graduate Credits

Transfer of graduate credits to the Graduate College is possible only when the student was formally admitted to the graduate college at another accredited institution and the course(s) is certified as graduate credit by that institution.

The work must be recommended by the adviser as a part of an approved plan of study. The acceptance of transferred work requires the recommendation of the student's advisory committee and approval by the dean of the Graduate College at the time a program of study is planned. A maximum of nine credit hours with a grade of "B" or better in each course can be accepted as transfer credits toward a master's degree. Doctoral students must complete at least 30 hours of their program at OSU. However, no more than nine hours may be transferred from institutions that do not grant doctoral degrees.

<table>
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<td>Manufacturing Systems Engineering</td>
<td>MMSE</td>
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<tr>
<td>Mechanical Engineering</td>
<td>M MechE, MS, PhD</td>
<td>2</td>
<td>2</td>
<td>TOEFL 600; technical undergraduate degree.</td>
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<tr>
<td>Design, Housing and Merchanting</td>
<td>MS</td>
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<tr>
<td>Field Research and Child Develpment</td>
<td>MS</td>
<td>4</td>
<td>4</td>
<td>3.00 GPA; 3 I.o.r.; goal stmt; writing competency assessment first semester.</td>
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<tr>
<td>Hospitality Administration</td>
<td>MS</td>
<td>4</td>
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<tr>
<td>Human Environmental Sciences</td>
<td>PhD</td>
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<tr>
<td>Nutritional Sciences</td>
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<tr>
<td>INTERDISCIPLINARY</td>
<td>MS, PhD</td>
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<tr>
<td>Environmental Science</td>
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<tr>
<td>Food Science</td>
<td>MS, PhD</td>
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<tr>
<td>Natural Applied Sciences</td>
<td>MS</td>
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<tr>
<td>Plant Science</td>
<td>PhD</td>
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<tr>
<td>Telecommunications Management</td>
<td>MS</td>
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<tr>
<td>OSTEOPATHIC MEDICINE</td>
<td>PhD</td>
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<tr>
<td>Biomedical Sciences</td>
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<tr>
<td>VETERINARY MEDICINE</td>
<td>MS, PhD</td>
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<tr>
<td>Veterinary Biomedical Sciences</td>
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</table>

3. As such work is not guided by a plan of study or approved by an adviser, no more than nine semester credit hours of course work taken while a special student may be used on a plan of study to meet requirements for a degree.

4. Special students are subject to the same academic regulations as those students admitted into degree programs.

Probation or Provisional Status. Applicants who are graduates of accredited colleges and universities and who have attained less than an acceptable grade-point average in all undergraduatem work may be admitted provisionally or on probation on recommendation of the major department at Oklahoma State University and concurrence by the dean of the Graduate College. Alternatively, a student who has been in full graduate standing or special student status may be placed on probation or continued provisionally if academic performance in courses taken in graduate status at Oklahoma State University falls below a "B" average. Students with acceptable academic records but without the background necessary for a particular degree program may also be admitted provisionally. Students admitted provisionally or on a probationary basis may be granted full graduate standing after performing at an acceptable academic level. Failure to meet required academic levels while in a probationary status will result in dismissal from the Graduate College.

Notes:
- No entrance exam; 3 I.o.r.:
  - 3 I.o.r.: TOEFL 575.
  - 3 I.o.r.: GRE 900; MAT 35.
  - 3 I.o.r. resume; stmt of interests.
  - 3 I.o.r. 1 page essay.
Departmental or Program Requirements

The General Regulations of the Graduate College are minimum requirements that must be met by all graduate students at OSU. Students are also subject to any additional requirements that are determined by their program of study. Students should always make sure to receive copies of specific program requirements by contacting the program office.

Readmission to the Graduate College

A prospective student must enroll for courses at OSU within a year after his or her admission date to retain active status. A graduate or prospective student who does not enroll within one year must reapply for admission. A student who interrupts enrollment for one year must reapply for admission, or obtain approval from the department to continue admission, and will then be subject to the regulations in effect at the time of readmission.

Audit

A student who does not wish to receive credit in a course may, with the approvals of the student's adviser and the instructor of the course concerned, attend the class strictly as a visitor. A student who applies to audit a course promises that he or she will not use the audit to avoid the rule against excessive hours, and that he or she will not petition or ask in any way for the privilege of taking an examination to obtain credit after he or she has audited the course. (Laboratory courses, private music lessons and art courses are not open for audit.)

If a student is already enrolled for credit in a course, but wishes to change to auditing that course, the student must officially drop the course (or, if appropriate, withdraw), at the time the student changes to audit.

A student who has established a permanent record at OSU may have the audited course recorded on his or her transcript with “AU” appearing in place of the grade. Not later than one week after the close of that semester, the student must present to the Office of the Registrar the instructor's copy of the audit form with a signed statement from the instructor, on the reverse side, that it is appropriate for the course to be recorded on the student's transcript. Any individual 65 years or older may audit a class at no charge.

Enrollment

Students with a bachelor's degree are expected to register in the Graduate College unless they want to obtain another bachelor's degree. If they register as an undergraduate, the courses taken cannot be given graduate credit at a later date.

Students in the Graduate College may enroll in a course which does not carry graduate credit or audit courses if such courses are recommended by an adviser and approved by the dean of the Graduate College.

An advance fee payment is required of all new and readmitted students.

Students will be permitted to enroll (late fee will be charged) or to add a course through the first week of a regular semester or third day of a summer session. For short courses, students will not be permitted to enroll after the first day of the course.

Enrollment Procedure

1. Enrollment forms (Trial Schedules) are available in the Graduate College.

2. Advanced degree candidates have their Trial Schedule forms approved and signed by their departmental advisers and take them to the Graduate College prior to enrolling. Special students have their Trial Schedule forms approved in the Graduate College prior to enrolling.

3. After having the Trial Schedule form approved in the Graduate College, graduate students complete the enrollment process in the Sectioning Room located on the fourth floor of the Student Union.

Phone-in Enrollment

Graduate students may enroll by telephone if they have been accepted into the Graduate College. Students must have no academic or financial holds on their enrollment and must have the required advance fee payment on file in the Office of the Bursar. Students may use the local number (405) 744-6368 or the toll-free number 1-800-227-GRAD.

Minimum and Maximum Hours of Enrollment

Any graduate student using the facilities and faculty resources of the University must be enrolled. Every graduate student is expected to satisfactorily complete no fewer than six semester credit hours during the academic year (fall, spring and summer) until the degree is awarded. Students who are involved in research throughout the year are expected to enroll each semester.

The total registration shall not exceed 18 credit hours for a semester or nine credit hours for a summer session. Regardless of the number of hours taken, a student may not count more than 16 credit hours taken in the fall or spring semester nor more than nine semester credit hours earned in a summer session toward a degree. For short-course sessions less than eight weeks in length, enrollment shall not exceed one credit hour for each week.

Faculty Members. No member of the faculty, with the rank of associate professor or above or equivalent rank at the time of completing the requirements, may be granted a degree from this institution. This regulation applies to faculty members in the schools of engineering holding the rank of assistant professor or above.

Enrollment Regulations for Graduate Assistants and Fellows. Graduate students employed by the University part-time for remuneration for the amount of credit recommended by the head of the major department and approved by the dean of the Graduate College. In general, students employed 20 hours per week may not register for more than 10 semester credit hours of course work for a semester and five hours during a summer session. Other employment will be permitted for an appropriate number of hours. Graduate students whose employment is such that results will be used for a thesis, however, may register for additional thesis credit as recommended by the research adviser and approved by the dean of the Graduate College.

Any graduate student holding an assistantship or fellowship must enroll in at least six resident semester credit hours during the fall and spring semesters and at least three resident semester credit hours for each summer session.

If a graduate assistant enrolls in more credit hours than allowed for percentage of time employed, a petition for excessive hours, available in the Graduate College, must be completed and returned to the Graduate College for approval.

Employment-Enrollment

If Employed:  Petition to take:

<table>
<thead>
<tr>
<th>Fall/Spring</th>
<th>Summer</th>
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<tbody>
<tr>
<td>100% or full time</td>
<td>6 hours</td>
</tr>
<tr>
<td>75% or 3/4 time</td>
<td>7 hours</td>
</tr>
<tr>
<td>60%</td>
<td>8 hours</td>
</tr>
<tr>
<td>50% or 1/2 time</td>
<td>10 hours</td>
</tr>
</tbody>
</table>
12 hours 6 hours
25% or more than more than
1/4 time 13 hours 7 hours

Full-time or Half-time Status. Full-time or half-time status of graduate students is:

Regular Semester
Full-time 9 or more hrs. 4-8 hrs.
Half-time 4 or more hrs. 2-3 hrs.

Summer Session
Full-time 9 or more hrs. 4-8 hrs.
Half-time 4 or more hrs. 2-3 hrs.

The Office of the Registrar considers employment as a teaching or research assistant when determining enrollment status. A student holding a 0.50 FTE graduate assistant appointment, and enrolled in a minimum of six hours during the fall or spring semester, or three hours during the summer semester, will be certified as a full-time graduate student.

Enrollment and Financial Assistance. For the purpose of receiving monetary assistance through the Office of Student Financial Aid, the amount of the award is related only to the total number of credit hours in which enrolled. Certifiable enrollment status, based upon a combination of enrollment and employment, only assists with the deferral of loan repayments, never qualification for aid, which is based solely on enrollment.

Enrollment During the Research Phase

Because enrollment reflects the involvement of University faculty members, the graduate student must maintain continuous enrollment in thesis and/or problem courses for credit during the entire research phase of the program. Such enrollment is not limited by the maximum number of credit hours of thesis which may apply toward a degree.

In particular, students must be enrolled in at least two hours during the semester in which they take their final examination or meet other requirements. They must also be enrolled in at least two hours during the semester in which they graduate.

Academic Standing

Minimum Grade Requirements. A grade-point average of "B" (3.00) is required to (1) maintain good standing as a graduate student and (2) meet requirements for a degree. In determining whether a student has met minimum requirements for a degree, grades for courses on the plan of study are averaged separately from other courses not on the plan of study. In order to continue enrollment in the Graduate College, a student is expected to maintain a cumulative graduate GPA of at least 3.00. In order to receive a degree, a student must have a minimum 3.00 GPA in the course work listed on the plan of study. This course work does not include the research hours (those used to fulfill the thesis, report or creative component requirements) on the plan of study. The student must also have at least a 3.00 GPA in the hours designated as research hours on the plan of study. The grade-point averages for research hours and course work hours are figured separately.

After a plan of study has been approved, a course with a grade below a "B" cannot be replaced on the plan without approval of the dean of the Graduate College.

A course with a grade below "C" cannot be used as part of the minimum number of semester credit hours required for the degree.

Some departments have more stringent requirements. The major department should be consulted concerning minimum grade requirements.

Academic Warning and Strict Academic Probation. Grades below "B" are considered below the acceptable standard for graduate students. Any student who receives such a grade will be sent a letter of warning from the Graduate College. If a student's overall GPA drops below a 3.00, the student is subject to being placed on "strict academic probation. A student on "strict academic probation is required to earn a minimum grade of "B" in each course during the next semester of full-time enrollment or two semesters of part-time enrollment. Failure to do so may result in suspension from the University.

Departments are notified when students in their programs have been given academic warnings, been placed on strict academic probation, or been suspended. The department has the option to request that the student be granted a one semester reprieve from an academic suspension. However, further requests for continuance of students who have violated conditions of their probation are not usually granted.

Grades for Thesis (5000) and Dissertation (6000). The grade of "X," indicating research progress, may be assigned to thesis (5000) and dissertation (6000) courses until the research is finished. Advisers also have the option of assigning a letter grade each semester. By assigning the grade of "X," the adviser acknowledges that the student has made progress on thesis or dissertation research. Upon completion of the thesis or dissertation, the adviser submits a Change of Grade form to have the final grade entered for the thesis or dissertation.

The "X" grade can also be assigned in a course identified as the creative component portion of a master's degree. Each department in which a creative component is an option has identified one class in which "X" may be assigned if more than one semester is required to complete the creative component. Upon completion of the creative component, the adviser submits a Change of Grade form to have the final grade entered.

Pass-No Pass Grading System. The "P" or "NP" grade refers only to the final grade in the course as recorded by the Office of the Registrar. Homework will be assigned and evaluated, and tests and examinations will be given. Students taking the course on a "P" or "NP" basis are expected to satisfy these course requirements. "P" indicates a grade equivalent to an "A," "B," or "C" while "NP" indicates a grade equivalent to "D" or "F."

Graduate students may take a course utilizing the Pass-No Pass grading system with the consent of their major advisors and the dean of the Graduate College, but courses taken under this system cannot be used on a plan of study to meet graduate degree requirements.

Academic Regulations
Refer also to the sections on "Adding Courses," "Dropping Courses," and "Withdrawing from the University."

Graduate-Credit Courses
Courses numbered 5000 and above are primarily for graduate students, and only graduate students and seniors who have obtained prior approval may enroll. The majority of courses on the master's and doctoral plans of study will be 5000 level and above.

Courses numbered 3000 and 4000 that are identified by an asterisk in the "Course Listings" of the Catalog can be taken by graduate students. Graduate students enrolled in these courses will be considered as taking the courses for graduate credit and expected to fulfill all academic requirements as proposed by the professor.

Courses numbered 3000 and 4000 that are identified by an asterisk may be used to meet requirements for a graduate degree on the plan of study if approved by the student's advisory committee and the dean of the Graduate College. Courses that are not identified by an asterisk may not be used to fulfill requirements for a graduate degree.
unless the following requirements are met.

A graduate student wishing to use a course taken on a Pass-No Pass basis on his or her plan of study to meet degree requirements must submit a letter, along with the Trial Schedule form at the time of enrollment, to the major adviser. The major adviser will consider the request and if approved, the letter and Trial Schedule form will be submitted to the dean of the Graduate College for approval. A student who chooses the Pass-No Pass grading system may change to the usual grading system with the consent of his or her major adviser and the dean of the Graduate College any time prior to the last date on which a course may be added. Once the deadline has passed, a student will not be permitted to change his or her choice of grading system.

Grade Appeals. A student may appeal a grade given by an instructor in a case in which he or she believes the grade awarded is inconsistent with announced grading policy. The student should consult the "Student Rights and Responsibilities" or contact the Office of the Executive Vice-President for information regarding initiating the appeals process.

Application for Diploma-Graduation

At the time of enrollment for the last semester or summer session of work toward a degree, the student completes an Application for Diploma card. Completion of that card initiates clearance procedure toward graduation by the Graduate College and the Office of the Registrar. The student is billed for the graduation fee along with tuition. If all requirements for the degree are not met according to deadlines specified in the Graduate College Calendar, the student must complete a new Application for Diploma at the time of re-enrollment. Applications for diplomas are to be submitted during the first two weeks of a regular semester or the first week of a summer session.

Records and Transcripts

All permanent records are stored in the Office of the Registrar in Whitehurst Hall. Requests for grades, transcripts and diplomas should be made to that office.

A graduate student who does not complete the requirements in time to receive the degree at the end of the semester may secure a statement from the Office of the Registrar when all requirements for the degree have been satisfied. Such a statement will not be issued until all grades for the semester have been recorded.

Summary of Procedure for Master's Degree

Dean-Dean of Graduate College; GCO-Graduate College Office; DH-Department Head; TA-Temporary Adviser; Adviser-Person designated by department head to advise; Comm-Committee

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Initiate through</th>
<th>Approved by</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Apply for admission. (Follow instruction sheet carefully. If relevant, see &quot;Requirements for Admission to Teacher Education&quot; in the 'College of Education.&quot;</td>
<td>Dean</td>
<td>Complete 30 days prior to enrollment. (60 days prior for international students.)</td>
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<tr>
<td>2. Read &quot;General Regulations&quot; and &quot;Master's Degree&quot; sections, then secure registration materials in the Graduate College.</td>
<td>GCO</td>
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<tr>
<td>3. Secure assignment of a temporary adviser from major department head and enroll for the first semester.</td>
<td>DH &amp; TA</td>
<td>Dean</td>
<td>Prior to completing the 17th credit hour.</td>
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<tr>
<td>4. Plan program with advice of department head or designated Graduate Faculty member and submit plan of study.</td>
<td>Adviser</td>
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<tr>
<td>5. Proceed with course work and research assignment.</td>
<td>Adviser</td>
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<tr>
<td>6. Complete the Application for Diploma card at the time of enrollment; make any corrections needed on plan of study.</td>
<td>GCO</td>
<td>At the time of enrollment for the semester or session in which the degree is to be conferred. (Application is good for stated degree date only. File new application if conferring of degree is delayed.)</td>
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<tr>
<td>7. Take comprehensive written examinations as required by major department.</td>
<td>Adviser</td>
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<tr>
<td>8. Complete research, prepare final draft copy of thesis or report and submit it at least one week prior to the final examination, along with a copy of the abstract, to each member of the examining committee and to the Graduate College. The final draft must be complete and legible. Ordinary proofreading marks and minor handwritten additions, changes, etc. are permitted, but the copy should be in such condition that it can be read easily and understood clearly. The style should be determined by the advisory committee. The Graduate College Style Manual lists specific requirements for formatting the document. The adviser must sign the copy submitted to the Graduate College.</td>
<td>Dean</td>
<td>Deadlines published yearly.</td>
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<tr>
<td>Procedure</td>
<td>Initiate through Procedure Approved by Time</td>
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<tr>
<td>9. Take final examination or defense and have committee chairperson notify Graduate College of the examination results immediately following conclusion of the examination.</td>
<td>Adviser</td>
<td>Deadlines published yearly.</td>
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<tr>
<td>10. Make any changes in thesis or report as required by examining committee and by the Graduate College. Advisory committee members sign final copies of thesis or report. The Graduate College makes the final decision on acceptance of the thesis or report. Candidate submits four approved copies of thesis and six approved copies of the abstract of one copy of a report and six approved copies of the abstract.</td>
<td>Adviser</td>
<td>Deadlines published yearly.</td>
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</table>

11. Pay binding fee in the Office of the Bursar and return form to the Graduate College.

Arrange for cap, gown and hood at Student Union Bookstore and attend Commencement.

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Master's Degree Programs

Accounting, MS
Agricultural Economics, MS
Agricultural Education, MS
Agriculture, MAg (Agricultural Economics, Agricultural Education, Agronomy, Animal Science, Entomology, Forest Resources, Horticulture and Landscape Architecture, and Plant Pathology)
Agronomy, MS
Animal Science, MS
Applied Behavioral Studies, MS
Architectural Engineering, MArchE
Architecture, MArch
Biochemistry and Molecular Biology, MS
Biosystems Engineering, MBioE, MS
Botany, MS
Business Administration, MBA
Chemical Engineering, MChemE, MS
Chemistry, MS
Civil Engineering, MCivilE, MS
Computer Science, MS
Counseling and Student Personnel, MS
Curriculum and Instruction, MS
Design, Housing and Merchandising, MS
Economics, MS
Educational Administration, MS
Electrical Engineering, MElecE, MS
English, MA
Entomology, MS
Environmental Engineering, MEnvirE, MS
Environmental Science, MS
Family Relations and Child Development, MS
Food Science, MS
Forest Resources, MS
General Engineering, MGenE, MS
Geography, MS
Geology, MS
Health, Physical Education and Leisure, MS
Higher Education, MS
History, MA
Horticulture, MS
Hospitality Administration, MS
Industrial Engineering and Management, MIE&Mgmt, MS
Manufacturing Systems Engineering, MMSE
Mass Communications, MS
Mathematics, MS
Mechanical Engineering, MMechE, MS
Plan I—with thesis, 30 credit hours, consisting of 24 hours of course work and six hours of research;  
Plan II—with report, 32 credit hours, consisting of 30 hours of course work and two hours of research;  
Plan III—with no thesis or report, 32 credit hours of course work including the creative component. The Plan III program must contain a creative component that is explicitly identified on the plan of study. The creative component may be a special report, an annotated bibliography, a project in research or design, or other creative activity, as designated by the advisory committee.

The number of credits specified for each plan are minimums set by the Graduate College. Departmental requirements may exceed these.

The major department, with the approval of the dean of the Graduate College, decides which alternatives are open to the candidates. Some departments also require a minimum number of semester credit hours of upper-division and graduate courses in the major field, including courses taken as an undergraduate.

**Residence Requirements.** Candidates for a master's degree must complete a minimum of 21 semester credit hours from OSU if they follow Plan I, or 23 semester credit hours if they follow Plan I or III. Nine semester credit hours of the 30 or 32 required for the degree may be completed by courses taken at another accredited college or university.

A student who holds a D.V.M., M.D., D.O., D.D.S., or equivalent professional medical degree may receive up to nine hours credit toward a master's degree, subject to the recommendation of the advisory committee and the approval of the dean of the Graduate College. However, a student receiving this credit may not transfer additional hours to OSU from other graduate programs.

The last eight semester credit hours for the degree must be taken on the Stillwater campus unless a written request by the student to take the work at another location is approved by the head of the major department and the dean of the Graduate College.

**Advisement.** The student should go to the department head, who may assign an adviser or advisory committee to assist the student in planning and pursuing the entire program for a degree. The advisory committee must include a minimum of three members of the Graduate Faculty.

**Level of Courses Applied to Graduate Degree.** Graduate students must enroll in no fewer than 21 semester credit hours of 5000- and 6000-level courses through Oklahoma State University as presented on the plan of study to meet requirements for the master's degree.

**Plan of Study.** The preliminary plan of study for the degree must be filed in the Graduate College prior to completion of the 17th graduate credit hour for students working for a master's degree in residence. The student should secure the plan of study forms from the Graduate College, develop the plan with the adviser, and file three copies in the Graduate College. The plan of study must be signed by the adviser and by two other members of the graduate faculty in the major department, and approved by the dean of the Graduate College.

Students seeking a master's degree in Teacher Education must be admitted to the master's curriculum in Teacher Education before submitting a plan of study.

The plan of study is subject to modification as the student progresses, but all changes must have the approval of the adviser. A final, accurate plan of study must be filed in the Graduate College by the end of the second week of the semester or session in which the degree is to be conferred.

Graduate credit used to obtain one master's degree cannot be counted toward another master's degree.

**Major Subject or Field.** A major field of study may cross departmental lines subject to the decision of the major department.

Before receiving a master's degree, the student must have completed in the major department or field a minimum of 16 semester credit hours above the prerequisites required for graduate work in that subject or field.

**Minor Subject or Field.** To minor in a subject or field, a student must complete, as a minimum, enough semester credit hours as a graduate student to satisfy, with undergraduate credits, the requirements for an undergraduate major in that department. The minor may vary from six to 15 semester credit hours.

A student may minor in two departments if the requirements are met for each and the major department and both minor departments approve.

**Language Requirements.** A candidate for the master's degree may be required to demonstrate a reading knowledge of a modern foreign language. Any such requirement of the department is included on the plan of study and is to be filled out at the time the preliminary plan is approved by the student's adviser.

If a foreign language is required, the head of the major department must certify that it has been met before a final examination can be scheduled.

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**Abbreviations:**

MA Master of Arts  
MAg Master of Agriculture  
MArch Master of Architecture  
MArchE Master of Architectural Engineering  
MBA Master of Business Administration  
MBioE Master of Biosystems Engineering  
MChemE Master of Chemical Engineering  
MCivilE Master of Civil Engineering  
MElecE Master of Electrical Engineering  
MEnvrE Master of Environmental Engineering  
MGenE Master of General Engineering  
MIE&Mgmt Master of Industrial Engineering & Management  
MM Master of Music  
MMSE Master of Manufacturing Systems Engineering  
MMechE Master of Mechanical Engineering  
MS Master of Science  

**Admission to a Program.** Some departments require that any student seeking a master's degree take an examination (e.g. GRE, GMAT) before being admitted to a program of study. See the table on "Graduate Admission Requirements" or contact the head of the major department.

**Basic Requirements.** The master's degree may be earned by one of three plans:
A foreign language requirement for a master's degree may be met either by examination or by college credit, according to individual departmental requirements.

**Written Examinations.** Some departments require a written examination covering the major and minor fields. It is usually taken before the thesis or report has been completed. Arrangements for taking the examination should be made with the department at least three weeks in advance. The written examination must be passed before a final examination is scheduled.

A student who fails all or part of the written examination should consult the chairman of the examination committee to find out what must be done before taking another examination.

**Thesis or Report.** Any student working on a thesis or report should obtain a copy of the *Graduate College Style Manual*, published by and available from the Graduate College. It is also available via the World Wide Web (http://www.osuoks.okstate.edu/gradcoll). A thesis or report must conform to the format specifications set forth in this manual. The style of the document is to be determined by the advisory committee and should be reflective of publications in the student's discipline.

After completing the research, the student prepares a final draft copy (complete and legible final draft) of the proposed thesis or report, and submits a copy, along with the abstract, to each member of the examining committee, and to the Graduate College. The proof copy must be signed by the adviser and be submitted to the Graduate College no later than the stated deadline date (see “Graduate College Calendar”).

**Thesis.** The student must submit to the Graduate College four copies of the thesis with six copies of the abstract no later than the stated deadline (see “Graduate College Calendar”). The thesis copies become the property of the University. Two copies are filed in the Library and two copies are kept by the major department. There is a binding fee, payable at the Office of the Bursar.

**Report.** The student must submit to the Graduate College one copy of a report, with six copies of the abstract. It must be bound in a pressboard cover as described in the *Graduate College Style Manual*. The final copy of the report, must be submitted to the Graduate College no later than the stated deadline (see “Graduate College Calendar”).

**Human Subjects and Research.** Oklahoma State University follows federal guidelines which require a review of any research involving human subjects. All such research must be approved by the Institutional Review Board (IRB) before human subjects are involved. Guidelines on how to obtain permission to use human subjects in research are available from the departmental graduate coordinator or the executive secretary of the IRB, the Graduate College, or Office of the Vice-President for Research. The information provides examples of activities subject to careful review and those which are easily approved.

Because University policy requires prior approval of all research involving human subjects, the letter from the IRB granting approval of the research must be included in the appendix of any thesis or dissertation submitted to the Graduate College in fulfillment of degree objectives. Failure to obtain approval for use of human subjects means that the thesis or dissertation cannot be accepted.

**Final Examination.** If the thesis or report option is used, the student arranges with the major department for the final examination after the draft copy of the thesis or report has been filed in the Graduate College and distributed as described in the preceding section. The final examination may be oral or written or both. The final examination is primarily a defense of the thesis or report. If the defense is judged inadequate, a decision on whether to permit re-examination will be made by the advisory committee. Examinations are open to all members of the Graduate Faculty, and may be attended by anyone else who obtains the permission of the committee.

The committee will notify the Graduate College immediately of results of the final examination. Following satisfactory completion of the final examination, the candidate will make changes in the thesis or report as required by the committee and by the Graduate College, and submit it in final form signed by the committee to the Graduate College.

A student who fails to pass either a written or oral final examination should consult the chairman of the examining committee. Another examination cannot be given for two months after a failure, and a department may limit the number of times that the examination may be repeated.

If the non-thesis option is used, the department head or advisor must notify the dean of the Graduate College that the student has satisfactorily completed all departmental requirements. Both positive and negative results must be reported to the Graduate College.

**Time Limit.** Students are expected to complete the requirements for the master’s degree within five years from first enrollment after admission to the master’s degree program. Any extension of this time limit must be approved by the Graduate Faculty Council.

To determine whether or not courses taken more than five years before the anticipated date of the degree can be counted toward the degree, the student should consult the departmental graduate adviser. Such courses cannot be accepted except on a complete plan of study which gives the date that the requirements for the degree are to be completed. They must be a part of a study plan and can be approved only for a specified time. Courses taken more than two years prior to actual graduation will not be accepted after a plan of study without a formal request from the advisory committee and approval of the Graduate Faculty Council.

**Continuous Enrollment.** A graduate student must maintain continuous enrollment during the entire research phase of the program. Such enrollment is not limited by the maximum number of credit hours which may apply to the degree. Continuous enrollment can be met with six credit hours during each 12-month period or two credit hours in each of the fall, spring and summer semesters. Students who are using physical or faculty resources of the University are expected to be enrolled during each semester in at least two credit hours.

Failure to maintain continuous enrollment requires submission of a new application for readmission to the graduate program. If readmitted, all requirements in effect at the time of readmission must be completed.

**Special Requirements for Selected Master’s Degrees.** Requirements for the Master of Agriculture, Master of Architecture, Master of Architectural Engineering, Master of Business Administration, and Master of Engineering are described in detail elsewhere in the *Catalog*. Each degree has requirements that are program specific and exceed the minimal requirements specified by the Graduate College.

**Doctor of Philosophy Degree Programs (Ph.D.)**

- Agricultural Economics
- Agricultural Education
- Animal Breeding and Reproduction
- Animal Nutrition
- Applied Behavioral Studies
- Biochemistry and Molecular Biology
- Biomedical Sciences
- Biosystems Engineering
- Business Administration
- Chemical Engineering
**Summary of Procedure for Doctoral Degree**

Dean-Dean of Graduate College; DH-Department Head; TA-Temporary Adviser; Comm-Committee; Ch-Chair of Committee

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Initiate through</th>
<th>Approved by</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apply for admission. (Follow instruction sheet carefully.)</td>
<td>Dean</td>
<td>Dean</td>
<td>Complete 30 days prior to enrollment (60 days prior for international students).</td>
</tr>
<tr>
<td>2. Secure assignment of a temporary adviser from major department head and enroll.</td>
<td>DH &amp; TA</td>
<td>Dean</td>
<td></td>
</tr>
<tr>
<td>3. Request the appointment of advisory committee.</td>
<td>TA</td>
<td>Dean</td>
<td></td>
</tr>
<tr>
<td>4. Prepare plan of study with assistance of committee. Submit three approved copies to Graduate College.</td>
<td>Comm</td>
<td>Dean</td>
<td>Prior to enrollment date (see 'University Calendar') during second full semester of enrollment beyond master's degree.</td>
</tr>
<tr>
<td>5. Fulfill foreign language requirement or attain other required proficiencies.</td>
<td></td>
<td></td>
<td>Prior to qualifying examination.</td>
</tr>
<tr>
<td>6. Complete major portion of course work and plan dissertation program with committee. Submit copy of approved dissertation outline to Graduate College.</td>
<td>Ch</td>
<td>Dean</td>
<td>As early in the research stage as possible.</td>
</tr>
<tr>
<td>7. Apply for and take qualifying examination.</td>
<td>Ch</td>
<td>Dean</td>
<td>As early in the doctoral program as feasible.</td>
</tr>
<tr>
<td>8. Submit results of qualifying examination and/or application for admission to candidacy (Form G-4).</td>
<td>Comm</td>
<td>Dean</td>
<td>Not less than six months prior to Commencement in which degree will be conferred.</td>
</tr>
<tr>
<td>9. Verify accuracy of plan of study in Graduate College. Secure committee approval for any necessary changes. Check on time limit for the degree.</td>
<td>Comm</td>
<td>Dean</td>
<td>At the beginning of the semester or summer session in which degree is to be conferred.</td>
</tr>
</tbody>
</table>

**Basic Requirements.** The Doctor of Philosophy degree is granted in recognition of high achievement in scholarship and independent investigation. The candidate must prove his or her acceptability by (1) successfully completing a series of courses comprising a plan of study, (2) passing various examinations demonstrating academic competence; (3) carrying out a research program under supervision and preparing an acceptable dissertation, and (4) demonstrating initiative, creative intelligence, and ability to plan and carry out research in his or her chosen field.

The Doctor of Philosophy degree requires six semesters of full-time graduate study (a minimum of 90 semester credit hours) beyond the bachelor's degree, or four semesters of full-time graduate study (a minimum of 60 semester credit hours) beyond the master's degree. This includes a minimum of 15 credits for the dissertation (6000). Students may use 90 hours beyond the bachelor's degree as a degree total only if admitted directly into the doctoral program from the bachelor's degree.
<table>
<thead>
<tr>
<th>Procedure</th>
<th>Approved by</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. Complete the Application for Diploma card at the time of enrollment.</td>
<td>Dean</td>
<td>At the time of enrollment for the semester or session in which the degree is to be conferred. (Application is good for stated time only. File new application if conferring of degree is delayed.)</td>
</tr>
<tr>
<td>11. Complete research, prepare final draft copy of dissertation and submit it at least one week prior to the examination, along with a copy of the abstract, to each member of the committee and to the Graduate College. The final draft must be complete and legible. Ordinary proofreading marks and minor handwritten additions, changes, etc., are permitted, but the copy should be in such condition that it can be read easily and understood clearly. The format must follow the Graduate College Style Manual recommendations; however, the style is to be determined by the advisory committee. The adviser must sign the copy submitted to the Graduate College.</td>
<td>Ch Comm Dean</td>
<td>Deadlines published yearly.</td>
</tr>
<tr>
<td>12. Schedule dissertation defense. Committee chairperson notifies Graduate College of the results immediately following conclusion of the examination.</td>
<td>Ch Dean</td>
<td>Deadlines published yearly.</td>
</tr>
<tr>
<td>13. Make any changes in dissertation required by examining committee and by the Graduate College. Advisory committee members sign final copies of dissertation. The Graduate College makes the final decision on acceptance of the dissertation. Candidate submits four approved copies of the dissertation and six approved copies of the abstract.</td>
<td>Ch Comm Dean</td>
<td></td>
</tr>
<tr>
<td>14. Pay binding and microfilming fees in the Office of the Bursar; complete questionnaire and microfilming agreement form and return all forms to the Graduate College.</td>
<td></td>
<td>Form to be obtained from the Graduate College after dissertation has been formally accepted by that office.</td>
</tr>
<tr>
<td>15. Rent or buy cap, gown, and hood at Student Union Bookstore and attend Commencement.</td>
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</tbody>
</table>
chairperson for a conference with the committee. During the conference, the preparation and qualifications of the student for graduate work will be discussed and appropriate plans made for future study.

Plan of Study. After the preliminary conference, the student should complete the plan of study for the degree, have it approved by the advisory committee, and file three copies in the Graduate College.

The plan must include all the acceptable graduate work that has been completed and all that will be taken for the doctoral degree. The plan should include approximately 75 percent of courses at the 5000-6000 level and at least 15 hours dissertation credit. Forms for preparing the plan of study may be obtained in the Graduate College. The plan of study must include a minimum of 60 hours beyond the master's degree. Courses from the master's degree are not listed on the doctoral plan of study.

Because the acceptance of work which the student desires to use toward the degree rests with the advisory committee, it is important to plan a complete program and have it approved by the dean of the Graduate College as soon as possible. Courses taken more than 10 years prior to actual graduation will not be accepted on a plan of study without a formal request from the advisory committee and approval of the Graduate Faculty Council.

The plan of study is to be submitted prior to the pre-enrollment date during the second full semester of enrollment (beyond the master's degree).

Changes in the plan can be made with the approval of the advisory committee and the dean of the Graduate College. A final, accurate and approved plan must be filed at the beginning of the semester or summer session in which the degree is to be conferred.

Minor Subject or Field. As a means of giving depth and breadth to their doctoral programs, most departments require work in a minor field or at least a selection of extra-departmental courses. To minor in a subject or field, as a minimum, the graduate student must complete graduate level work beyond requirements for an undergraduate degree in the minor department. A department in which a student indicates a minor must certify to the dean of the Graduate College the satisfactory completion of requirements for a minor.

Character of Work. The satisfactory completion of course work (see General Regulations) is only one requirement for receiving the degree. The student must also: (1) pass a qualifying examination, (2) prepare an acceptable dissertation, (3) demonstrate the ability to do independent study, (4) pass a defense of dissertation, and (5) comply with other requirements of the major department.

Residence Requirements. A minimum of 30 semester credit hours must be taken at Oklahoma State University. All credit accepted toward the degree beyond the master's degree must be on the student's plan of study and be approved by the advisory committee.

One year of the last two years must be spent in continuous residence at this institution.

With prior approval by the advisory committee, the student may do research for the degree in absentia. Research conducted while not in residence is under the supervision of the major adviser and the advisory committee.

Courses taken at the University Center at Tulsa (UCT) while registered through Oklahoma State University are considered residence credit. Courses taken from the other three cooperating universities at UCT are considered to be transfer credit.

Language Requirement. Foreign language or other proficiency requirements may be specified to meet the need for specific skills and areas of knowledge that facilitate research and contribute to wider understanding. Specific requirements are determined by degree-granting departments or programs. In many fields, a reading knowledge of one or two modern foreign languages is an important part of scholarship and necessary for research. In other fields, proficiency in special or related disciplines may be required that will contribute to the needs of the individual program.

Qualifying Examination. The qualifying examination is comprehensive, covering the entire area of the student's graduate study. The examination may be written, oral or both. The examination must be passed not less than six months before the degree is granted (see "Admission to Candidacy"). The results of the examination are reported to the Graduate College on Form G-4.

Before taking the qualifying examination, the student must have an approved plan of study and dissertation proposal on file in the Graduate College, and have the approval of the advisory committee.

In case of failure to pass any part of this examination, the student will be notified in writing of the conditions under which another examination can be taken. A second examination may not be given earlier than four months after a failure.

If the results of the second examination are unsatisfactory, no other examination may be given without the approval of the Graduate Council.

Admission to Candidacy. A student must be admitted to candidacy at least six months before the commencement in which the Doctor of Philosophy degree will be received.

Before being admitted to candidacy, the student must have passed the qualifying examination, and have an approved plan of study and dissertation outline filed in the Graduate College.

Dissertation. A dissertation (doctoral thesis) is required of each doctoral-candidate. The subject of the dissertation must be approved by the advisory committee and the dissertation is prepared under the direction of members of the committee or a special dissertation committee approved by the advisory committee.

The dissertation must follow specifications in the Graduate College Style Manual, available from the Graduate College. It is also available via the World Wide Web (http://www.osu-ours.okstate.edu/gradcoll). All dissertation copies must have the necessary approval signatures before submission to the Graduate College.

After completing the research, the student prepares a final draft copy (complete and legible) of the proposed dissertation and submits a copy, along with the abstract, to each member of the committee and to the Graduate College. The copy being submitted to the Graduate College must be approved by the student's dissertation adviser. The final draft copy must be submitted to the Graduate College no later than the stated deadline date (see "Graduate College Calendar").

Human Subjects and Research. Oklahoma State University follows federal guidelines which require a review of any research involving human subjects. All such research must be approved by the Institutional Review Board (IRB) before human subjects are involved. Guidelines on how to obtain permission to use human subjects in research are available from the departmental graduate coordinator or the executive secretary of the IRB, the Graduate College, or Office of the Vice-President for Research. The information provides examples of activities subject to careful review and those which are easily approved.

Because University policy requires prior approval of all research involving human subjects, the letter from the IRB granting approval of the research must be included in the appendix of any dissertation submitted to the Graduate College in fulfillment of degree objectives. Failure to obtain approval for use of human subjects means that the thesis or dissertation cannot be accepted.
Final Examination. The final examination is primarily a defense of the dissertation. If the defense is judged inadequate, a re-examination decision will be made by the advisory committee. The examination is open to all members of the Graduate Faculty and may be attended by anyone else who obtains the permission of the committee.

The committee will notify the Graduate College immediately of results of the final examination. Following satisfactory completion of the final examination, the candidate will make any changes required by the committee and by the Graduate College and submit the dissertation in final form signed by the committee to the Graduate College.

Four copies of the dissertation in final form and six copies of the abstract must be submitted to the Graduate College no later than the stated deadline (see "Graduate College Calendar"). The dissertation copies become the property of the University; two copies are filed in the Library and two copies are kept by the major department. There is a binding fee, payable at the Office of the Bursar.

All dissertations are microfilmed by University Microfilms, Inc. The student is required to pay a fee for microfilming the complete document and for publication of an abstract of about 350 words. The student must complete a University Microfilms Agreement Form after the dissertation has been accepted by the Graduate College. Copyrighting the dissertation is not required, but can be done at a small additional cost with the approval of the dean of the Graduate College.

Time Limit. Students are expected to complete the requirements of the Ph.D. degree within seven years from their first enrollment in the degree program. After that time a new program of study must be arranged with the advisory committee and filed in the Graduate College. No courses over 10 years old at the time of graduation may be used to fulfill requirements.

If all requirements for the degree are not completed within four years after the qualifying examination was passed, a second qualifying examination must be repeated successfully.

Any exception to these time limits must be approved by the Graduate Faculty Council.

Continuous Enrollment. A graduate student must maintain continuous enrollment during the entire research phase of the program. Such enrollment is not limited by the maximum number of credit hours of thesis which apply to the degree. Continuous enrollment can be met with six credit hours during each 12 month period or two credit hours in each of the fall, spring and summer semesters.

Students who are using physical or faculty resources of the University are expected to be enrolled during each semester in at least two credit hours.

Failure to maintain continuous enrollment requires submission of a new application for readmission to the graduate program. If readmitted, all requirements of the Graduate College and the department in effect at the time of readmission, must be completed.

Doctor of Education Degree Programs (Ed.D.)

Applied Educational Studies Curriculum and Instruction Educational Administration Higher Education Occupational and Adult Education

The degree of Doctor of Education is a professional degree conferred in recognition of outstanding ability as an educator in some special field or fields as shown by: (1) satisfactory completion of a program of study; (2) passing examinations showing an understanding of the field of specialization and its relation to allied subjects; (3) the preparation of a dissertation demonstrating ability to approach problems with a high degree of originality and independence; and (4) passing an examination covering the dissertation and related fields.

Basic Requirements. The minimum time required for the doctor's degree is six semesters of full-time graduate study (a minimum of 90 semester credit hours) beyond the bachelor's degree, or four semesters of full-time graduate study (a minimum of 60 semester credit hours) beyond the master's degree. Courses at the 5000 and 6000 level should make up approximately 75 percent of the plan of study and must include 10 hours for the doctoral dissertation. The student must register for the dissertation in the same way he or she registers for other courses. Students may use 90 hours beyond the bachelor's degree as a degree total only if admitted directly into the doctoral program from the bachelor's degree.

Admission to a Program. The student can secure an application form from the Graduate College along with information concerning areas and programs of study offered. The application will be evaluated by the faculty of the appropriate department and by the Graduate College. A student planning to seek the Doctor of Education degree must provide specific information as requested by the College of Education (i.e., vita, letters of recommendation, protocols of scholarly work, and test scores). Test scores required are the Miller Analogues Test and/or the aptitude portion of the Graduate Record Examination. A student should contact his or her department head to determine which tests are required and to obtain materials concerning the personnel folder.

When the student's personnel folder is complete, the graduate review committee will review the student's records and recommend to the dean of the Graduate College whether or not the student should be admitted. The dean of the Graduate College will inform the student by letter of admission status.

Temporary Adviser. At the beginning of a student's doctoral program, the head of the major department will designate a member of the Graduate Faculty to serve as temporary adviser to the student. The temporary adviser will guide the student in the selection of courses for the first semester or summer session.

Advisory Committee. Upon recommendation of the head of the major department or of the graduate committee of the department, an advisory committee of not fewer than four members will be appointed by the dean of the Graduate College. At least one member of the advisory committee must be from a department or program outside the student's major field of study. The duties of the advisory committee consist of (1) advising the student, (2) assisting the student in preparing a program of study, (3) preparing and administering the qualifying examination, (4) assisting in planning and conducting the research, (5) supervising the writing and subsequent approval of the dissertation, and (6) conducting the final examination.

Preliminary Conference. As soon as the student is notified that an advisory committee has been appointed, a conference should be arranged with the chairperson and committee. Before the conference the student must see that the chairperson has transcripts of previous work and other information that will be needed in the conference. During the conference, the preparation of the student for graduate study will be discussed and plans made for future study.

Plan of Study. After the preliminary conference, the student should complete the plan of study for the degree, and have four copies approved and signed by the advisory committee. One copy will be retained by the student and three copies sent to the Graduate College.

The plan must include all the acceptable graduate work that has been completed and all that will be taken for the degree. The plan should include approximately 75 percent of courses at the 5000-6000 level and 10 hours...
dissertation credit. Forms for preparing the plan of study may be obtained in the Graduate College. The plan of study must include a minimum of 60 hours beyond the master's degree or 30 hours beyond the Ed.S. Courses from the master's degree or Ed.S. are not listed on the doctoral plan of study.

Because the acceptance of work which the student desires to use toward the degree rests with the advisory committee, it is important to plan a complete program and have it approved by the dean of the Graduate College as soon as possible. Courses taken more than 10 years prior to actual graduation will not be accepted on a plan of study without a formal request from the advisory committee and approval of the Graduate Faculty Council.

The plan of study is to be submitted prior to the pre-enrollment date during the second full semester of enrollment (beyond the master's degree).

Changes in the plan can be made with the approval of the advisory committee and the dean of the Graduate College. A final, accurate, and approved plan must be filed at the beginning of the semester or summer session in which the degree is to be conferred.

**Character of Work.** Completing a number of courses with a "B" average (see "General Regulations") is one of the requirements for the doctoral degree. The student must also: (1) pass a qualifying examination, (2) prepare an acceptable dissertation, (3) demonstrate the ability to do independent study, (4) pass a defense of dissertation, and (5) comply with other requirements of the major field or department.

**Residence Requirements.** A minimum of 30 semester credit hours must be taken at Oklahoma State University. One academic year of the last two, as determined by the appropriate department, must be spent in continuous residence at this institution.

The residence requirement can be met by two semesters of full-time graduate study. Any other way of meeting the residence requirement must have the approval of the student's advisory committee and of the dean of the Graduate College.

Courses taken at the University Center at Tulsa (UCT) while registered through Oklahoma State University are considered residence credit. Courses taken from the other three cooperating universities are considered to be transfer credit.

**Foreign Language and Research Instruments Proficiency.** All candidates will be expected to have a command of those instruments necessary in the study of educational problems. The doctoral advisory committee of each candidate may require evidence of proficiency in one or more foreign languages, educational research, statistics, and computer usage.

**Qualifying Examination.** Before taking the qualifying examination, the student must have completed the main areas in a plan of study which has been approved by the advisory committee, have the approval of his or her advisory committee, and have an approved outline for the dissertation on file in the Graduate College and in the office of the department concerned.

The qualifying examination is designed to measure the student's proficiency in the field of specialization, the breadth and depth of his or her professional education background and his or her knowledge of cognate subjects. The examination may be both written and oral but part of it must be written. This examination must be passed and the result reported to the Graduate College on Form G-4 at least six months before the degree is granted (see "Admission to Candidacy" in the "Doctor of Philosophy" section).

In case of failure to pass this examination, the student will be notified by the examining committee of the condition under which another examination may be taken. A student who fails on either the qualifying or final examination cannot take another examination for four months. If the result of the second examination is unsatisfactory, no other examination may be given without the approval of the Graduate Council.

**Dissertation.** A dissertation (doctoral thesis) is required of each candidate for the Doctor of Education degree. The dissertation has three principal functions: (1) training in research, (2) promoting professional growth, and (3) contributing to professional knowledge in education. Not every dissertation will be expected to serve these three functions in the same way or to the same extent.

The format specifications, procedures, and regulations for the dissertation are the same as for the Ph.D. The Ed.D. candidate should refer to the "Doctor of Philosophy" section on dissertations and submission procedures through the Graduate College.

**Human Subjects and Research.** Oklahoma State University follows federal guidelines which require a review of any research involving human subjects. All such research must be approved by the Institutional Review Board (IRB) before human subjects are involved. Guidelines on how to obtain permission to use human subjects in research are available from the departmental graduate coordinator or the executive secretary of the IRB, the Graduate College, or Office of the Vice-President for Research. The information provides examples of activities subject to careful review and those which are easily approved.

Because University policy requires prior approval of all research involving human subjects, the letter from the IRB granting approval of the research must be included in the appendix of any thesis or dissertation submitted to the Graduate College in fulfillment of degree objectives. Failure to obtain approval for use of human subjects means that the thesis or dissertation cannot be accepted.

**Time Limit.** Students are expected to complete the requirements for the Doctor of Education degree within seven years after beginning course work in the degree program. Otherwise a new program of study must be arranged with the advisory committee and filed in the Graduate College. No courses over 10 years old at the time of graduation may be used to fulfill requirements.

If all requirements for the degree are not completed within four years after the qualifying examination was passed, a second qualifying examination must be repeated successfully.

Any exception to these time limits must be approved by the Graduate Faculty Council.

**Continuous Enrollment.** Continuous enrollment must be maintained during the entire research phase of the program. Such enrollment is not limited by the maximum number of credit hours of thesis which apply to the degree. Continuous enrollment can be met with six credit hours during each 12-month period or two credit hours in each of the fall, spring and summer semesters. Students who are using physical or faculty resources of the University are expected to be enrolled during each semester in at least two credit hours.

Failure to maintain continuous enrollment requires submission of a new application for readmission to the graduate program. If readmitted, all requirements of the Graduate College and the department in effect at the time of readmission, must be completed.

**Specialist in Education Degree Program (Ed.S.)**

**Education**

The Specialist in Education degree is a post-master's professional degree. It is conferred as an appropriate recognition of achievement as evidenced by:
1. Successful professional performance in the area of the student's specialization.

2. Satisfactory completion of a program of graduate study of approximately two academic years.

3. Satisfactory performance on examinations designed to reveal the student's undertaking of the field of specialization and its relation to other areas.

4. Preparation of a thesis dealing with some aspect of concern to the student's profession and its defense before a committee of the Graduate Faculty.

**Admission.** The student can secure an application form from the dean of the Graduate College along with information concerning areas and programs of study offered. The application will be evaluated by the faculty of the appropriate department and by the Graduate College.

**Admission to a Program.** A student planning to seek the Specialist in Education degree must provide specific information as requested by the College of Education, i.e., vita, letters of recommendation, protocols of scholarly work, and test scores. Test scores required are the Miller Analogies Test and/or the aptitude portion of the Graduate Record Examination. A student should contact the department head to determine which tests are required and obtain materials concerning the personnel folder.

When the student's personnel folder is complete, the graduate review committee for Specialist in Education programs will review the student's records and recommend to the dean of the Graduate College whether or not the student should be admitted to the program. The dean of the Graduate College will inform the student by letter regarding admission.

**Temporary Adviser.** At the beginning of a student's Specialist in Education program, the head of the major department will designate a member of the Graduate Faculty to serve as temporary adviser to the student. The temporary adviser will guide the student in the selection of courses for the first semester or summer session.

**Advisory Committee.** The dean of the Graduate College will appoint an advisory committee nominated by the head of the department in which the student wishes to specialize. This committee (1) conducts the preliminary examination and conference, (2) approves the proposed plan of study, (3) supervises the student's progress in the program, (4) supervises the research, and (5) arranges for and conducts the final examination. The advisory committee consists of three members of the graduate faculty, with the chair holding associate or full membership status. All three members may be chosen within the student's area of study. Additional members may come from other disciplines.

**Plan of Study.** As soon as practical after the appointment of the committee, the student will arrange with the chair for a conference for the purpose of planning a program of study. The plan of study will include all graduate work required to complete the program. It will be filed, in triplicate, in the Graduate College. This plan may be modified with the approval of the advisory committee and the dean of the Graduate College. Courses taken more than 10 years prior to actual graduation will not be accepted on a plan of study without a formal request from the advisory committee and approval of the Graduate Faculty Council. The plan of study should be submitted prior to enrollment for the second semester of full-time study.

**Credit-hour Requirements.** A minimum of 60 semester credit hours beyond the bachelor's degree or 33 hours beyond the master's degree are required for the Specialist in Education degree. This may include as many as 10 credit hours for the practicum study and accompanying report.

**Character of Work.** Completing an appropriate number of courses with a "B" average (see "General Regulations") is only one of the requirements for this degree. The student must also: (1) pass a qualifying examination, (2) conduct an appropriate study of education, (3) show qualities of professional leadership, and (4) pass a final examination.

**Residence Requirements.** The candidate must be enrolled full-time at OSU for one academic year of the two years required for the degree. Two summer sessions are considered equivalent to one semester for purposes of meeting the residence requirement.

Ordinarily the last 20 hours, including the study and report, must be earned in residence on the Stillwater campus of Oklahoma State University. Any deviation must be recommended by the advisory committee and approved by the dean of the Graduate College. No more than nine hours may be transferred from another university.

**Qualifying Examination.** A qualifying examination is required of all candidates for the Specialist in Education degree. The nature of this exam is determined within each specialization.

**Time Limit.** Students must complete all requirements for the Specialist in Education degree within five years after beginning course work in the degree program. No course over 10 years old at the time of graduation may be used to satisfy degree requirements. Any exception to these time limits must be approved by the Graduate Faculty Council after recommendation from the advisory committee.

**Continuous Enrollment.** Continuous enrollment must be maintained during the duration of the program through enrollment in at least six credit hours over any 12 month period. Normally this requirement is met by enrolling in at least two credit hours in each of the spring, summer and fall terms. Students who are using physical or faculty resources of the University are expected to be enrolled each semester in at least two hours.

Failure to maintain continuous enrollment requires submission of a new application for readmission to the graduate program. If readmitted, all requirements of the Graduate College and the program in effect at the time of readmission must be completed.

**Credit toward an Ed.D. or a Ph.D.** A student holding an Ed.S. may have the credit hour requirements for a Ph.D. or Ed.D. reduced to 30 hours subject to recommendation by the advisory committee and approval of the dean of the Graduate College. However, all of the remaining 30 hours toward the doctoral degree must be taken at the 5000 or 6000 level and all must be taken at OSU.
The four groups of the Graduate Faculty are full members and emeriti, and associate members and emeriti. Members of the Graduate Faculty, their degrees held and degree-granting institutions, and most recent academic title at OSU are listed below. Dates following indicate: first, the year that the faculty member was initially appointed to or her present position; second, the year that the faculty member was initially appointed to a position at Oklahoma State University. A single date means that these two coincided.

Members

BRUCE J. ACKERSON, B.S. (Univ. of Nebraska), M.S. (Univ. of Colorado), Ph.D. (ibid); Regents Professor of Physics; 1991, 1977.

BRIAN D. ADAM, B.S. (Wheaton College). M.S. (Univ. of Nebraska, Lincoln), Ph.D. (Univ. of Illinois); Associate Professor of Agricultural Economics; 1994, 1990.


MOHAMED SAMIR AHMED, B.S. (Cairo Univ.), M.S. (Ein-Shams Univ.), M.S. (McGill Univ.), Ph.D. (ibid); Professor of Civil and Environmental Engineering; 1991, 1980.

DOUGLAS B. AICHELE, B.A. (Univ. of Missouri), M.A. (ibid), Ed.D. (ibid), Professor and Associate Head of the Department of Mathematics; 1980, 1969.

ROBERT W. ALLEN, B.S. (Univ. of Tulsa), Ph.D. (Purdue Univ.); Adjunct Associate Professor of Biochemistry and Microbiology, OSU-COM; 1995, 1993.

H. JACK ALLISON, B.S. (Louisiana State Univ.), M.S. (ibid), Ph.D. (O.S.U.); P.E.; Professor of Electrical and Computer Engineering; 1976, 1961.

ZUHAIR F. AL-SHAIEB, B.S. (Damascus Univ.), M.S. (Univ. of Missouri, Rolla), Ph.D. (ibid); Brown Monnett Professor, Regents Professor and Head of the Department of Geology; 1994, 1972.

DALE E. ALSPACH, B.S. (Univ. of Akron), Ph.D. (Ohio State Univ.); Regents and Southwestern Bell Professor of Mathematics; 1990, 1973.


JEFFREY ANDERSON, B.A. (Rutgers Univ.), Ph.D. (Univ. of Florida); Professor of Horticulture and Landscape Architecture; 1996, 1986.

KIM B. ANDERSON, B.S. (O.S.U.), M.S. (ibid), Ph.D. (ibid); Professor of Agricultural Economics; 1990, 1982.

MICHAEL P. ANDERSON, B.S. (Brigham Young Univ.), M.S. (Univ. of Minnesota), Ph.D. (ibid); Associate Professor of Plant and Soil Sciences; 1990.


BAHRM H. ARJUJANDI, B.S. (N.S. & F.C. Tehran), M.S. (Pittsburg State Univ.), Ph.D. (Kansas State Univ.); Associate Professor of Nutritional Sciences; 1998.

LYNN K. ARNEY, B.S. (Univ. of Tulsa), M.E. (Northeastern Oklahoma State Univ.), Ed.D. (O.S.U.); Associate Professor of Educational Studies; 1988, 1985.

RICHARD ARTHUR AUKERMAN, B.S. (Univ. of North Dakota), M.S. (ibid), Ph.D. (ibid); Professor of Management; 1987, 1980.

LINDA AUSTIN, B.A. (State Univ. of New York, Stony Brook), M.S. (Univ. of Illinois); M.A. (Univ. of Rochester), Ph.D. (ibid); Associate Professor of English; 1990, 1985.

DAVID EDWARD BALK, B.A. (Immaculate Conception College, MA), M.A. (Marquette Univ.), Ph.D. (Univ. of Illinois); Professor and Head of the Department of Family Relations and Child Development; 1997.

DONNA KAY BANDY, B.A. (Univ. of Iowa), M.A. (Drexel Univ.), Ph.D. (ibid); Associate Professor of Physics; 1991, 1987.

JOHN A. BANTLE, B.A. (Eastern Michigan Univ.), M.S. (ibid), Ph.D. (Ohio State Univ.); Professor of Zoology and Associate Dean for Research, College of Arts and Sciences; 1991, 1976.

LETICIA BARCHINI, B.A. (Univ. Nacional de Tucuman, Argentina), Ph.D. (Univ. Nacional de Cordoba, Argentina); Associate Professor of Mathematics; 1988, 1980.

BILLY BARFIELD, B.S. (Texas A & M Univ.), Ph.D. (ibid); P.E.; Professor and Head of the Department of Biosystems and Agricultural Engineering; 1992.


LAURA L. B. BARNES, B.A. (Univ. of Nebraska), M.S. (ibid), Ph.D. (ibid); Assistant Professor of Educational Studies; 1990, 1976.

LAURA L. BARNES, B.A. (Univ. of Nebraska), M.A. (ibid), Ph.D. (ibid); Assistant Professor of Plant and Soil Sciences; 1991.

RICHARD P. BATTEIGER, B.A. (Ohio Univ.), M.A. (Univ. of Florida), Ph.D. (ibid); Associate Professor of English; 1985.

CAROLYN A. BELL, B.S. (O.S.U.), M.S. (ibid), Ph.D. (Univ. of Texas); Associate Professor and Head of the Department of Sociology; 1987, 1981.

CAROL L. BENDER, B.S. (Texas Tech Univ.), M.S. (Oregon State Univ.), Ph.D. (Univ. of California, Riverside); Professor of Plant Pathology; 1997, 1986.

RICHARD C. BERGERET, B.A. (Carroll College), Ph.D. (Univ. of Nebraska); Professor of Entomology; 1980, 1971.

KENNETH DARRELL BERLIN, B.A. (North Central College, Illinois), Ph.D. (Univ. of Illinois, Urbana); Regents Professor of Chemistry; 1971, 1960.

JOE G. BERRY, B.S. (O.S.U.), M.S. (ibid), Ph.D. (Kansas State Univ.); Professor of Animal Science; 1988, 1980.

DENNIS EARL BERTHOLF, B.S. (Univ. of Kansas), M.A. (New Mexico State Univ.), Ph.D. (ibid); Professor of Mathematics; 1988, 1968.


BIRNE BINEGAR, B.S. (Univ. of California, Los Angeles), M.S. (ibid), Ph.D. (ibid); Associate Professor of Mathematics; 1993, 1988.

JAMES BRYAN BLAIR, B.S. (West Virginia Univ.); Ph.D. (Univ. of Virginia); Professor and Head of the Department of Biochemistry and Molecular Biology; 1990.

JAMES T. BLANKEMEYER, A.B. (Temple Univ.), M.A. (ibid), Ph.D. (ibid); Professor of Microbiology and Molecular Genetics; 1993, 1977.

JAMES E. BOSE, B.S. (O.S.U.), M.S. (ibid), Ph.D. (ibid); P.E.; Professor and Director of the Division of Engineering Technology; 1977, 1960.

DONALD L. BOSWELL, B.A. (Univ. of Central Florida), M.S. (Indiana State Univ.), Ph.D. (ibid); Associate Professor of Applied Health and Educational Psychology; 1991.

GREGORY BOWES, B.A. (Augustana College, Me.); Ed. (Northern Illinois Univ.), Ed.D. (ibid); Professor of Educational Studies; 1996.

DONNA H. BRANSON, B.A. (Rosary College), M.S. (ibid), Ph.D. (ibid); Associate Professor of Industrial Engineering and Management; 1985.

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Ronald L. Dougherty, B.S. (Univ. of Missouri, Rolla), M.S. (ibid), Ph.D. (ibid); Professor of Mechanical and Aerospace Engineering; 1992, 1985.

Damon G. Doyle, B.S. (O.S.U.), M.S. (ibid), Ph.D. (ibid); Associate Professor of Agricultural Economics; 1990, 1986.

David Duvall, B.A. (Univ. of California, Berkeley), M.S. (San Jose State Univ.), Ph.D. (Univ. of Colorado); Professor of Zoology; 1995.

Richard Eberle, B.A. (Univ. of California, Los Angeles), Ph.D. (Baylor College of Medicine); Professor of Veterinary Infectious Diseases and Physiology and Associate Dean for Research, College of Veterinary Medicine; 1990.

Lea L. Ebro, B.S. (Univ. of the Philippines), B.S. (ibid), M.S. (Iowa State Univ.), Ph.D. (Ohio State Univ.); Professor of Nutritional Sciences; 1984, 1978.

Anthony A. Echelle, B.S. (Southeastern Oklahoma State Univ.), M.S. (Univ. of Oklahoma), Ph.D. (ibid); Professor of Zoology; 1985, 1980.

Jonathan V. EdeIson, B.S. (Univ. of Missouri), M.A. (Iowa State Univ.), Ph.D. (ibid); Professor of Plant Pathology; 1993, 1990.

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Charles K. Edgley, B.A. (Wayland College), M.A. (Texas Tech Univ.), Ph.D. (State Univ. of New York, Buffalo); Professor of Sociology; 1982, 1972.


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Ziad El-Rassi, B.S. (Lebanese Univ.), M.S. (Claude-Bernard Univ.), Ph.D. (ibid); Associate Professor of Chemistry; 1993, 1988.

Leah T. Engelhardt, B.S. (Northwestern Univ.), M.S.Ed. (Southern Illinois Univ.), Ph.D. (ibid); Professor of Curriculum and Educational Leadership; 1992, 1982.

David A. England, B.S. (Indiana Univ.), M.S. (ibid), Ph.D. (ibid); Professor and Head of the School of Curriculum and Educational Leadership, and Associate Director of Professional Education; 1996.

Robert E. England, B.A. (Oklahoma College of Liberal Arts), M.P.A. (Univ. of Oklahoma), Ph.D. (ibid); Professor of Political Science; 1990, 1982.

David M. Engle, B.S. (Abilene Christian College), M.S. (ibid), Ph.D. (Colorado State Univ.); Professor of Plant and Soil Sciences; 1987, 1982.

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Carel Filip Faber, B.S. (Rijksuniv. Groningen, Netherlands), Ph.D. (Univ. Van Amsterdam); Associate Professor of Mathematics.

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Cheryl Ann Farr, B.S. (Univ. of Houston), M.S. (Iowa State Univ.), Ph.D. (ibid); Associate Professor of Design, Housing and Merchandising; 1996, 1991.

Alexander B. Filonow, B.S. (Univ. of Rhode Island); M.S. (Michigan State Univ.), Ph.D. (ibid); Associate Professor of Plant Pathology; 1989, 1984.

William L. Fisher, B.A. (Univ. of Louisville), M.A. (DePauw Univ.), Ph.D. (Univ. of Louisville); Adjunct Associate Professor of Zoology; 1996, 1991.


Jacqueline Fletcher, B.S. (Emory Univ.), M.S. (Univ. of Montana), Ph.D. (Texas A & M Univ.); Professor of Plant Pathology; 1992, 1983.


Warren T. Ford, B.A. (Wabash College), Ph.D. (Univ. of California, Los Angeles); Regents Professor of Chemistry; 1994, 1978.

David G. Fournier, B.A. (Univ. of Missouri, Kansas City), M.A. (ibid), Ph.D. (Univ. of Minnesota); Professor of Family Relations and Child Development; 1991, 1978.

Gary L. Fouth, B.S. (Univ. of Missouri), M.S. (ibid), Ph.D. (ibid); P.E.; Professor of Chemical Engineering; 1989, 1980.

Joseph Carl Fox, B.S. (Brigham Young Univ.), M.S. (ibid), Ph.D. (Montana State Univ.); Professor of Veterinary Infectious Diseases and Physiology; 1992, 1978.

Stanley F. Fox, M.S. (Univ. of Illinois), M.Phil. (Yale Univ.), Ph.D. (ibid); Professor of Zoology; 1992, 1977.

Gary L. Frankwick, B.B.A. (Univ. of Wisconsin, Madison), M.B.A. (Univ. of Wisconsin, Oshkosh); Ph.D. (Arizona State Univ.); Associate Professor of Marketing; 1990.

Robert Wesley Fulton, B.S. (O.S.U.), M.S. (Washington State Univ.), Ph.D. (Univ. of Missouri), M.S. (O.S.U.); Professor and Head of the Department of Veterinary Infectious Diseases and Physiology, and Assistant Director of the Oklahoma Agricultural Experiment Station; 1986, 1982.
JAMES L. HUSTON, B.A. (Dennison Univ.), RAYMOND L. HUHNKE, B.S. Ag. Engr. LOUIS G. JOHNSON, B.S. (Massachusetts)
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LAURA HUBBS-TAIT, B.A. (Univ. of Michigan)
ARTHUR W. HOUNSLOW, B.Sc. (Univ. of Dallas)
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JIM S. KEEPER, B.S. (Southwestern State Univ.), M.A. (ibid), Ph.D. (ibid)
KENNETH L. KING, B.A. (Southwestern State College), M.S. (ibid), Ph.D. (ibid)
BRIAN A. KAHN, B.S. (Delaware Valley Col.
SHELDON KATZ, B.S. (Massachusetts Insti-
MARVIN STANFORD KEENER, B.S. (Birm-
PHILIP KENKEL, B.S. (Univ. of Kentucky), M.B.A. (ibid), Ph.D. (ibid); Associate Professor of
DAROLD L. KETRING, B.S. (Univ. of California)
JANICE WICKSTEAD JADLOW, B.A. (Miami University), M.A. (Univ. of Virginia), Ph.D.
JOSEPH M. JADOW, JR., B.A. (Central Missouri State College), M.S. (ibid), Ph.D. (ibid)
CHARLES PATRICK KOELLING, B.S.I.E.
RANU KOMANDURI, B.E. (Osmania Univ.)
GLENNA L. KRANZLER, B.S.A.E. (North Dakota
JERZY S. KRAINSKI, B.S. (Univ. of Warsaw)
RUTH HAAS KRIEGER, B.S. (Univ. of Illinois), M.A. (ibid), Ph.D. (ibid); Southwestern Bell Professor of Electrical and Computer Engineering
TIMOTHY C. IRELAND, B.S. (Phillips Univ.), M.S. (O.S.U.), Ph.D. (ibid); Professor of
JAMES FORBES JACKSON, B.B.A. (Univ. of Texas), M.B.A. (ibid), Ph.D. (ibid); Associate Professor of
WILLIAM H. JACO, B.S. (Fairmont State College), M.A. (Pennsylvania State Univ.), Ph.D. (Univ. of Wisconsin); Grayce B. Kerr Professor of Education (1991, 1987)
BERT H. JACOBSON, B.S. (O.S.U.), M.Ed.
JANICE WICKSTEAD JADLOW, B.A. (Miami University), M.A. (Univ. of Virginia), Ph.D.
JOSEPH M. JADOW, JR., B.A. (Central Missouri State College), M.S. (ibid), Ph.D. (ibid)
GEORGE FREDERICK JEWSBURY, B.A. (Mankato State College), M.A. (Univ. of Washington), Ph.D. (ibid); Professor of History 1985, 1967.
ARLAND H. JOHANNES, B.S. (Illinois State Univ.), M.S.E. (ibid), Ph.D. (ibid)
DAVID T. JOHN, B.A. (Asbury College), M.S.P.H. (Univ. of North Carolina), Ph.D. (ibid); Professor of Biochemistry and Microbiology and Associate Dean for Basic Sciences and Graduate Studies, OSU-COM; 1990.
BECKY L. JOHNSON, B.S. (O.S.U.), M.S. (Univ. of Illinois), Ph.D. (ibid); Professor of Botany; 1988, 1969.
GORDON V. JOHNSON, B.S. (North Dakota State Univ.), M.S. (Univ. of Nevada, Reno), Ph.D. (Univ. of Nebraska, Lincoln); Professor of Plant and Soil Sciences; 1983, 1977.
LOUIS G. JOHNSON, B.S. (Massachusetts Institute of Technology), M.S. (ibid), Ph.D. (ibid); Associate Professor of Electrical and Computer Engineering; 1983, 1979.
WILBUR D. DEKE JOHNSON, B.S. (Rocky Mountain College), M.Ed. (Univ. of Montana), Ed.D. (Western Michigan Univ.); Associate Professor of Educational Studies; 1979, 1974.
EDWARD JONES, B.A. (Central Connecticut), M.A. (Ohio Univ.), Ph.D. (ibid); Associate Professor of English; 1992, 1987.
R. MALATESHA JOSHI, B.S. (Mysore Univ.
MANJUNATH KAMATH, B. Tech. (Indian Inst. of Technology, Madras), M.E. (Indian Inst. of Science); Ph.D. (Univ. of Wisconsin, Madison); Associate Professor of Industrial Engineering and Management; 1995, 1993.
MARVIN STANFORD KEENER, B.S. (Birmingham Southern College), M.A. (Univ. of Missouri, Columbia), Ph.D. (ibid); Professor of Mathematics and Executive Vice-Presi-
PHILIP KENKEL, B.S. (Univ. of Kentucky), M.B.A. (ibid), Ph.D. (ibid); Associate Professor of Agricultural Economics; 1995, 1990.
DARIOLO K. KETRING, B.S. (Univ. of California), M.S. (ibid), Ph.D. (ibid); National Science Foundation Postdoc.
JANET I. KIMMRELL, B.S. (Southeastern Oklahoma State Univ.), M.S. (ibid), Ph.D. (ibid); Associate Professor of Agricultural Education; 1975, 1969.
S. DEAN KINDLER, B.S. (Univ. of Nebraska), Ph.D. (ibid); Adjunct Professor of Entomology; 1987.
KENNETH L. KING, B.A. (Southwestern State College, Oklahoma), M.Ed. (Univ. of Oklahoma, Edmond), Ph.D. (ibid); Regents Service Professor of Curriculum and Instruction; 1994, 1972.
JAMES S. KIRBY, B.S. (O.S.U.), M.S. (ibid), Ph.D. (ibid); Professor of Plant and Soil Sciences; 1983, 1989.
DANIEL O. KLETKE, B.S. (O.S.U.), M.S. (ibid), Ph.D. (ibid); Professor of Agricultural Economics; 1979, 1966.
EDWARD OLLINGTON PRICE, III, B.A. (Texas A & M Univ.), Ph.D. (ibid); Associate Professor of Economics and Legal Studies in Business; 1984, 1979.

JAMES MANUEL PRICE, B.S. (Univ. of Oklahoma), B.A. (ibid), Ph.D. (ibid); Associate Professor of Psychology; 1974, 1977.

JOSEPH A. PRICE, B.S. (Rutgers Univ.), Ph.D. (Univ. of Massachusetts); Associate Professor of Biochemistry and Microbiology, OSU-COM; 1985.

NEIL PURDIE, B.S. (Univ. of Glasgow), Ph.D. (ibid); Professor and Head of the Department of Chemistry; 1994, 1977.

MARY LYNNE RICHARDS, B.S. (Michigan State Univ.), Ph.D. (ibid); Associate Professor of Economics and Legal Studies in Business; 1984, 1979.

ROBERT LOUIS ROBINSON, JR., B.S. (O.S.U.), M.S. (ibid), Ph.D. (ibid); Regents Professor and Chair of Chemical Engineering; 1987, 1965.

LINDA C. ROBINSON, B.S. (Louisiana State Univ.), M.S. (ibid), Ph.D. (Univ. of Tennessee); Associate Professor of Family Relations and Child Development; 1995, 1990.

MARK ROCKLEY, B.A. (Hope College), Ph.D. (Univ. of Southampton); Professor of Chemistry; 1984, 1975.

PETER CUSHING ROLINS, B.A. (Harvard Univ.), Ph.D. (ibid); Regents Professor of Chemistry; 1995, 1990.

JOHN S. C. ROMANS, B.S. (Iowa State Univ.), M.A. (Univ. of Iowa), Ph.D. (Univ. of Kansas); Associate Professor of Applied Health and Educational Psychology; 1995, 1990.

ALEXANDER J. ROUGH, B.S. (U.S. Military Academy), M.S. (Univ. of Tennessee), Ph.D. (Medical College of Georgia); Associate Professor of Physiology and Pharmacology, OSU-COM; 1997, 1992.

R. RUSSELL RHINEHART, M.Ed. (ibid), Ph.D. (Michigan State Univ.); Professor of Veterinary Anatomy, Pathology and Pharmacology, and Graduate Coordinator for Veterinary Biomedical Sciences; 1988, 1982.

CHARLES WAYNE QUALLS, JR., B.S. (O.S.U.), D.V.M. (ibid), Ph.D. (Univ. of California, Davis); Professor of Veterinary Science, Botany, and Statistics; 1987, 1974.

SURENDRA A. SINGH, B.S. (Banaras Hindu Univ., Varanasi, India); M.S. (Univ. of Arkansas); M.A. (ibid), Ph.D. (North Carolina State Univ.); Associate Professor of Mathematics; 1996, 1992.

JAMES M. SEALS, B.S. (Abilene Christian College), M.S. (Univ. of Texas, Austin); Associate Professor of Psychology; 1982, 1969.

JOSEPH A. PRICE, B.S. (Rutgers Univ.), Ph.D. (ibid); Associate Professor of Economics and Legal Studies in Business; 1984, 1979.

MANSUR SAMADZADEH, B.S. (Sharif Univ. of Technology, Tehran, Iran); M.S. (ibid), Ph.D. (East Texas State Univ.); Associate Professor of Computer Science, 1988, 1987.


RAY E. SANDERS, B.S. (O.S.U.), M.S. (ibid), Ph.D. (ibid); Associate Professor of Curricular and Educational Leadership; 1993, 1985.

LAWRENCE SANDERS, B.S. (Iowa State Univ.); Ph.D. (ibid); Professor of Veterinary Anatomy, Pathology and Pharmacology; 1992, 1981.

CHARLES G. SANNEY, B.S. (Oklahoma Baptist Univ.), M.S. (Univ. of Oklahoma); Professor of Biochemistry and Microbiology, OSU-COM; 1989, 1985.

ZHENBO QIN, B.S. (Wuhan Univ., Wuhan, China); M.S. (ibid), Ph.D. (ibid); Associate Professor of Biochemistry and Microbiology; 1996, 1992.

JOSEPH A. PRICE, B.S. (Rutgers Univ.), Ph.D. (ibid); Associate Professor of Physics and Pharmacology; 1997, 1992.

SUSAN SAVVIDES, B.S. (Univ. of Binghamton, N.Y.), M.A. (Univ. of Florida), Ph.D. (ibid); Associate Professor of Education and Legal Studies in Business; 1991, 1985.

FREDERICK V. SCHAEFER, B.S. (Univ. of Maryland), Ph.D. (North Carolina State Univ.); Adjunct Associate Professor of Biochemistry and Microbiology; 1995.

RAYMOND JOE SCHATZER, B.S. (Univ. of Missouri), M.S. (Iowa State Univ.); Associate Professor of Agricultural Economics; 1988, 1983.

DEAN FREDERICK SCHRINER, B.S. (Colorado State Univ.), M.S. (Iowa State Univ.), Ph.D. (ibid); Professor of Agricultural Economics; 1974, 1965.

ALLEN CLARK SCHUERMANN, B.A. (Univ. of Kansas), M.S. (Wichita State Univ.), Ph.D. (Univ. of Arkansas); Professor of Industrial Engineering and Management 1984.
JAMES H. BOGGS, B.S. (O.S.U.), M.S. (ibid), 184 Graduate Faculty

LLOYD ALLEN BRINKERHOFF, B.S. (Univ. of

DAVID SHELLEY BERKELEY, A.B. (Juanita

BERNARD R. BELDEN, B.Ed. (State Univ. of

DONALD J. BANKS, B.S. (O.S.U.), M.S. (ibid), (Purdue Univ.);

LAWRENCE L. BOGER, B.S. (Purdue Univ.);

DANIEL DELANO BADGER, B.S. (Virginia

BERNARD D. BECK, B.S. (Iowa State Univ.), M.S. (ibid), Ph.D. (Iowa State Univ.);

DANIEL DELANO BADGER, B.S. (Virginia

BENNET LEE BASORE, B.S. (O.S.U.), Sc.D.

GEORGE LEWIS BARNES, B.S. (Michigan


1948, 1947.


1947, 1946.

1942, 1941.

1984, 1946.


1946, 1945.


1941, 1934.


1964, 1957.


1964, 1948.


1962, 1952.


1962, 1952.


JOHN MILSTEAD, B.S. (Univ. of Arkansas), M.S. (Michigan State Univ.), Ph.D. (ibid); Professor Emeritus of Agronomy, 1992, 1951.

ROBERT N. MADDOX, B.S. (Univ. of Arkansas), M.S. (Univ. of Oklahoma), Ph.D. (O.S.U.); P.E.; Professor Emeritus of Chemical Engineering, Director, PPL, SHEE; 1986, 1953.

NORBERT R. MAHNKEN, A.B. (Southwestern College, Kansas), M.A. (Univ. of Nebraska), Ph.D. (ibid); Professor Emeritus of History; 1983, 1947.

GILBERT J. MAINS, B.S. (Duquesne Univ.), Ph.D. (Univ. of California); Professor Emeritus of Chemistry; 1994, 1978.


CHARLES V. MAXWELL, B.S. (Univ. of Georgia), M.S. (ibid), Ph.D. (Univ. of Wisconsin); Professor Emeritus of Animal Science; 1996, 1968.


JOHN C. MccULLERS, B.A. (Univ. of Texas, Austin), M.A. (ibid), Ph.D. (ibid); Professor Emeritus of Family Relations and Child Development; 1988, 1976.


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THOMAS EDWIN MOORE, B.A. (Univ. of Texas), M.A. (ibid), Ph.D. (ibid); Professor Emeritus of Sociology; 1982, 1947.

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WILBUR STANLEY NEWCOMER, B.S. (Pennsylvania State Univ.), M.S. (Cornell Univ.), Ph.D. (ibid); Professor Emeritus of Psychological Science; 1985, 1950.

JOSEPH RANDOLPH NORTON, B.S. (O.S.U.), M.S. (ibid), Ph.D. (Univ. of Texas); Professor Emeritus of General Engineering; 1976, 1946.

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ROBERT THOMAS RADFORD, B.A. (Baylor Univ.), M.A. (ibid), Ph.D. (Univ. of Texas); Associate Professor Emeritus of Philosophy; 1994, 1963.


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ROBERT M. REED, B.S. (Univ. of Illinois), M.S. (ibid), Ph.D. (ibid); Professor Emeritus of Agronomy; 1987, 1950.


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CHARLES I. ABRAMSON, B.A. (Boston Univ.), M.A. (ibid), Ph.D. (ibid); Assistant Professor of Psychology; 1993.

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ARMOND DUDLEY BAREFOOT, B.S. (O.S.U.), M.S. (ibid); Associate Professor Emeritus of Agricultural Engineering; 1986, 1953.

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This Catalog offers information about the academic programs and support services of the University. This Catalog is as accurate as possible, but the information may not remain current for all of the academic year. Circumstances may prompt changes in courses, course content, credit, fees, regulations, semester calendar, curriculum, degrees offered, and other University matters. Such changes authorized by the University apply both to prospective students and to those previously enrolled, unless the latter are specifically exempted.

Not all courses are offered each semester or session. Students should consult the current class schedule book and the departmental office for specific details regarding frequency of offerings in specific courses.

Course descriptions are listed alphabetically by fields. (See the College of Osteopathic Medicine of OSU College Catalog for osteopathic medicine course descriptions.)

Explanation of Course Listings

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

Course Number. All courses are identified by numbers composed of four digits. The first digit indicates the class year in which the subject is ordinarily taken, although enrollment is not exclusive as to student classification; the second and third digits identify the course within the field and the last digit identifies the number of semester credit hours the course carries. A course number beginning with 0 indicates that the course does not carry University credit. A course number ending in 0 indicates that the course carries variable credit. An asterisk (*) following the four-digit number indicates the course is approved for graduate credit.

Those numbered 5000 and above are primarily for graduate students, and only graduate students and selected seniors with consent of the instructor may enroll in them. Courses numbered 3000 and 4000 may be taken for graduate credit if the course number is labeled with an asterisk. Extra work may be required of a graduate student in a 3000- or 4000-level course.

Course Title. The title of the course is printed in boldface letters.

Statement of Variable Credit. Each course number ending in zero is followed by a statement of the credit that may be earned. Typical entries are 1-6 credits, maximum 6 and 1-3 credits, maximum 12, the first part of the entry indicating the permissible credit per enrollment, followed by a statement of the maximum credit which may be earned in the course through repeated enrollment.

Laboratory Hours. If a course contains a laboratory, the number per week of laboratory hours are stated, e.g., Lab 3.

Prerequisite(s). Prerequisites from the same department as the course being described are listed first, with no departmental abbreviation and in increasing numerical order. If from another department, that departmental abbreviation must precede the number of the prerequisite course. Those courses having prerequisites from both within and from outside the department bear combination entries such as 3303 and STAT 2012. Prerequisites are listed in the following manner:

Prerequisites: A, B or C
A or B or C is acceptable
Prerequisites: A, B and C
A, B and C are required
Prerequisites: A, and B or C
A and either B or C
Prerequisites: A and B, or C
Both A and B, or C required
Prerequisites: A, or B and C
Either A or both B and C required
Prerequisites: A or equivalent and B
Both A, or the equivalent of A, and B are required
Prerequisites: A, and B or equivalent
Both A and B, or the equivalent of B, are required
Prerequisites: A and B, or equivalents
Equivalents of both A and B are acceptable.

Where no prerequisites are listed for courses numbered 3000 or 4000 level, it is understood that the prerequisite is 60 credit hours of work completed, or 45 credit hours completed with an overall grade-point average of 3.25. The prerequisite for courses numbered 5000 or 6000 level is graduate standing in addition to any other prerequisites listed. Instructors may waive prerequisites when student background justifies. Prior approval of instructor may be required in problems courses, independent study, internships, thesis and dissertation courses, and courses taught in a professional school.

Description of Course Content. The content of the course and its major emphases are described. Courses which are taught under another name and number are indicated by the statement Same course as 0000. Credit may not be earned in both courses so cross-referenced.
Abbreviations Used

A&S Arts and Sciences
ABSED Applied Behavioral Studies in Education
ACCTG Accounting
AEROS Aerospace Studies--Air Force
AG Agriculture
AGCOM Agricultural Communications
AGEC Agricultural Economics
AGED Agricultural Education
AGRON Agronomy
ANSI Animal Science
ANTH Anthropology
ARCH Architecture
ART Art
AVSED Aviation and Space Education
BCOMM Business Communications
BIOCH Biochemistry
BIOEN Biosystems Engineering
BIOL Biological Science
BIOMD Biomedical Sciences
BOT Botany
BUHON Business Honors
BUSAD Business Administration
BUSED Business Education
BUSPR Business Professions
CDIS Communication Sciences and Disorders
CHEM Chemistry
CHENG Chemical Engineering
CIED Curriculum and Instruction Education
GIVEN Civil Engineering
CLMOL Cell and Molecular Biology
COMSC Computer Science
CONST Construction Management Technology
DHM Design, Housing and Merchandising
EAHED Educational Administration and Higher Education
ECEN Electrical and Computer Engineering
ECON Economics
ECT Electronics and Computer Technology
EDUC Education
ENGL English
ENGR Engineering
ENGSC Engineering Science
ENTO Entomology
ENVIR Environmental Science
FIN Finance
FIRET Fire Protection and Safety Technology
FLL Foreign Languages and Literatures
FOR Forestry
FRCD Family Relations and Child Development
FRNCH French
GENE Genetics
GENEN General Engineering
GENT General Technology
GEOG Geography
GEOL Geology
GRAD Graduate
GREEK Greek
GRMN German
HES Human Environmental Sciences
HIST History
HLTH Health
HONOR Honors
HORT Horticulture
HPEL Health, Physical Education and Leisure
HRAD Hotel and Restaurant Administration
INDEN Industrial Engineering and Management
JAPAN Japanese
JB Journalism and Broadcasting
LA Landscape Architecture
LATIN Latin
LEIS Leisure
LIBSC Library Science
LSB Legal Studies in Business
MAE Mechanical and Aerospace Engineering
MATH Mathematics
MBA Master of Business Administration
MC Mass Communications
MECAG Mechanized Agriculture
MGMT Management
MICRO Microbiology
MILSC Military Science
MKTG Marketing
MET Mechanical Engineering Technology
MSIS Management Science and Information Systems
MTCL Medical Technology
MUSIC Music
NATSC Natural Science
NSCI Nutritional Sciences
OAED Occupational and Adult Education
PE Physical Education
PET Petroleum Technology
PHILO Philosophy
PHYSIC Physics
PLP Plant Pathology
POLSC Political Science
PSYCH Psychology
REL Religious Studies
RUSS Russian
SOC Sociology
SPAN Spanish
SPCH Speech Communication
STAT Statistics
TCOM Telecommunications Management
TE Technology Education
TECED Technical Education
TH Theater
TIED Technical and Industrial Education
UNIV University
VAPP Veterinary Anatomy, Pathology and Pharmacology
VIDP Veterinary Infectious Diseases and Physiology
VMED Veterinary Medicine
VMS Veterinary Medicine and Surgery
ZOOL Zoology
Accounting (ACCTG)

2103 Financial Accounting. Prerequisite: 24 semester credit hours, including ENGL 1113 and MATH 1483 or equivalent. Financial accounting concepts and the use of financial accounting information in decision making.

2203 Managerial Accounting. Prerequisite: 2103. Managerial accounting concepts and objectives, planning and control of sales and costs, analysis of costs and profits.

3013 Federal Income Taxation. Prerequisite: 2203. Federal income tax and its relationship to business decision-making; primary emphasis on recognition of the important tax consequences that attach to business transactions and their impact on business decision making.

3203 Cost Accounting. Prerequisites: 2203 with a grade of "C" or better and STAT 2023. Cost accumulation systems, allocating product costs, planning and controlling costs, standard costing, and profitability analysis.


3403 Financial Accounting II. Prerequisite: 3303 with grade of "C" or better. Continuation of financial accounting theory and problems.

3603 Accounting Information Systems. Prerequisite: 2203. Accounting system design and installation.

4010 Accounting Projects. 1-6 credits, maximum 6. Prerequisites: consent of instructor and 3203 and 3403. Special topics, projects, and independent study in accounting.

4013 Advanced Federal Income Taxation. Prerequisite: 3013 with a grade of "B" or better. Federal income tax law applicable to individuals, corporations, partnerships, trusts and estates, and other specialized topics.

4203 Topics in Management Accounting. Prerequisites: 2203 with grade of "C" or better and MGMT 3223. Integrative course in cost and management accounting; use of accounting information for internal decision making.

4303 Non-business, Fiduciary and Institutional Accounting. Prerequisite: 3403 with grade of "C" or better. Fund and governmental accounting, bankruptcies, receiverships, estates and trusts.

4403 Financial Accounting III. Prerequisite: 3403 with grade of "C" or better. Consolidated statements and other financial accounting topics.

4453 EDP Auditing. Prerequisite: 4503 or consent of instructor. EDP auditing as it applies to the business environment. Impact of computer-based systems on control and auditing, total systems control analysis, and specific EDP auditing techniques as they apply to computer-based systems.

4503 Auditing. Prerequisite: 3403, 3603. Auditing theory, procedures and practices.

5000 Thesis. 1-6 credits, maximum 6. For students writing reports and theses in accounting.

5013 Seminar in Tax Research. Prerequisite: 4013 or consent of instructor. Development and administration of federal tax law with emphasis on the development of tax research skills.

5023 Seminar in Estate and Gift Taxation. Prerequisite: 5013 or consent of instructor. Federal tax law applicable to estate and gift taxation and income taxation of estates and trusts.

5033 Seminar in Oil and Gas Taxation. Prerequisite: 5013 or consent of instructor. Federal income tax laws applicable to the petroleum and other extractive industries.

5043 Seminar in Partnership Taxation. Prerequisite: 5013 or consent of instructor. Federal income tax laws applicable to partnerships.

5053 Seminar in Corporate Taxation. Prerequisite: 5013 or consent of instructor. Federal income tax laws applicable to corporations and to other entities in their capacity as corporate shareholders.

5103 Financial Accounting and Analysis. Prerequisites: admission to MBA program or consent of MBA director. Development of the ability to read and analyze financial statements and to use this information along with other types of information in decision making.

5110 Special Topics and Individual Work in Accounting. 1-10 credits, maximum 10. Prerequisite: consent of instructor. Individual work on special topics, projects or readings selected to acquaint students with significant accounting literature.

5113 Managerial Accounting. Prerequisite: 5103. Interpretation of accounting data in planning, controlling and decision making.

5133 Seminar in Oil and Gas Accounting. Financial accounting and reporting rules and practices in the petroleum industry.

5203 Seminar in Contemporary Accounting Theory I. Prerequisite: 3403. Origin and development of accounting and a critical study of modern accounting theory.

5303 Seminar in Contemporary Accounting Theory II. Prerequisite: 3403. Critical study of contemporary accounting theory.

5313 Financial Statement Analysis. Prerequisite: consent of instructor. A study of the demand and supply of financial data, properties of numbers derived from financial statements, the role of financial information in investment decisions, and features of the decision-making environment.

5400 Practicum in Professional Accounting. 1-6 credits, maximum 6. Prerequisite: 30 semester credit hours of accounting. An accounting policy course studying auditing, tax, systems, internal and external reporting and international aspects of business cases.

5503 Advanced Auditing. Prerequisite: 4503. Emphasis on auditing aspects of EDP, use of statistical sampling techniques in connection with audits of financial data, filings with the SEC and other regulatory agencies and other public accounting related topics.

5603 Accounting-based Information Systems. Prerequisite: 18 credit hours of accounting including 4203. Concepts underlying the design and use of an effective accounting information system.

5713 Seminar in International Accounting. Prerequisites: 3403 and consent of graduate coordinator. Accounting issues faced by multinational enterprises and internationally listed companies, including diversity in financial reporting and harmonization.

5803 Seminar in Cost-Managerial Accounting. Prerequisite: 18 credit hours of accounting. Intensive study of cost managerial accounting theory relating to problems of an advanced nature.

5900 Graduate Internship in Accounting. 1-3 credits, maximum 3. Prerequisites: admission to master's program; consent of graduate coordinator. Supervised internship in public accounting, industry, or not-for-profit organizations. May be counted as elective hours only.

5902 Research Report. Prerequisite: consent of supervising professor and coordinator of graduate programs in accounting. Methods used in research and report writing in accounting. Independent investigation and writing of an acceptable report on a topic approved by the student's supervising professor. Restricted to candidates seeking the M.S. in accounting degree and not available to students who have credit in 5000.

6000 Research and Thesis. 1-18 credits, maximum 36. Prerequisite: approval of advisory committee. For students working on the doctoral degree.

6110 Graduate Readings and Special Topics in Accounting. 1-3 credits, maximum 20. Prerequisite: consent of supervising professor and coordinator of graduate programs in accounting. Supervised reading of significant literature and study of special topics not covered in regularly scheduled accounting courses.

6703 Seminar in Accounting Research. Prerequisites: Doctoral student status and consent of coordinator of graduate programs in accounting. The theoretical literature and research methodology in accounting.

Aerospace Studies-Air Force (AEROS)

1111 The Air Force Today I. Lab 1. Doctrine, mission and organization of the United States Air Force through a study of the total force structure, strategic offensive and defensive forces, general purpose forces, and aerospace support forces.


2111 The Development of Air Power I. Lab 1. Growth and development of aerospace power through history beginning with first manned flights and continuing through World War II.
2111 The Development of Air Power II. Lab 1. Development and growth of aerospace power from the period following World War II through the Vietnam conflict; all measures of peaceful deployment of US air power.

3103 Air Force Leadership and Management I. Lab 1. The study of the fundamental leadership, management, and communication skills required of an Air Force junior officer. Basic managerial processes, management of forces in changing environments, organizational power, politics and managerial strategy and tactics.

3203 Air Force Leadership and Management II. Lab 1. The application of leadership, management, and communication skills required of an Air Force junior officer. The individual as a leader in the Air Force environment, individual motivational and behavioral processes, group dynamics, leader and managementethics, counseling and evaluating are discussed.

3504 Summer Training Unit. Prerequisite: consent of PAS. Students spend from two to three weeks on an Air Force base. Junior officer training, familiarization training in most functional aspects of a typical Air Force base. Includes career orientation, small arms firing, flight orientation rides, and survival training.

4103 (S)National Security Forces in Contemporary American Society I. Lab 1. The formulation, organization and context of national security; civil-military interaction and the evolution of strategy. Review of the military profession and officership.

4203 (S)National Security Forces in Contemporary American Society II. Lab 1. Strategy and management of conflict, implementation of national security policies. Review of societal issues in the military profession and the military justice system.

4402 Applied Officer Practicum. Prerequisite: consent of PAS. Students spend from two to three weeks on an Air Force base. Junior officer training, familiarization training in most functional aspects of a typical Air Force base. Includes career orientation, small arms firing, flight orientation rides, and survival training.

4300 Internships in Agricultural Communications. 1-6 credits, maximum 6. Prerequisites: consent of internship coordinator and adviser. Supervised work experience with approved employers in agricultural communications including agricultural publications, radio stations, television stations, public relations offices, advertising firms, government offices, and other related opportunities. Presentation required following the internship.

4413 Agricultural Communications Product Development. Lab 4. Prerequisites: JB 2393; senior standing in instructor. The development of agricultural communications projects with focus in either broadcast or print media. Practical application of writing, editing and design skills as well as software applications.

4990 Problems in Agricultural Communications. 1-6 credits, maximum 6. Prerequisite: consent of instructor. Small group and individual study and research problems relating to communications within the agricultural sector and from the agricultural sector to other constituencies.

Agricultural Economics (AGEC)

1114 (S)Introduction to Agricultural Economics. 3 credits. Economic theory of production, marketing and consumption of agricultural products. The role and structure of agriculture in the American economy. Policies to achieve efficiency and welfare goals in agriculture. No general education credit for students also taking ECON 1115 or ECON 2103.

390 Internship in Agricultural Economics. 1-6 credits, maximum 6. Prerequisite: approval of internship committee and adviser. Supervised work experience with approved public and private employers in agricultural economics including banks, farm credit services, agriculture chemical firms, Soil Conservation Service, congressional offices and other opportunities. Credit will not substitute for required courses. Graded on pass-fail basis.

3203 Agricultural Price Analysis. Prerequisites: 1114, 3213 or AG 2112; MATH 1513. Economic theory, statistics and data combined to describe, understand and forecast agricultural price relationships and variation. Quantitative techniques developed to determine the factors causing price variation and to measure trend, cyclical, seasonal and random price variation.

3213 (A)Quantitative Methods in Agricultural Economics. Lab 2. Prerequisites: 1114, MATH 1513, and MSIS 2103, AG 2112 or equivalent. Includes, graphics, budgeting, discounting, basic statistical measures, use of microcomputers, and price analysis. Basic background methods for some courses involving analysis.

3303* (S)Agricultural Marketing. Prerequisites: 1114 or ECON 2103. The agricultural marketing system, its importance to the economy and the role of the individual firm manager. Futures markets, hedging, and the use of decision aids.

3313* Agribusiness Management. Prerequisites: 1114 or ECON 2103. Financial analysis, production and statistical methods and their practical application to the successful management of the farm or ranch and other agricultural businesses.

3413 Farm and Ranch Management I. Lab 2. Prerequisites: 1114, MATH 1513, and MSIS 2103. AG 2112 or equivalent. Production planning with budgeting, financial records and income tax management for the individual farm-ranch business.

3503* (S)Natural Resource Economics. Prerequisite: 1114 or ECON 2103. Framework for analyzing natural resource management decisions. Applications of microeconomic theory to the management of soil, water and other resources, with emphasis on the institutions having an impact on management opportunities. Supply of and demand for natural resources, resource allocation over time, rights of ownership, and public issues of taxation, police power and eminent domain.

3603* Agricultural Finance. Prerequisites: 3313 or 3413, ACCTG 2103. Farm financial management; preparation and analysis of net worth, cash flow and income statements, including microcomputer applications; financial intermediaries; serving agriculture; procedures for evaluating investments; alternative means of acquiring control of farm resources.

3990 Special Problems in Agricultural Economics. 1-3 credits, maximum 3. Directed study of selected agricultural economics topics.

4313* Agricultural Marketing and Prices. Prerequisites: 3203, 3213 and 3303. Agricultural marketing, with emphasis on system-wide approaches. Economic tools and techniques for making decisions.

4323* Applied Agribusiness Management. Prerequisites: 3313 or 3413; 3603 or FIN 3113; 3303 or MKTG 2123; 4413 or BUSL 3213; ECON 3023 or 3113. Agricultural decision theory in the uncertain operating environment of agricultural firms including cooperatives. Planning, organizing, implementing, coordinating, and controlling problems associated with establishing an agribusiness, achieving firm growth, and operating the firm through time. Partial budgeting, regression, linear programming, and simulation as used by managers to analyze the interaction of resources, prices, and production alternatives in determining the optimal business plan.

4343* International Agricultural Markets, Trade and Development. Prerequisites: 2103 and 3303. International trade of agricultural products with emphasis on theory of trade and monetary flows, national trade policies and world market structures for agricultural products. Impacts of trade on the domestic agricultural sector and the role of trade in agricultural economics.

4403* Farm and Ranch Management II. Prerequisites: 3603 and MATH 1513. Production planning with linear programming and other tools and methods of planning under uncertainty; acquisition of resources and the use of information systems in managing the individual farm-ranch business.

4413* Agricultural Law. Prerequisites: 1114 and junior standing. Survey of law with emphasis on agricultural problems and applications. Contract law, tort law, property law, real estate transactions, oil and gas leases, business organization, estate planning and credit.

4503* Environmental Economics and Resource Development. Prerequisite: 3503 or ECON 3113 or consent of instructor. Economic, social and political factors relating to conservation, natural resource development and environmental quality. Valuation of priced and non-priced natural and environmental resources. Analysis of environmental and natural resource policy and the role of public and private agencies in conservation and development.

4513* Farm Appraisal. Lab 2. Prerequisite: 3413. Estimating the market value of agricultural real estate using the three approaches to value. Determining the feasibility and profitability of land purchases.

4703* (S)American Agricultural Policy. Prerequisites: 1114 and upper-division standing. Economic characteristics and problems of agriculture; evolution and significance of programs and policies.

4723* (S)Rural Economic Development. Prerequisite: 1114. Concepts and theories of regional and community economics, including input-output, economic base, simulation, budget location, and routing. Oklahoma applications.

4902* Agricultural Economics Seminar. Prerequisite: senior standing in agricultural economics. Contemporary problems in agricultural economics; career exploration; agriculture in the economics of the nation and the world.

4911* Agricultural Economics Seminar. Prerequisite: senior standing in agricultural economics. Contemporary problems in agricultural economics; agriculture in the economics of the nation and the world. Individual seminar reports and group discussion of reports.

4990* Problems of Agricultural Economics. 1-6 credits, maximum 6. Open to students with consent of instructor only. Research on special problems in agricultural economics.

5000* Thesis or Report in Agricultural Economics. 1-6 credits, maximum 6. For students working for a M.S. degree in agricultural economics. Independent research and thesis under the direction and supervision of a major professor.

5010* Professional Experience in Agricultural Economics. 1-6 credits, maximum 6. Prerequisites: approval of internship committee and adviser. Supervised professional experience with approved public and private employers in agricultural economics including banks, production credit associations, federal land banks, soil conservation service, and other agricultural related firms. Credit will not substitute for required courses. Designed for Master of Agriculture program.

5101* Research Methodology. The philosophical bases for research methods used in agricultural economics. Alternative research methods compared. Alternative approaches to planning, managing and performing research.

5103* Mathematical Economics. Prerequisites: 4503 or consent of instructor. Elementary presentation of linear and nonlinear programming techniques to agricultural problems.

5203* Advanced Agricultural Prices. Prerequisite: 5103, STAT 4043. Demand and price structures, price discovery, time series and agricultural price research methods.

5213* Econometric Methods. Prerequisites: 5103 and ECON 4213 or STAT 4043. Application of econometric techniques to agricultural economic problems, theory and estimation of structural economic parameters.

5303* Agricultural Market Policy and Organization. Marketing firm decisions; structure, conduct and performance of agricultural industries; interregional trade theory; and government policies that influence decisions.

5403* Production Economics. Prerequisite: 5103. Analysis of micro static production economics problems: factor-product, factor-factor and product-product relationships; functional forms for technical unit and aggregate production functions; maximizing and minimizing choice rules; firm cost structure; scale relationships.


5603* Advanced Agricultural Finance. Prerequisite: 3603. Financial structure of agriculture, firm financial planning and management, financial intermediation in agriculture and agricultural finance in developing countries.

5703* Economics of Agriculture and Food Policy. Prerequisites: 4703 and 5103. Application of welfare criteria and economic analysis to agricultural, food and rural development problems and policies.

5713* Rural Regional Analysis. Prerequisite: 5103. Concepts of market and nonmarket based rural welfare; theories of regional growth as applied to rural areas; methods of regional analysis including computable general equilibrium; analysis of policies and programs for improving welfare of rural population groups.

5723* Rural Development Planning. Economics of market based planning for developing and developed countries; methods of incentive planning with emphasis on agricultural and rural project analysis; methods of agricultural and rural sector incentive planning with emphasis on general equilibrium results.

5733* International Agricultural Policy and Development. Review and evaluation of agricultural trade and development policies emphasizing developing countries. Objectives, constraints and instruments of national food and agricultural trade policy in an interdependent world. Efficiency, stability, distribution, equity and market structure in commodity trade.

5990* Advanced Studies. 1-6 credits, maximum 6. Open to graduate students with consent of instructor only. Investigation in designated areas of agricultural economics.

6000* Research Problems. 1-15 credits, maximum 24. Open to students pursuing graduate study in agricultural economics beyond the requirements for a master's degree. Independent research and thesis under the direction and supervision of a major professor.

6102* Teaching Practicum in Agricultural Economics. Lab 4. Prerequisites: two semesters of graduate study in agricultural economics. Philosophies of resident and nonresident teaching, general tasks performed, review, evaluation and lecture organization, preparation and presentation.

6103* Advanced Applications of Mathematical Programming. Prerequisites: 5103, 5113. General presentation of nonlinear optimization theory followed by applications of nonlinear programming, nonparametric production functions, neural networks, and discrete stochastic programming. Required use of the GAMS/MINOCS optimization software package.

6113* Systems Analysis for Agriculture. Prerequisites: 5103, STAT 4043, knowledge of BASIC or FORTRAN. Methodology of systems modeling developed. Problem definition, design of abstract models and the simulation of dynamic agricultural systems with time delays, storage, feedback and stochastic variation. Theory and application of modeling with differential equations and optimal control procedures.
6213* Advanced Econometrics. Prerequisites: 5213 and MATH 3013. General presentation of large sample theory followed by applications to general linear models, general nonlinear models, simultaneous equation models, time series models, and probability models.

6300* Agricultural Marketing Seminar. 1-6 credits, maximum 6. Prerequisite: consent of instructor. Current developments in theory, techniques for evaluating marketing behavior, market legislation and market development.

6303* Advanced Agricultural Marketing. Prerequisite: 5303. Marketing theory, market structure and performance, governmental regulation and policy, and bargaining in agricultural markets.

6400* Seminar in Farm Management and Production Economics. 1-6 credits, maximum 6. Prerequisite: 5403 or consent of instructor. Scientific research methodology applied to problems of resource efficiency.

6403* Advanced Production Economics. Prerequisite: 5403. Micro dynamic production economic problems under risky conditions; recent developments in agricultural risk management, measuring utility, stochastic efficiency and decision theory; potential application of inventory, replacement, simulation, game theoretic, Bayesian and nonlinear programming models in production economics research.

6700* Agricultural Policy and Rural Resource Development Seminar. 1-2 credits, maximum 2. Frontier issues in agricultural policy, natural resources and rural development.

Agricultural Education (AGED)

3101 Laboratory and Clinical Experiences in Agricultural Education. Preprofessional clinical experiences in agricultural education career areas. Requirements for admission to teacher education, student teaching and internships. Planning courses and experiences to enhance technical skills.

3103 Foundations and Philosophies of Teaching Agricultural Education. Lab 2. Prerequisite: 21 semester credit hours of agriculture with a 2.50 GPA. Roles and responsibilities of the agricultural education teacher; types of program offerings; steps of the teaching-learning process; place of agricultural education in relation to other educational programs in school systems.

3200* Planning the Community Program in Agricultural Education. Lab 2. Prerequisite: 3103. Determining resources and trends of local communities with respect to agricultural production and business. Emphasis on agricultural education program policies, FFA chapter advisement, planning and managing the instructional program, identification and completion of records and reports required of a teacher of agricultural education in Oklahoma.

3303* Leadership Skills for Agricultural Organizations. Identification of styles and roles of leadership; development of leadership techniques and skills required in working with organizations and youth groups; dynamics of group action, methods of resolving conflict, communicating, of guiding, and of evaluating; ethical considerations for leaders.

3403 Programs and Personnel of the Cooperative Extension Service. Enabling legislation, program areas, teaching methods used, staff training and program administration. Special emphasis on entry-level positions and responsibilities of each.

4103* Methods and Skills of Teaching and Management in Agricultural Education. Lab 2. Prerequisite: junior standing in the College of Agriculture, full admission to the University Teacher Education program and concurrent enrollment in 4200. Facets of the teaching-learning process including teaching methods, basic teaching skills, proper classroom management techniques and motivational techniques and ideas. Preparation for student teaching which is to be completed during the same semester.

4200 Student Teaching in Agricultural Education. 10 credits. Lab 30. Prerequisites: 3203, junior standing in the College of Agriculture, full admission to the University Teacher Education program and concurrent enrollment in 4203. Full-time directed experience in an approved agricultural education department. Applications of methods and skills in agricultural education as related to selecting, adapting, utilizing, evaluating curriculum materials and experiences to meet educational goals and facilitate learning for individual students. Roles, responsibilities, interactions, of school personnel and parents. Study of professional education groups and organization and operation of school systems. Graded on a pass-fail basis.

4203* Nonformal Educational Methods in Agriculture. Prerequisite: junior standing. Preparation of qualified areas which have career goals directed toward service, management, communications, production and education outside the public school setting. Personal and employment skills essential for success in supervised internships in related career areas. Public relations, presentation skills in a nonformal education setting, community involvement, personal finance, development of the resume, interview and functioning as a professional in a supervised internship environment. Same course as AGCOM 4203.

4300 Agricultural Education Internship. 3-6 credits, maximum 6. Prerequisites: professional course sequence and consent of advisor/ internship coordinator. Supervised full-time internships in approved county extension offices, agricultural businesses or government agencies, for students preparing career paths in agricultural education. Not intended for teacher certification. Maximum credit requires a 12-week internship in addition to a report and final seminar.

4713 (Ultrasound Programs in Agricultural Education and Extension. World hunger and its root causes. The function of international agencies, organizations, foundation and churches in improving the quality of life for people of the developing nations. Roles of agricultural education and extension at all levels for enhancing the effectiveness of indigenous programs of rural development and adult education.

4990* Seminar and Problems in Agricultural Education. 1-3 credits, maximum 6. Small group and/or individual study and research in problems relating to programs of occupational education in agriculture.

5000* Research and Seminar. 1-6 credits, maximum 6. Independent research and thesis under the direction and supervision of a major professor.

5100* Organizing Curriculum and Programs of Agricultural Education. 1-3 credits, maximum 6. Studies of student and community agricultural needs as bases for localizing, personalizing and utilizing a basic core curriculum and other components essential to effective local agricultural education programs.

5123* Adult Programs in Agricultural and Extension Education. Determining adult needs, priorities, participation in agricultural activities and adoption of new ideas and practices. Designing, organizing, conducting, and evaluating adult education programs in agricultural and extension education.

5500* Directing Programs of Supervised Experience. 1-3 credits, maximum 6. Prerequisite: consent of instructor. Determining the supervised training needs and opportunities of individual students. Planning for supervision of agricultural education training programs and 4-H club projects. Analysis of training opportunities in production agriculture, agricultural businesses and individual career development.

5752* Leadership in Agriculture. Lab 2. Concepts, principles and philosophies of leadership applied to agricultural contexts. Importance of traits, perceptions and behaviors to success of agricultural professionals in leadership roles. Dimensions and style of leadership for varying situations.

5823* Advanced Methods of Teaching Agriculture. Advanced concepts and methods relevant for both formal and informal presentations. Effects methods may have on individuals involved in the learning experience. Demonstrations of proficiency in use of various advanced methodologies, technologies and concepts.

5863* Methods of Technological Change. Processes by which professional change agents influence the introduction, adoption, and diffusion of technological change. Applicable to people who work closely with people in formal and non-formal educational settings.

5940* Styles of Leadership for Agricultural Education. 1-3 credits, maximum 8. Study of what leadership is and how current leadership styles have an impact on the success of present day agricultural organizations. Utilization of extensive bank of videotapes of current leaders as reference base for study.

5980* Research Design in Occupational Education. 1-3 credits, maximum 6. Research tools as aids in decision making. Literature, logic, survey techniques, research design, statistics and the computer are emphasized. Studies in vocational and technical education are reviewed and proposals for graduate research papers prepared.

5990* Problems in Agricultural and Extension Education. 1-3 credits, maximum 8. Securing and analyzing data related to special problems or investigation in designated areas of agricultural education.
2112 Microcomputer Techniques in Agriculture.
Lab 2. Operation and capabilities of microcomputers in agricultural applications. Simple programming, data analysis, graphical display, spread sheets, word processing.

3010 Internships in Agriculture. 1-3 credits, maximum 12. Supervised internships with business, industry or governmental agencies including cooperating veterinarians. Graded on pass-fail basis.

3090 Study Abroad. 12-18 credits, maximum 36. Prerequisites: consent of the Office of International Programs, major adviser, and assistant or associate dean of the College. Participation in a formal study abroad program spending a semester or year in full-time enrollment at a university outside of the U.S.

4010 Honors Seminar. 1-6 credits, maximum 6. Role of agriculture in society and adjustments to change in the economy.

Agronomy (AGRON)

1213 Crop Production. Soils and cropping practices necessary for future crop production systems. Production of modern crops and their management, as well as the adaptation of major agronomic crops to varying edaphic and climatic conditions. Importance of crop production to the producer and the consumer.

2012 Crop Production Laboratory. Lab 2. Prerequisite: 1213. Hands-on experiences with crop plants. Identification of crops in seed, seeding, mature stages; crop morphology, seed quality, grain grading, growth stages of crops.

2041 Agronomic Orientation. Prerequisite: sophomore standing in agronomy. Development and improvement of written and oral communicative skills; orientation to agronomic research and extension activities; academic requirements and procedures. Graded on pass-fail basis.

2124 (N)Fundamentals of Soil Science. Lab 2. Prerequisite: CHEM 2115. Principal physical, chemical and biological properties of the soil related to plant growth; soil testing and fertilizer usage; formation and classification of soils, rural and urban land use.

3111 Weed Control Laboratory. Lab 2. Prerequisites: 1213 and 3112 (or concurrent enrollment). Identification of common weeds, principles and practices of herbicide application, and application equipment, handling and proper use of herbicides.

3112 Principles of Weed Control. Prerequisite: 1213. Weed control principles and practices included in cultural and chemical weed control. Current weed control practices in crops, rangeland and crop situations.

3213 (N)Pasture Management and Forage Production. Prerequisites: 1213, 2124, and MATH 1213. Pasture systems, livestock management and forage crop production for maximum economic production of introduced forage species.

3433* (N)Soil Genesis, Morphology, and Classification. Lab 3. Prerequisite: 2124. Basic principles dealing with how and why soils differ, their descriptions, geographic distributions and modern classification. Soil genesis and classification, a prerequisite to sound land use planning and land management.

3554* (N)Plant Genetics. Lab 2. Prerequisite: BIOL 1304. Basic principles of heredity. Interrelations between genetics, biochemistry and molecular genetics emphasized. Mendelian genetics, cytogenetics, mutations, gene regulation and genetic engineering.

3781 Market Grain Technology. Lab 2. Prerequisite: 1213. Quality characteristics of grain for commercial use; identification of different market classes of grain, quality factors, and admixtures affecting the commercial grade; practice in grading grain using the federal grain standards.

3796 Seed and Plant Identification. 1 credit, maximum 2. Prerequisite: 1213. Identification and classification of agronomically important crop and weed species from seed and from seedling, vegetative, flowering or mature plants.

3893* (N) Soil Chemistry and Environmental Quality. Prerequisite: 2124. Soil chemical processes that affect plant nutrition, nutrient cycling, and fate of environmental pollutants. Chemistry of soil surfaces and soil solution, of important soil processes, and of agronomic and environmental topics such as water quality, soil acidity, pesticide residues, environmental chemistry and risk assessment, soil remediation and contaminant bioavailability, land application of municipal and industrial wastes, long-term reactions and environmental fate.

3913* (N)Principles of Rangeland Management. Prerequisites: 1213 or BIOL 1304, and AGRON 2124. Characteristics of rangelands; range regions of the U.S.; rangeland plant response to the environment; the rangeland ecosystem; ecological basis of rangeland management; manipulating rangeland vegetation; grazing management; managing range- lands for wildlife and other values. Field trips required.

4080 Agronomy Internship. 1-6 credits, maximum 6. Prerequisite: consent of instructor. Internship must be at an approved agribusiness unit or other agency serving agronomic agriculture. Requires a final conference with on-campus adviser and a written report. Graded on a pass-fail basis.

4113* Advanced Weed Science. Prerequisites: 3111 and 3112. Integrated approach for weed management. Weed life cycles and biology, weed crop interactions, herbicide families and their characteristics, and finally a systematic and integrated weed management system. Methods of conducting and interpreting research results in appropriate topics.

4123* Crop Physiology. Prerequisites: 1213 and BOT 3463. Application of basic physiological concepts of growth and cultural management and underlying crop production; environmental and genetic effects on growth of crop plants. Plant ecosystems at the community level relative to optimum yields and quality.
4120* Describing and Interpreting Soils. 1 credit, maximum 3. Lab 3. Prerequisite: 2124. Describe and classify soil properties in the field and interpret for suitable agriculture, urban, and other land uses.

4234* Soil Nutrient Management. Lab 2. Prerequisite: 2124. Soil fertility and use of fertilizer materials for conservation, maintenance, and improvement of soil productivity and to minimize environmental concerns.

4353* Plant Breeding. Prerequisite: 3554 or equivalent. Basic principles dealing with the improvement of plants through application of genetic principles.

4363* Environmental Soil Science. Prerequisites: BIOI 1304 and CHEM 1215. Presentations of soil processes and interpretation for natural resource management; land reclamation; identification of wetlands; oil and soil damages; impact of fertilizer, pesticide and other agricultural chemicals on soil and water quality; water resources; long-term soil erosion and landscape formation; transformations of manure, sewage sludge and other organic by-products.


4470* Problems and Special Study. 1-3 credits, maximum 12. Lab 1-3. Prerequisite: consent of the instructor. Problems in crop and soil science including range and turf, plant breeding and genetics, crop management and physiology, weed control, soil chemistry and fertility, soil physics, soil biology, soil conservation and soil morphology.

4563* Dynamics of Wetland, Forest and Rangeland Soils. Prerequisite: 2124. Dynamics of soils that receive minimal or no production input. Identification of wetland soils and the biogeochemical reactions occurring in wetland soil environments. Nutrient cycling, physical, chemical and biological properties of forest and rangeland soil systems.

4571 Senior Seminar. Prerequisite: senior standing in agronomy. Career opportunities (talks and field trips); preparation of resumes and interviews. Graded on a pass-fail basis.

4673* Grain Crops. Lab 2. Prerequisite: 1213. Production, distribution, classification, utilization and improvement of the major cereal crops.

4683* (N)Physical Properties of Soils. Prerequisites: 2124 and PHYS 1114. Soil physical properties and processes, and their influence on plant growth.

4772* Oilsseed, Pulse and Mucilage Crops. Prerequisite: 1213. Production, utilization and improvement of oilseed, pulse and mucilage crops with special emphasis on peanuts and soybeans.

4783* Cotton Production. Prerequisite: 1213. Production, utilization and improvement of cotton. Several other agronomic fiber crops briefly discussed.

4863* Soil Remediation and Waste Management. Prerequisite: 2124. Soil productivity as affected by contamination and land application of animal waste. Characterization of contaminated sites and remediation methodology for inorganic and organic constituents focusing on soil biological activity. Characterization, nutrient cycling and best management practices for animal waste products.

4934* Landscape and Community Ecology of Rangelands. Lab 2. Prerequisite: 3913. Ecological relationships between climate, soils, plants, and animals of rangeland ecosystems. Rangeland classification, succession, biodiversity, productivity, and sustainability at community and landscape levels. Two Saturday field trips would be required, as part of the lab, at an additional cost to student.

4954* Rangeland Vegetation Management. Lab 3. Prerequisite: 3913. Methods of managing prairies, shrubland and forest vegetation for livestock and wildlife. Integrated application of prescribed fire, grazing management, herbicides, and mechanical treatments. Field trips and reports in laboratory.


4973 Rangeland Resources Planning. Lab 3. Prerequisites: 4954, ANSI 3612. Inventory of ranch resources, survey and evaluation of ranch practices, and economic analysis. Development of a comprehensive ranch management plan. Managing rangeland and ranch resources in a social context. Written and oral reports. Field trips required. Same course as ANSI 4973.

4990* Special Topics in Range Management. 1-3 credits, maximum 3. Prerequisite: 15 hours of range management. Advanced topics and new developments in range management.

5000* Master’s Thesis. 1-6 credits, 6 maximum total credits under Plan I, and 3 total credits under Plan II. Prerequisite: consent of adviser in agronomy. Research planned, conducted and reported in consultation with a major professor.

5020* Graduate Seminar. 1 credit, maximum per semester 1 credit on M.S. program and 2 credits on a Ph.D. program required. Prerequisite: graduate standing. Philosophy of research, methods of research, or interpretation of research in agronomy.

5110* Problems in Agronomy. 1-4 credits, maximum 6. Prerequisite: consent of instructor. Supervised study of special problems and topics in crop and soil science not covered in other graduate courses in agronomy.

5193* Spatial and Non-spatial Data Base Management of Natural Resources. Prerequisites: one course in statistics and programming experience. Methods of acquiring, managing and analyzing spatial data using geographic information systems. Management of non-spatial data using relational database managers. Development of applications using these tools for evaluating and managing natural resources.

5224* Soil Chemical Processes and Impact on Environmental Quality. Lab 3. Prerequisites: 3893 and CHEM 2113 or CHEM 3324 or equivalent. Modern physical, chemical and biological processes in soils that impact biogeochemical cycles and environmental quality. Modern theory of soil solution thermodynamics, kinetics of soil chemical processes, soil colloid chemistry, and soil geochemistry. Environmental soil science applications including environmental fate of toxic substances and remediation of contaminated soil. Laboratory component provides hands-on experience with techniques used for soil chemical investigations and with chemical speciation computer models.

5230 Research. 1-6 credits, maximum 8 (not to exceed 4 credit hours of either crops or soils). Prerequisite: consent of faculty member who will supervise the research.


5353* Advanced Soil Genesis and Classification. Lab 2. Prerequisite: 3433. Processes and factors of soil formation. Comparison of world soil morphology and classification systems.

5403* Physiological Action of Herbicides. Prerequisite: BOT 3463. The mode of action, uptake, and translocation, and metabolism of herbicides in crops and weeds.

5414* Plant Breeding Theory, Methods and Strategies. Prerequisites: 3554, 4353 and STAT 5013, or consent of instructor. Development and application of statistical and genetic principles in breeding. Emphasis on soybeans and cross-pollinated crops; emphasis on selection methods pertinent to plant improvement; examination of philosophies and strategies employed in private and public plant breeding programs.

5433* Biotechnology in Plant Improvement. Prerequisites: 3554, 4353, and BIOL 3014 or consent of instructor. Use of emerging technologies in cell biology and molecular genetics to identify and manipulate plants. Emphasis on genetic systems which influence productivity and end-product utilization. The integration of biotechnology into plant breeding programs and issues concerning the release of genetically engineered organisms into the environment.

5443* Advanced Genetics. Prerequisites: 3554 or equivalent; BIOCH 3543 or 3653. Concepts of eukaryotic genetics with emphasis on classical, molecular and quantitative genetics.

5452* Cytogenetics. Prerequisite: 5443 or concurrent enrollment in BOT 5232. Behavior of chromosomes, cellular organelles and cyttoplasm in relation to genetic behavior.
5583* Soil Physics. Prerequisites: MATH 2265 or 2365, PHYSG 1214. Fluid flow through saturated and unsaturated soils; temperature changes and heat flow in soil; soil strength and deformation as it applies to plant response.

5613* Laboratory Methods of Soil, Plant and Environmental Analysis. Lab 3. Prerequisites: CHEM 2122, 3324 or equivalent. Theory, principles and techniques of laboratory methods used for chemical analysis of soil, plant material and environmental samples. Modern analytical methods used for soil testing of plant available nutrients, determination of environmental contaminants, and chemical characterization of soil. Operational theory of applicable instruments including atomic spectrophotometry (CP, AA, UV-VIS, XRF), chromatographic (GC, GCMS, HPLC, IC), and potentiometric methods. Laboratory component hands-on experience of chemical methods.

5760* Special Topics in Rangeland Science. 2-4 credits, maximum 4. Prerequisite: consent of instructor. Selected topics in rangeland research methods or other rangeland topics.

5813* Soil-Plant Nutrient Cycling and Environmental Quality. Prerequisite: 4234 or equivalent. Theory and application of soil plant relationships in production and nonproduction environments. Nutrient cycling, mass balance, soil nutrient supply and plant response. Methods to reduce the impact of nutrients on environmental quality, soil-plant buffering and response models.

5863* Management of Agricultural Research Systems. Organization, management and budgeting agricultural research systems with emphasis on developing countries. Analysis of research and training priorities, budgeting, staffing and management of projects.

5954* Rangeland Vegetation Management. Lab 3. Prerequisite: 3913. Methods of managing prairie, shrubland and forest vegetation for livestock and wildlife. Integrated application of prescribed fire, grazing management, herbicides and mechanical treatments. Field trips and related laboratory. No credit for students with credit in 4954.

5973* Rangeland Resources Planning. Lab 3. Prerequisites: 4954, ANSI 3612. Detailed analysis of case studies of rangeland and ranch management problems. Resource inventory, evaluation of ranch operations, and economic analysis. Integrated planning for representative ranch firms. Written and oral reports. Field trips required. No credit for students with credit in 4973.

5990* Soil Physical Analyses. 1-2 credits, maximum 2. Lab 1 or 2. Prerequisite: 4683. Principles and techniques.

6000* Doctoral Thesis. 1-6 credits, maximum 20. Independent research to be conducted and reported with the supervision of a major professor as partial requirement for the Ph.D. degree.

6010* Advanced Topics and Conference in Agronomy. 1-6 credits, maximum 12. Prerequisite: M.S. graduate study. Advanced topics in areas of agronomic interest. A reading and conference course designed to acquaint the advanced student with fields not covered in other courses in agronomy.

6410* Topics in Plant Breeding and Genetics. 1-3 credits, maximum 6. Prerequisite: consent of instructor. Selected topics in the statistical and experimental analysis of quantitative traits, evolutionary development of domesticated plants and animals, and techniques used in breeding crop plants.

Animal Science (ANSI)

1124 Introduction to the Animal Sciences. Lab 2. Species adaptability, product standards and requirements, areas and types of production, processing and distribution of products, includes meat animals, dairy and poultry.

1133 Fundamentals of Food Science. Food industry from producer to consumer and the current U.S. and world food situations.

1223 Exploring the Science of Animal Agriculture. Lab 2. An introductory course describing the principles, methods, applications and value of biological research with farm animals. Course also offered for honors credit.


3012 Beef Production. Lab 2. Prerequisite: 1124 and 2123. Modern production and management practices for beef cattle operations. No credit for animal science students with credit in 4612, 4621, 4631 or 4641.

3021 Sheep Production. Lab 2. Prerequisite: 1124 and 2123. Modern production and management practices for sheep operations. No credit for animal science students with credit in 4542.

3031 Swine Production. Lab 2. Prerequisite: 1124 and 2123. Modern production and management practices for swine operations. No credit for animal science students with credit in 4643.

3033 Meat Technology. Lab 3. The basic characteristics of meat and meat products as they relate to quality. Product identification, economy, nutrition, preparation of animal science and their associated career opportunities and obligations.

3110 Undergraduate Seminar. Prerequisite: 60 credit hours and animal science major status. An in-depth consideration of the various areas of specialization in the field of animal science and their associated career opportunities and obligations.

3113* Quality Control. Lab 2. Prerequisite: organic chemistry and MICRO 2124 or equivalent. Application of the principles of quality control in food processing operations to maintain the desired level of quality.

3154* Food Microbiology. Lab 2. Prerequisites: MICRO 2124 and organic chemistry. Relationship of microorganisms to food manufacture and preservation, to food spoilage and microbial food poisoning and to various aspects of primary food production. Same course as MICRO 3154.

3182 Meat Grading and Selection. Lab 4. Prerequisite: 2253. Classifying and grading carcasses and cuts of beef, pork and lamb; factors influencing quality and value.


3301 Food Sanitation Laboratory. Lab 2. Prerequisites: 3302 or concurrent enrollment, and MICRO 2124. Exercises to illustrate qualitative and quantitative methods of evaluating foods, food ingredients or processing procedures and equipment for proper attainment of sanitation.

3302 Food Sanitation. Prerequisite: organic chemistry. Principles of sanitation in food processing, distribution, preparation and service. Emphasis on control of food spoilage and food-borne illnesses.

3333* Meat Science. Lab 3. Prerequisites: 2253, CHEM 1215 or equivalent. Analomical and biochemical characteristics of meat animals studied. The application of scientific principles to the processing and economical utilization of meat animals, as well as in the manufacture of meat products, emphasized in the laboratory.

3373 (N) Food Chemistry. Lab 2. Prerequisite: 3343 or organic chemistry. Basic composition, structure and properties of foods and the chemical changes or interactions that occur during processing and handling.

3422 Horse Management and Production. Nutrition, feeding, reproduction and physical conditioning of horses. Current management concepts as they apply to the health and well being of horses.

3423* (N) Animal Genetics. Prerequisite: introductory biology. The basic principles of heredity including: kinds of gene action, random segregation, independent assortment, physical and chemical basis of heredity, mutations, sex-linkage, chromosome mapping, multiple alleles and chromosomal abnormalities. Also a brief introduction to quantitative inheritance and population genetics.

3433* Animal Breeding. Lab 2. Prerequisite: 3423. The application of genetic principles to livestock improvement; study of the genetic basis of selection and systems of mating; and the development of breeding programs based on principles of population genetics.

Marketing and Utilization of Milk. Lab 2. Prerequisites: 1124 and AGEC 1114. Marketing and utilization of milk, pricing, quality controls, procurement, processing and utilization, product distribution and factors affecting consumption.

Pet and Companion Animal Management. Current concepts and management principles related to pet and companion animal species and their roles in society. Discussion of the human-animal bond, service animals, kennel and cattery management, anatomy, internal and external parasites, toxins, restraint and handling, training, reproduction, nutrition, genetics and breeding.

Principles of Animal Nutrition. Prerequisite: CHEM 1215 or equivalent. Basic principles of animal nutrition including digestion, absorption and metabolism of the various food nutrients; characteristics of the nutrients; measurement of body needs; ration formulation.

Processing Dairy Foods. Lab 3. Prerequisites: MICRO 2124 and organic chemistry. Theory and practice in formulation and processing; butter and margarine, cottage cheese, blue and processed cheeses; evaporated and sweetened condensed milk; ice cream; ice milk and other frozen desserts.

Rangeland and Pasture Utilization. Lab 2. Prerequisite: AGRON 3213 or 3913. Integration of livestock production with rangeland and pasture management practices.

Applied Animal Nutrition. Lab 2. Prerequisite: 3543. Composition, characteristics and nutritive value of feeds and ration additives; qualitative and quantitative nutrient requirements of each of the classes of livestock; formulation of rations for each of the classes of livestock.

Basic Nutrition for Pets. Nutrients, nutrient requirements, feeding practices, food sources and diet management for pets and companion animals as well as exotic animals and birds.

Analysis of Food Products. Lab 2. Prerequisite: organic chemistry. Application of quantitative chemical and physical methods of analysis to the examination of foods.

Agricultural Animals of the World. The production and utilization of agricultural animals by human societies.

Poultry Science. Lab 2. Prerequisites: 1124, and 2125 or 3543. The relationship of the biological concepts and functions of poultry to management practices, incubation procedures, and economic factors utilized by poultrymen in biological concepts and functions of poultry to Poultry Science.

Horse Science. Lab 2. Prerequisites: 3433, 3443 and 3653. Current concepts and production principles related to the horse industry including nutrition, reproduction, herd health, functional anatomy and implications, social behavior, and applying principles of psychology in horse management and training.


Sheep Science. Lab 2. Prerequisites: 3433, 3443 and 3653. Breeding, feeding, management and marketing of commercial and purebred sheep.

Cow-Calf and Purebred Beef Cattle Management. Lab 2. Prerequisites: 3433, 3443, and 3653. Application of scientific knowledge, management principles and research advances to modern commercial cow-calf and purebred beef cattle production.

Stocker and Feedlot Cattle Management. Lab 2. Prerequisites: 3612, 3653. Application of scientific knowledge, management principles and research advances to modern stocker and feedlot cattle operations.

Swine Science. Lab 2. Prerequisites: 3433, 3443 and 3653. Application of genetic, physiological, microbiological, nutritional and engineering principles to the efficient production of swine.

Livestock Sales Management. Lab 2. Prerequisite: 3433. Advertising of purebred livestock; performance data and breeding values in the merchandising of purebred livestock; photography and ad copy layout; conduct of an actual livestock auction, including animal selection, advertising, catalog and animal preparation, clerking, receipt of payments, sales budgets and transfer of registration papers.

Animal Growth and Performance. Prerequisite: an upper-division course in animal science. Physiological and endocrine factors affecting growth and performance of domestic animals.

Applications of Biotechnology in Animal Science. Lab 3. Prerequisites: 3423 and BIOCH 3653. Training in current biotechniques used in protein, hormone and molecular genetic research in food and animal science. Theory and applications of the various techniques.

Capstone for Animal Agriculture. Lab 2. Prerequisite: senior standing. Examination of the role of animal agriculture in society, the importance of research and current issues. Oral and written reports.

Special Problems. 1-6 credits, maximum 6. Prerequisite: consent of instructor. A detailed study of an assigned problem by a student wishing additional information on a special topic.

Animal or Food Industry Internship. 3-12 credits, maximum 12. Prerequisite: consent of instructor. Full-time internship at an approved production, processing or agribusiness unit or other agency serving animal agriculture. Maximum credit requires a six-month internship in addition to a report and final examination. Graded on a pass-fail basis.

Rangeland Resources Planning. Lab 3. Prerequisites: 3612 and AGRON 4554. Inventory or range resources, survey and evaluation of range resources, and range management. Development of a comprehensive ranch management plan. Managing rangeland and ranch resources in a social context. Written and oral reports. Field trips required. Same course as AGRON 4973.

Research and Thesis. 1-6 credits, maximum 6. Independent research planned, conducted and reported in consultation with a major professor.

Special Problems. 1-3 credits, maximum 6. Special problems in areas of animal science other than those covered by the individual graduate student as a part of his research and thesis program.

Seminar. 1 credit, maximum 3. A critical review and study of the literature; written and oral reports and discussion on select subjects.

Basic Reproductive Physiology. Prerequisite: ZOOL 3204. Female and male reproductive processes, the influences of environmental factors upon these processes and the application of reproductive physiology to animal production. Same course as VDSP 5413.

Special Topics in Food Science. 1-4 credits, maximum 4. Laboratory work in handling and/or consent of instructor. Advanced topics and new developments in food science especially with reference to foods of animal origin.

Advances in Meat Science. Prerequisites: BIOCH 4113 and ZOOL 3204 or equivalent. Development of muscle and its transformation to meat. Properties of meat and their influence on water-binding, pigment formation, texture and fiber characteristics.

Advanced Animal Breeding. Prerequisites: 3433 or equivalent and STAT 4013. Basic concepts of population genetics as related to theoretical animal breeding including heritabilities, genetic correlations, selection methods, inbreeding and heterosis.

Advanced Animal Nutrition. Lab 2. Prerequisite: 3653. Physiological aspects of digestion and absorption and content of livestock feeds and methods of analysis; methods of determining nutrient value of foods, nutritional energetics; nutrient requirements of different animals; and the application of current concepts in nutrition to formulation of rations and feeding program.

Rumenology. Prerequisite: 3653 or equivalent. Physiology of development of the rumen digestive tract; the nature of, and factors controlling, digestion and absorption from the tract to include the relative nature and roles of the rumen bacteria and protozoa.

Rumenology Laboratory. Lab 3. Prerequisite: 5742 or concurrent enrollment. Demonstration and practice of basic techniques used in nutritional and physiological research investigations with the ruminant animal including cannulations, passage measurements, microbiology and in vitro rumen fermentation.
Anthropology (ANTH)

2353 General Anthropology. Anthropology, emphasizing the study of human physical evolution (physical anthropology) and cultural evolution (archaeology).

3353* (S)Cultural Anthropology. Introduction to culture, various subdisciplines of cultural anthropology, anthropological concepts and capsule ethnographies of assorted ethnic groups.

3823 (S)North American Indian Cultures. Pre-contact and traditional subsistence patterns, social organization and ideology with emphasis on specific groups in each culture area.

4123* Archaeology of North America. Factors influencing the initial peopling of North America, the spread and diversification of hunting and gathering economies, the rise of agricultural systems and emergence of extensive and complex political units.

4633* (S)Racial and Cultural Minorities. Ethnic and racial groups in contemporary pluralistic society, including a cultural-historical perspective of their origins, social relations, value systems and goals.

4643* Women: A Cross-cultural Perspective. Compares the roles of women in different types of societies (hunting and gathering, horticultural, peasant and agricultural). Social, familial, economic and legal status of women in American society. Same course as SOC 4643.

4823* Contemporary Native Americans. Cultural adaptations of North American Indians within both contemporary 'traditional' communities and urban settings. Federal programs and current problems as they relate to the adaptational processes.

4863* (S)Comparative Cultures. Compares environments, economies, social and political organizations and other aspects of culture among selected literate and preliterate societies.

4990* Special Topics in Anthropology. 1-3 credits, maximum 6. Prerequisite: consent of instructor. Directed readings or research on significant topics in anthropology.

Applied Behavioral Studies in Education (ABSED)

1112 World of Work. Assists students in exploring career options through increased understanding of job market and expanded knowledge of occupational information. Includes a study of the decision-making process and a look at the present and future changing world of work.

3013 Leadership Concepts. Prerequisite: 12 hours completed course work. Increases undergraduate student competence through the study of leadership concepts. Stresses communications, decision-making, leadership styles and theories and group dynamics. Attempts integration of theoretical concept with reality of application within the university community.

3092 Student Development Training for Resident Assistants. Theories of student development. Topics include helping skills, community building, communication skills, and multicultural sensitivity. Application of theory to living groups.

3113 Psychological Foundations of Childhood. Prerequisite: PSYCH 1113. The child from conception to puberty with focus on educational implications of development in cognitive, affective and psychomotor domains.

3202 Education of Exceptional Learners. Learning characteristics, needs and programs of educating the exceptional learner in the public schools. Implications of the learning, environmental and cultural characteristics; planning and program assistance available for accommodating the exceptional learner in regular and special education programs; observation of exceptional learners.

3213 Psychology of Adolescence. Prerequisite: PSYCH 1113. The adolescent from pubescence to adulthood with focus on educational implications of development in cognitive, affective and psychomotor domain.

3240 Observation and Participation in Special Education. 1-3 credits, maximum 6. Lab 1-3 credits. Observation and participation of exceptional learners and the educational provisions for them. Graded on a pass-fail basis.

3413 Child and Adolescent Development. Prerequisite: PSYCH 1113. The person from conception through adolescence with focus on education implications of development in cognitive, affective, social, and physical domains.

3633 Assessment and Intervention for Exceptional Infants and Children-Birth to Age 6. Prerequisite: 3202. Assessment techniques and intervention strategies appropriate for exceptional infants and young children. Basic theories of development and research to support various intervention strategies and assessment techniques.

4052 Measurement and Evaluation in the School. Prerequisite: full admission to Teacher Education. Construction and selection of classroom tests. Contrasts between criterion-referenced and norm-referenced measurement strategies. Grading techniques, rudiments of standardized test selection and score interpretation and procedures to be used to summarize and analyze test results.

4063* Exploration of the Creative Experience. Prerequisite: senior standing. The creative experience in art (visual to performing), articulation (oratory to literature), thought (philosophy to psychology), business (practices to products), leisure (procreation to recreation). Western and Eastern viewpoints. Personal creative development focusing on an individual's creative expression and personal development in the arts.

4223 Human Learning in Educational Psychology. Prerequisites: PSYCH 1112, MATH 2413 and CIED 3283. Provides skills in the application of standardized and informal assessment information for educational planning. Includes analysis of commonly used achievement, perceptual, motor and language tests and behavioral analysis techniques.

4453* Educational Diagnosis and Remediation. Prerequisites: 4052, MATH 2413 and CIED 3283; an approved observation or field experience course, and for students pursuing teacher certification, full admission to Teacher Education required. Instructional psychology focusing on the study of teaching and learning theory as part of an instructional program to deal with individual, cultural, and environmental differences. Case studies and group discussion emphasizing motivation, planning, evaluation, classroom problems and management.

4513* Introduction to the Emotionally Disturbed. Prerequisite: 3202 or 5633. Characteristics, identification and teaching of the emotionally disturbed or behavior disordered student; a variety of theoretical approaches to the subject.


4640 Student Teaching in Special Education. 1-12 credits, maximum 12. Prerequisites: 3202 and full admission to Teacher Education. Supervised teaching experience in the area of special education in which the student is preparing to qualify for a teaching certificate. Graded on a pass-fail basis.
5123* Medical Information in Counseling. Prerequisite: consent of instructor. Orientation to medical information and medical aspects of disability. Application to clinical problems in human service professions such as rehabilitation counseling, counseling psychology, and related disciplines.

5163* Counseling Techniques for Teachers of Gifted and Talented Students. Prerequisites: 5063 and admission to the graduate program in applied behavioral studies. Techniques for dealing with the conflicts experienced by gifted and talented students. Strategies for consulting with teachers, peers, and parents regarding optimal development of gifts. Peer counseling techniques, dealing with self-concept, social and emotional concerns, problem solving and decision making, referral procedures and self analysis for teachers related to learning and teaching philosophy and style.

5173* Gerontological Counseling. Prerequisite: graduate standing or consent of instructor. An examination of mental health treatment modalities and approaches to counseling with older adults. An experiential component is included.

5183* Introduction to Rehabilitation Counseling. Background, legal aspects and philosophy of rehabilitation. Overview of current practices in rehabilitation and related areas.

5210* Practicum in School Psychology. 2-6 credits, maximum 6. Prerequisites: admission to school psychology program, successful completion of required course work and consent of instructor. Supervised experience in the practice of skills and procedures of school psychology in a school setting.

5213* Advanced Educational Psychology. Prerequisite: three hours of educational psychology or consent of instructor. Learning and its effect upon coping and adjustment. How learning, environmental and personality factors interact to change human behavior.

5223* Psychology of Disability. Psychological and sociological implications of physical disability and illness. Dynamic and genetic factors in disability and disability conditions including issues in rehabilitation psychology, counseling, and somatopsychology.

5320* Seminar in Applied Behavioral Studies. 3-6 credits, maximum 6. Prerequisite: consent of instructor. In-depth exploration of contemporary problems of applied behavioral studies.

5333* Effective Leadership in Student Services. Prerequisite: admission to graduate program in educational psychology or consent of instructor. The organization and management of student services operations in postsecondary institutions. Models for policy and decision making as well as leadership and supervision issues.

5363* Differentiated Curriculum Techniques and Materials for Gifted and Talented. Prerequisite: 5063. Development of curriculum techniques and materials for gifted and talented students. Preparation of IEPs and lesson plans, development of instruction. Materials and activities for developing or selecting appropriate activities and materials.

5453* Educational Measurements. Appropriate application of tests of teacher-made tests, selection of standardized tests, interpretation of test results, understanding of the statistics reported in testing literature, uses of test results and recent developments in educational measurement.

5463* Psychology of Learning. Application to education of the principles and theories of the psychology of learning.

5473* Introduction to Counseling Practice. Prerequisite: consent of instructor. Orientation to counseling practice through observation and participation. The supervised experiences permit the student and the counselor education staff to evaluate the student's strengths and weaknesses as a potential counselor or student personnel administrator.

5503* Multicultural Counseling. Emphasis on effective communication skills in cross-cultural counseling or helping relationships and the integration of theoretical knowledge with experimental learning. Psycho-social factors, life styles, etc. of various cultural and ethnic groups and their influence on the helping relationship.

5510* Practicum in School Psychology. 2-6 credits, maximum 6. Prerequisites: admission to school psychology program and consent of instructor. Supervised experience in the schools of psychological service delivery. Assessment, consultation, direct interventions and development of professional practice for school psychologists within school settings. Science-based child-success model. Two-three semester sequence.

5512* Secondary School Counseling and Development. Cooperation of the school counselor, teachers, principals, and parents emphasized in organizing, developing, implementing, and evaluating a counseling and development program in secondary schools.

5520* Individual Appraisal. 3 credits, maximum 6. Methods of developing a framework for understanding individuals and techniques for data collection, assessment, and interpretation such as interviews, testing, and case study. The study of individual differences including ethnic, cultural, and gender factors.

5533* Developmental Interventions. Lab 2. Counseling theories and techniques for working with children, adolescents, and their parents in individual and group counseling and consulting. Laboratory portion translates theory to practice.
5543* Career Development Theories. Historical and contemporary viewpoints advanced by Ginsberg, Super, Holland, Roe, etc. Counselors are assisted in utilizing the theoretical and applied basis for developing school-based career education programs and for assisting individuals in career planning.

5553* Principles of Counseling. A comprehensive foundation for counseling practice and the application of contemporary theories to further knowledge of counseling as a communication process.

5563* Conceptualization and Diagnosis in Counseling. Prerequisites: 5473 and 5553 or consent of instructor. Foundation in skills necessary to conceptualize and diagnose clients presentation of problems in counseling. Intake interview and report writing skills, case conceptualization skills, and differential diagnostic skills using the DSM system.

5572* Elementary School Counseling and Development. Cooperation of the school counselor, teachers, principals, and parents emphasized in organizing, developing, implementing, and evaluating a counseling and development program in elementary schools.

5583* Group Process. Lab 2. Group dynamics, theory, and techniques applicable to working with people of all ages in various school and non-school settings. Group member competencies are stressed during the laboratory period.

5590* Counseling Practicum. 3-12 credits, maximum 12. Prerequisites: grade of “B” or better in 5473 and 5553; admission to the counseling and student personnel program or consent of instructor. Supervised experience in human interaction processes of counseling and consulting with the major goal of facilitating positive growth processes through individual supervision. May be conducted in a variety of settings with a wide range of developmental levels.

5620* Practicum with Exceptional Learners. 1-8 credits, maximum 8. Lab 1-8. Prerequisite: consent of instructor. Supervised individual and group experience with exceptional learners. The particular experience (learning disability, mental retardation, gifted, etc.) is determined by the student's field of specialization.

5623* Characteristics of Students with Disabilities. Prerequisite: 5633. Educational, psychological and physiological characteristics of students with mild and moderate disabilities.

5633* Behavior Characteristics of Exceptional Individuals. Intra- and interindividual differences and problems that exceptional individuals experience. Educational programs and resources available to assist administrators, teachers and parents in dealing with unique individual needs.

5643* Counseling Parents of Exceptional Children. Aiding the classroom teacher and other professional personnel in the understanding of unique activities and interpersonal relations involved in counseling with parents of exceptional children.

5653* Play Therapy in Special Education. Theories and practices of the principles of play therapy. The application of play therapy for special education children. Supervised clinical experience with children with emotional, social and psychological problems.

5663* Creativity for Teachers. Theoretical origins of creativity and their concomitant applications in the classroom. Block organization of the theoretical bases for these techniques and approaches. Professional role of the teacher with students with mild and moderate disabilities including communication with other teachers.

5670* Rehabilitation Counseling Practicum. 1-12 credits, maximum 12. Prerequisites: graduate standing and consent of instructor. Applied experience for graduate students in counseling.

5673* Developmental Language for the Exceptional Individual. Prerequisites: 3202 or 5633; and SPATH 3213. Normal language development and variations from normal demonstrated by handicapped learners. Theoretical approaches to language training, formal and informal assessment techniques, and instructional methods.

5680* Internship in Counseling. 1-12 credits, maximum 12. Prerequisites: grade of “B” or better in 5590 and admission to the counseling and student personnel program. Supervised experience working and studying in a counseling agency or setting.

5690* Techniques and Consultation Models for Teaching Individuals with Disabilities. Prerequisites: 5623, 5633. Current techniques, models and approaches used to teach students with mild and moderate disabilities and the theoretical bases for these techniques and approaches. Professional roles of the teacher with students with mild and moderate disabilities including communication with other teachers.

5713* Transpersonal Human Development. Human development in terms of individual consciousness, focusing on the implications of such extraordinary states of consciousness as those associated with hallucinogenic drugs and mystical religious experience. Integration of psychological and religious interpretations of development. Applications to practical problems in education and psychology.

5720* Workshop. 1-8 credits, maximum 15. Professional workshops of various topics and lengths. Each workshop designed to meet unique or special needs of individuals concerned with education, helping professions, and behavioral studies.

5732* Teaching Strategies for the Physically Handicapped. Prerequisite: 4613. Types of physical handicaps, their educational implications and various adjustments for optimal functioning.

5743* Curriculum Modifications for Exceptional Individuals. Materials and resources designed for use by teachers and other professionals, paraprofessionals and parents in working with exceptional individuals. Includes commercial and teacher-student-made materials.

5753* Psychoeducational Assessment of Preschooles. Prerequisite: graduate standing. Recruitment and selection of preschool children associated with the intellectual, social and behavioral assessment of preschool children, from the viewpoint of recent research, discourse and policy initiatives. The link between assessment and intervention.

5763* Teaching Methods and Techniques for the Gifted and Talented. Prerequisite: 5563. Subject matter development and presentation of problems in counseling. Intake interview and report writing skills, case conceptualization skills, and differential diagnostic skills using the DSM system.

5783* Psycho-educational Testing of Exceptional Individuals. Prerequisite: consent of instructor. Intensive practice in the selection, administration and interpretation of individual tests, appropriate for exceptional individuals.

5793* Intellectual Assessment of Children and Youth. Prerequisites: 5783 or consent of instructor; admission to the psychology or school psychology program, counseling psychology program, or clinical psychology program. Intensive study of the Wechsler Scales, the Stanford-Binet and other selected tests of mental ability. Emphasis and practice in administration, scoring and interpretation. Issues related to report writing and non-discriminator assessment.

5823* Characteristics and Identification of the Emotionally Disturbed Learner. Prerequisites: 4653 and 5443. Characteristics and identification of the emotionally disturbed/behavior-disordered learner. Trains the teacher to identify the emotionally disturbed/behavior-disordered learner.

5853* Advanced Methods for Teaching the Mentally Retarded. Prerequisite: 4653. A review of research and methodological developments related to the instruction of mentally retarded children, adolescents and adults.

5863* Developing Programs for the Gifted and Talented. Prerequisites: 5063 and 5363. Programs based on various philosophies and structural concepts of gifted and talented education, e.g., mainstreaming, self-contained, pullouts, magnet schools, time blocking, acceleration and enrichment. Programs designed for general and specific academic ability; however, exposure will be provided to creative and productive thinking programs, leadership programs, and visual and performing arts programs. Specific models included.

5873* Instructional Strategies and Resources for the Emotionally Disturbed Learner. Prerequisite: 5823. Instructional procedures and resources available for working with the emotionally disturbed/behavior-disordered learner. A wide range of theoretical approaches explored.

5883* Behavior Management and Affective Education. Prerequisite: 4753. The utilization of various approaches to the management of individual and group behavior; affective education. See program in a wide range of instructional settings.

5933* Altered States of Consciousness in Human Development. Theory and research concerning the role of altered states of consciousness in human development. Practical techniques for facilitating healthy human development which might be of use to counselors, teachers, and other human services workers. Techniques include guided imagery, progressive relaxation and, especially, meditation.
6003* Research Topics in Special Education. Prerequisites: 6003 and 6013, admission to doctoral program or consent of instructor. Classic and current significant research topics; review and reinforcement of professional inquiry skills, preparation for utilization in independent or collaborative and reporting research in special education.

6083* Principles of Counseling Psychology. Prerequisite: admission to the doctoral program in counseling psychology. Development, theoretical foundations and applications of therapeutic models of counseling and psychology.

6110* Seminar in School Psychology. 1-3 credits, maximum 6. Prerequisite: concurrent enrollment in 6210. An assessment of psychological techniques applied to problems encountered in the internship.

6113* Child Personality Assessment. Prerequisite: admission to school psychology or counseling psychology program, or consent of instructor. The personal and social assessment of children using objective and projective techniques.

6123* Adult Personality Assessment. Prerequisite: consent of instructor. Administration and interpretation of adult personality assessment instruments such as Rorschach, TAT and DAP.

6153* Personality Theories. Prerequisite: consent of instructor. An in-depth analysis of personality theories and personality disorders.

6163* Emotion and Cognition. Prerequisite: consent of instructor. The relationship between emotion and cognition as it relates to knowing and learning. History, wisdom and the interdependence of affect and cognition, the effects of mood on memory, emotion in feminist epistemology, the role of feeling in the writing process, intuition, and narrative thought. Exploration of potential research.

6173* Higher Education Student Personnel Administration. Develops an understanding of the history, philosophy, student life, critical issues and administration of student personnel work in higher education.

6183* Legal Aspects in Special Education. Prerequisite: admission to doctoral program or consent of instructor. Familiarization and analysis of legal rights and responsibilities of students, educators, and administrators in special education, federal and state mandates, case law and recent legal developments affecting special education.

6210* Internship in School Psychology. 3-6 credits, maximum 12. Prerequisites: admission to school psychology program; completion of all course work; completed readiness for internship form and approval of school psychology faculty. Supervised field experience of nondoctoral school psychologists by certified school psychologists for a maximum of 1200 hours over the course of an academic year, or half-time for two years.

6213* Higher Education Student Personnel Services. Prerequisite: 6173. Higher education student personnel services such as: admissions, orientation, student activities, financial aid, housing and counseling.

6220* Internship in Higher Education Student Personnel. 2-6 credits, maximum 6. Prerequisites: 6173 or 6213 and admission to the student personnel and guidance program and consent of supervisor. Provides work and study opportunities under the guidance of student personnel, student activities, financial aid, foreign student advisement, student personnel administration, student union, group facilitation and other appropriate work situations.

6310* Advanced Practicum and Supervision. 3-12 credits, maximum 12. Prerequisites: 5590 and master's degree. For prospective counseling psychologists, counselor educators and supervisors, and practicing counselors. Supervised assistance in development of counseling, consulting and supervising competencies.

6313* Advanced Group Interventions. Lab 1. Prerequisite: 5383 or equivalent. Discussion and exploration of various aspects of group development and treatment. Theory and application of theory. Various factors associated with group psychotherapy cohesion, dynamics and screening.

6323* Psychological Consultation. Prerequisite: graduate standing in the applied behavioral studies or psychology program. Models and strategies for the delivery of special services in the schools and other agencies that focus on serving the mental health needs of children, adolescents and adults. The use of consultation as a problem solving alternative to the assessment/label approach.

6373* Program Evaluation. Prerequisite: admission to a doctoral level program or consent of instructor. Contexts, purposes and techniques of evaluating educational programs. Evaluation design, information collection, analysis, reporting and uses of results for programs ranging from individual lessons to nation-wide multi-year projects. Special emphasis on evaluation requirements of federally funded programs.

6443* Theories and Problems in Educational Psychology. Prerequisite: admission to doctoral program in educational, school psychology or consent of instructor. Theoretical foundations and nature of the problems and controversies in educational psychology; current issues and historical overview.

6460* Internship in Educational Psychology. 1-9 credits, maximum 9. Prerequisite: consent of instructor. Supervision and guidance of teaching and service in educational psychology. May be repeated for credit when work assignment varies. Required of all teaching assistants in educational psychology during the first semester of each new teaching assignment. Includes cooperative planning and evaluation.

6553* Human Motivation. A theoretically-oriented approach to the concept of motivation; essential prerequisites to human behavior and applications to the solution of real and hypothetical problems.

6554* Advanced Practice in Marital and Family Therapy. Prerequisite: consent of instructor. Advanced methods in assessment, diagnosis and treatment of marital and family problems. Skill development, professionalism, ethics and case management. Dynamics of co-therapy and conjoint treatment. Case consultation format. Same as PSYCH 6553.
Advanced Internship in Counseling. 1-3 credits, maximum 6. Prerequisite: admission to the doctoral program in counseling and student personnel or applied behavioral studies emphasizing counseling and development, and consent of instructor. Designed to facilitate counseling effectiveness and to set the stage for a productive life of professional practice.

Program Development in Special Education. Prerequisites: 6373 and admission to doctoral program or consent of instructor. Physical, social and psychological factors in communities such as power structure, economics, prejudice, religion, as well as national activities that are influential in establishing programs for the exceptional.

Current Trends and Issues in Special Education. Current research and literature regarding the education of exceptional children.

Doctoral Internship in School Psychology. 3-6 credits, maximum 6. Prerequisites: admission to school psychology doctoral program, completion of all course work, completed readiness for internship form, and approved by school psychology faculty. Supervised experience of doctoral school psychologists for final preparation to enter the profession of school psychology.

Instructional Systems Design. Prerequisites: 5213 and consent of instructor. A practically-oriented coverage of analyzing, defining, sequencing and validating instructional systems. Develops educational objectives, course development, matching instruction to individual differences and evaluation of systems. Techniques of developing and validating instructional components.

Applied Multivariate Research in Behavioral Studies. Prerequisites: 6013 and admission to doctoral program. An overview and analysis of the multivariate procedures commonly applied to educational and behavioral research. Emphasis on conceptual design and application of these procedures.

Directed Reading. 1-6 credits, maximum 6. Prerequisite: consent of instructor. Directed reading for students with advanced graduate standing.

Internship in Education. 1-8 credits, maximum 8. Lab 3-24. Prerequisites: admission to advanced graduate program and consent of department head. Directed off-campus experiences designed to relate ideas and concepts to problems encountered in the management of the school program.

Architecture (ARCH)

Introduction to Architecture. Lab 2. An introduction to the School of Architecture and OSU resources and how to use them. Introduction to the professions of architecture and architectural engineering and the issues facing these professions in the next century. Introduction to the educational processes and objectives required for becoming a professional architect or architectural engineer.


Architectural Design Studio II. Lab 16. Prerequisite: grade of "C" or better in 1216. Problems in architectural design.

Architectural Design Studio III. Lab 16. Prerequisite: grade of "C" or better in 2116. Problems in architectural design.

Building Systems and Materials. Prerequisite: grade of "C" or better in 2116. Architectural, structural, environmental control systems and materials in architecture.


History and Theory of Baroque Architecture. Prerequisite: 2003. History and theory of renaissance architecture in the western world particularly the later, baroque period.

Special Topics. 2-6 credits, maximum 6. Subjects to be selected by the faculty in architecture from advances in state-of-the-art areas.

Architectural Design Studio IV. Lab 16. Prerequisites: grade of "C" or better in 2116 and admission to third year. Problems in architectural design.

Environmental Control: Thermal Systems and Life Safety. Lab 2. Prerequisite: MATH 1715 or MATH 1513. A survey of the fundamentals of thermal comfort, energy concerns and mechanical systems for buildings as well as the basic principles of life safety.

Architectural Design Studio V. Lab 16. Prerequisite: grade of "C" or better in 3116. Problems in architectural design.

Structures: Timbers. Lab 2. Prerequisite: grade of "C" or better in 3233. Analysis and design of timber structures used in architecture.

Structures: Analysis I. Lab 2. Prerequisite: grade of "C" or better in 2024. Structural theory for applications in architecture.

Structures: Steel I. Lab 2. Prerequisite: grade of "C" or better in 3223. Analysis and design of steel structures used in architecture.

Environmental Control: Acoustics and Lighting. Prerequisite: MATH 1513 or 1715. A survey of architectural acoustics, electrical and lighting systems for buildings.

Advanced Architectural Acoustics Design. Prerequisite: 3433. The analysis and design of acoustically-critical spaces including open-plan offices, music facilities, studios, theaters, etc. The course includes a design project of the student's choice.

History and Theory of Early Modern Architecture. Prerequisite: 2003. History and theory of modern architecture in the western world from the industrial revolution to the early twentieth century.


Architectural Design Studio VI. Lab 20. Prerequisite: grade of "C" or better in 3216. Problems in architectural design.

Structures: Concrete I. Lab 2. Prerequisite: grade of "C" or better in 3223. Analysis and design applications in architectural problems using concrete structures.

Structures: Steel II. Lab 2. Prerequisite: grade of "C" or better in 3233. Design and analysis of multi-story steel frames, trusses, arches and other architectural structure components.


Marketing Professional Services. Prerequisite: 3116. Business development aspects of design firm management, including: marketing plan development; marketing organization; strategies and tools; selling techniques and contract negotiating.

Architectural Design Studio VII. Lab 20. Prerequisite: grade of "C" or better in 4117. Problems in architectural design.

Structures: Foundations for Buildings. Prerequisite: 4123 or concurrent enrollment. Interaction of frames and supports for structures used in architecture. Subsurface conditions and design of foundation systems and retaining walls for buildings.

Field Study in Europe I. Prerequisite: senior standing in architecture or consent of instructor. On-site analysis and study of European architecture, culture and urban design.

Structures: Analysis II. Lab 2. Prerequisite: grade of "C" or better in 3243. Mathematical formulation of architectural structural behavior. Matrix applications, finite element, finite differences, stability considerations and three-dimensional structural modeling.

Special Problems. 1-6 credits, maximum 6. Lab 3-18. Prerequisite: consent of instructor and head of the School. Theory, research or design in related disciplines. Plan of study to be determined jointly by student and graduate faculty.
5073* History and Theory of the Architecture of Frank Lloyd Wright and His Contemporaries. Prerequisite: 4073. A study of the architecture of Frank Lloyd Wright and his contemporaries in the late 19th and early 20th centuries.

5083* History and Theory of Japanese Architecture. Prerequisite: admission to the professional school or consent of instructor. Historical Japanese architecture from 200 BC to 1980; Shinto, Buddhist, Zen Sukiya, Zukuri, Minka and contemporary subjects.

5100* Special Topics. 3-6 credits, maximum 15. Subjects to be selected by the graduate faculty in architecture to cover state-of-the-art advances.

5119* Architectural Design and Development. Lab 24. Prerequisites: for architecture majors: grade of “C” or better in 3134, 3433, 4123, 4217; for architectural engineering majors: grade of “C” or better in 3116, 3134, 3433, 4123. Design and detailed development of a major architectural project integrating all aspects of architecture and related disciplines in a professional manner and milieu.


5193* Management of Architectural Practice. Prerequisite: fifth-year standing in architecture or architectural engineering or consent of instructor. Principles of management as applied to the private practice of architecture and architectural engineering.

5216* Architectural Design Studio: Competitions. Lab 18. Prerequisite: grade of “C” or better in 5119 or consent of instructor. Problems in architectural design through national and international student design competitions.

5233* Advanced Architectural Lighting Design. Prerequisite: 3433. Lighting applications in contemporary architectural design, including offices, schools, churches and health care facilities. Applications of the principles learned to a design of the student’s choice.

5243* Structures: Special Loadings. Prerequisites: MATH 3013 and grade of “C” or better in 4443 or consent of instructor. Mathematical formulations and modeling in architectural structures. Human response to vibrations. Seismic design in building. Design for extreme winds on buildings. Approximate methods for preliminary design of architectural structures.

5244* Structures: Concrete II. Lab 2. Prerequisite: grade of “C” or better in 4213. Design and analysis of multi-story reinforced concrete frames and pre-stressed and post-stressed concrete structural components used in architecture applications.

5293* Architectural Project Management. Prerequisite: fifth-year standing in architecture or consent of instructor. Principles of management as applied to architectural and architectural engineering projects.

5373* Field Study in Europe II. Prerequisite: student standing by instructor or consent of instructor. On-site study and analysis of European architecture, culture and urban design.

6000* Special Problems. 1-15 credits, maximum 15. Lab 3-18. Prerequisite: consent of instructor and head of School. Theory, research and design investigation in specific areas of study in the field of architecture and its related disciplines. Plan of study determined jointly by student and graduate faculty.

6053* Computer Applications in Architecture. Lab 3. Prerequisite: MECDT 4013 or equivalent or consent of instructor. State-of-the-art applications of computers to the practice of architecture and architectural engineering.

6073* History and Theory of Non-Western Architecture. Prerequisite: graduate standing or consent of instructor. American architecture beginning in the 16th century through the 20th century.

6100* Special Topics. 3-6 credits, maximum 15. Subjects selected by the graduate faculty in architecture to cover state-of-the-art advances.

6113* Creative Component Research. Prerequisite: admission to graduate program. Data gathering, analysis and program formulation related to creative component.

6117* Graduate Design Studio I. Lab 20. Prerequisite: admission to graduate program. Problems in architectural design.

6183* Architecture Seminar I. Prerequisite: admission to graduate program or consent of instructor. Architectural criticism.

6193* Financial Management for Architects and Engineers. Prerequisite: 3116. Financial aspects of design firm management, including fundamentals of finance, profit planning and control, cash management and analysis of financial statements.

6206* Creative Component in Architectural Engineering. Lab 18. A design project based on a program previously developed by the student, to include a written report and supporting documents when appropriate. Must be approved by the project adviser and completed in the final semester of the graduate program.

6207* Creative Component in Architecture. Lab 20. Prerequisite: 6117. A design project based on a program previously developed by the student to include a written report and supportive documents when appropriate. Must be approved by the project adviser and completed in the final semester of the graduate program.

6214* Graduate Design Studio. Lab 12. Prerequisite: 6117. Independent projects or competitions. May be combined with 6206 with approval of adviser.

6244* Structures: Analysis III. Prerequisite: grade of “C” or better in 4144. Plastic analysis and design of structural steel frames utilizing load and resistance factor design.

6283* Architecture Seminar II. Seminar for graduate students only. Architectural criticism.

6343* Structures: Steel III. Prerequisite: grade of “C” or better in 5244. Design of prestressed concrete structures, including pre- and post-tensioning.

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Art (ART)

1103 Drawing I. Lab 6. A freehand drawing experience designed to build basic skills and awareness of visual relationships. A sequence of problems dealing with composition, shape, volume, value, line, gesture, texture and perspective. A variety of media explored.

1113 Drawing II. Lab 6. Prerequisite: 1103. Objective and subjective approaches to visual problem solving in a variety of black and white and color media. The analysis and manipulation of form, light, space, volume, and the formal aspects of perspective.

1203 Color and Design. Lab 6. Introduction to visual problem-solving. Organization of the two-dimensional plane; line, shape, value, texture, and color theory dealing with its visual and psychological aspects.

1803 (H)Introduction to Art. An introduction to the analysis and interpretation of visual arts. Visual, emotional and intellectual aspects of art in painting, sculpture, printmaking and architecture.

2113 Life Drawing. Lab 6. Prerequisites: 1113, 1203. Introduction to life drawing with emphasis on preliminary linear construction and structural aspects of the figure, including the study of general body proportions, rapid visualization and figure-ground relationships.

2203 Three-dimensional Design. Lab 6. Prerequisites: 1103 and 1203. Exploration of three-dimensional form and space stressing organization of design elements, development of concepts and manipulation of materials. Investigation of linear space, modular ordering, mass/volume, and the conceptual and applied nature of projects of a conceptual and applied nature.

2213 Color Theory. Lab 6. Prerequisites: 1103, 1203. Intensive, structured investigation into the nature and properties of color. Hue, value, chroma, and additive color mixing theory as well as the expressive qualities, symbolic potential, and psychological impact of pigment color.

2403 Illustration I. Lab 6. Prerequisite: 2113. Introduction to historic and contemporary illustration. A consideration of the invention of a wide range of illustrative styles. Required experiments with media and consideration of alternate ways of illustrating a message through conceptual and compositional variations.
2413 Typography I. Lab 6. Prerequisites: 1103, 1113, 1203, 1803. An investigation of letter forms and their characteristics and a study of spacing, leading, type selection, layout alternatives, type specification and copy fitting. Preparation of typographic materials in an offset printing environment. Knowledge of graphic terminology and measuring systems while developing hands skills and introducing computer technology.

2423 Graphic Design I. Lab 6. Prerequisite: 2413. Exploration of basic design principles-line, form and color, as visual communication. Problem solving, generation of ideas, development of concepts and the integration of word and image. Technical and presentation skills.

3110 Life Drawing Studio. 3 credits, maximum 9. Lab 6. Prerequisite: 2113. The development of formal and expressive aspects of drawing by direct observation of the figure and its environment. Emphasis on media experimentation, aesthetic considerations, personal concepts, and anatomy.

3123 Oil Painting. Lab 6. Prerequisites: 1103, 1113, 1203, 1803, 2203, 2213, or consent of instructor. Methods of color preparation, hand building, wheel forming methods, methods of decoration and glazing, firing and kiln construction. Development of concepts into models.

3133 Watercolor Painting. Lab 6. Prerequisites: 1103, 1113, 1203, 1803, 2203, 2213 or consent of instructor. The development of skills in watercolor painting stressing form and content, visual perception and individual expression. Technical instruction applicable to individual problems and needs.

3138 Sculpture I. Lab 6. Prerequisites: 1103, 1113, 1203, 1803, 2203, 2213 or consent of instructor. The development of skills in sculpting stressing form and content, visual perception and individual expression. Structured assignments in color mixing, wet-on-wet techniques, wet-into-wet techniques, brush handling, paper supports and surface manipulation.


3343 Illustration II. Lab 6. Prerequisites: 2403, 3123 or 3133. Exploration of illustrative solutions to maximize visual interest via varied viewpoints, concepts and altered reality. Projects involving different career areas within the field of illustration. Requirements and advantages of each area.

3413 Typographic Design II. Lab 6. Prerequisite: 3423. Exploration of typographic communication through a variety of problems. Typo as the visual solution with emphasis on its functional, decorative and creative applications. Solution of more complex typographic problems, dealing with a large body of information via the development of grid systems.

3423 Graphic Design II. Lab 6. Prerequisites: 2423, 3413. Use of computer and traditional methods to enhance production skills and solution of design projects from concept to the comprehensive. Evaluation and design of symbols and logos and their various applications, leading to an understanding of theoretical concepts and an introduction to graphic design production and the preparation of art for reproduction.
4420 Graphic Design Studio. 3 credits, maximum 9. Lab 6. Prerequisite: 4413. Design and production of professional portfolio. Discussion of practical issues including career options, resume and portfolio preparation, and interview techniques.

4430 Illustration Studio. 3 credits, maximum 9. Lab 6. Prerequisite: 4413. Use of computer software to create three-dimensional images in an artificial three-dimensional space leading to storyboard design, animation scripts and the production of animation sequences to video.

4493 Portfolio Capstone. Lab 6. Final preparation of a professional portfolio, culminating in an extensive design project and the design, organization and production of an exhibition of work. Professional study on setting fees, writing contracts, working with an agent and other business practices.

4500 Ceramics Studio. 3 credits, maximum 9. Lab 6. Prerequisite: 3503. Continued explorations of ceramic arts: glazes, clay bodies, methods of forming, decorating and firing. Continued emphasis on the relation between visual unity and individual expressive concept as these apply to both utilitarian and conceptual forms.

4603 History of Ancient Egyptian Art. Broad survey of ancient Egyptian art and architecture from pre-dynastic to the beginning of the Christian Era under Roman rule (4000 B.C.-320 A.D.). Discussion within the context of religious meaning and overall cultural development of ancient Egypt.

4613 Art Since 1945. Art and art theory from 1945 to the present. Major trends of abstract expressionism, pop art, minimalism, photorealism and conceptual art. Theories and intellectual bases of each movement as well as major critical responses.


4653 History of Indian Art. The history and culture of South Asia (India and Pakistan) are explored through its arts-architecture, sculpture, painting, and decorative arts.

4673 History of Japanese Art. The arts of Japan from the beginning to the modern period in their historical and cultural setting. Cross-cultural contacts with China and the West. Architecture, sculpture, painting, landscape architecture, prints and decorative arts.

Arts and Sciences (A&S)

1100 An Introduction to the Arts. 1-3 credits, maximum 36. Prerequisites: participation in the Oklahoma Summer Arts Institute and consent of department head. Workshop experience in creative writing, dramatic performance, studio arts or music performance. Enrollment restricted to Oklahoma Summer Arts Institute participants.

1111 Freshman Orientation. Orientation for freshmen. Study techniques, evaluation of one's abilities and the making of proper educational and vocational choices.

1221 Honors Freshman Orientation. Prerequisite: Honors Program participation. Orientation for freshmen to Arts and Sciences Honors Program, introduction to University academic expectations, techniques for achieving academic success, and substantive introduction to material in selected academic disciplines. No credit for students with credit in A&S 1111.

2000 Special Topics. 1-3 credits, maximum 6. Selected interdisciplinary topics presented in lecture or seminar format.

2003 Arts and Sciences Honors Supervised Research. Prerequisites: Honors Program participation, consent of instructor and A&S Honors program director. Introduction to research or other creative activity in student's major field through participation in professor's research or creative activities.

3090 Study Abroad. 12-18 credits, maximum 36. Prerequisites: consent of the Office of International Programs and the student's college. Participation in a formal study abroad program requiring a semester or year in full-time enrollment at a university outside of the U.S.

3603 Colloquium in Area Studies. Interdisciplinary studies in one area: African, Asian, Latin American, Russian and East European, Native American, Ancient and Medieval, or Women's studies. Individual undergraduate research projects.

Astronomy (ASTRO)


2023 General Astronomy. Prerequisite: PHYS 1214 or equivalent. More rigorous treatment of material in 1104 for majors in physical sciences and other areas.

2153 Advanced Astronomy. Prerequisite: 1104 or 2203. Topics such as pulsars, quasars, neutron stars, black holes and interplanetary space probes.

3023 Astrophysics. Prerequisite: PHYS 2114 or consent of instructor; ASTRO 1104 recommended. Analysis and interpretation of astronomical phenomena in terms of the laws of physics, e.g. stellar structure, the interstellar medium, galaxies and cosmology.
Aviation and Space Education (AVSED)

1113 Theory of Flight. A ground school course covering Federal Aviation Regulations, theory of flight, power plant operation, service of aircraft, principles of navigation and meteorology. Fulfills the ground school training needed for a Private Pilot Certificate.

1221 Primary Flight Laboratory I. Lab 2. Prerequisites: concurrent enrollment or completion of 1113; FAA Third-class Medical Certificate. Student must complete a minimum of 16 flight hours toward the private pilot certificate. Flight instruction conducted under FAR Part 141. Special fee required. Graded on a pass-fail basis.

1231 Primary Flight Laboratory II. Lab 2. Prerequisites: 1113 and 1221; FAA Third-class Medical Certificate. Meets flight requirements for the private pilot certificate. Flight training conducted under FAR Part 141. Special fee required. Graded on a pass-fail basis.


1503 History of Manned Space Flight. Significant historical concepts and events leading to the current status of space exploration.

2113 History of Aviation. History of aviation from its early developments to the present. Historic events and the role of government as they relate to the evolution of the regulatory infrastructure of the aviation industry.

2122 Commercial Flight Laboratory I. Lab 4. Prerequisites: 1221 and 1231 or private pilot certificate, FAA Third-class Medical Certificate. First of three flight laboratories required for FAA commercial flight certificate with instrument rating. Flight instruction conducted under FAR Part 141. Special fee required.

2132 Commercial Flight Laboratory II. Lab 4. Prerequisites: 2122 and FAA Third-class Medical Certificate. Dual instrument flight instruction to meet requirements for FAA instrument rating. Flight instruction conducted under FAR Part 141. Special fee required.

2142 Commercial Flight Laboratory III. Lab 4. Prerequisites: 2132. FAA Second-class Medical Certificate and 18 years of age. Final flight lab to meet requirements for the FAA commercial pilot certificate. Flight instruction conducted under FAR Part 141. Special fee required.


2203 Impact of Aviation and Space Exploration on Society. Survey of significant events and ideas and their economic and social impact on society.

2214 Theory of Instrument Flight. Prerequisite: 1113 or passed FAA Private Pilot Written Examination. Instrument flight rules, the air traffic system and procedures, and elements of forecasting weather trends. Preparation for FAA Instrument Written examination. Flight simulator and laboratory experience in an instrument flight environment.


2633 Air Traffic Control and the National Airspace System. Prerequisite: 1113. In-depth knowledge in the subject of air traffic control and the national airspace system facilities, equipment and associated development. Enroute and terminal control areas, computerization and automation of service systems, ground-to-air systems and integrated telecommunications networks.


3243 Human Factors in Aviation. Prerequisite: PSYCH 1113 or equivalent. The study of people interacting with the aviation environment. Individual and group performance, equipment design, physical environment, and procedure development.

3333 Advanced Aircraft Systems. Prerequisites: 1113, 1221, 1231, 2122, 2132, or consent of instructor. Study of complex aircraft systems. Electronic flight instruments, inertial navigation, and aircraft monitoring systems.

3341 Multi-engine Flight Laboratory. Lab 2. Prerequisites: Private Pilot Certificate and FAA Third-class Medical Certificate. Dual flight instruction to meet requirements for the FAA multi-engine rating. Flight instruction conducted under FAR Part 141. Special fee required.

3441 Aerobatic Flight. Lab 2. Prerequisites: 1113 and 1220. A minimum of ten hours dual flight training. Basic, intermediate and advanced aerobatic flight maneuvers including sequencing and dimensional box spacing. Special fee required.

3443 Aviation Law. Prerequisite: BUSL 3213. Insight pertinent to federal governing bodies in addition to local and international laws forming the present structure of aviation law. Practices and pitfalls in aviation activities and a basic legal research capability.

3523 Airport Planning and Management. Prerequisite: 50 credit hours. Overview of the major functions of airport management including master planning. Study of the socio-economic effects of airports on the communities they serve.

3553 General Aviation Management. Prerequisite: 50 credit hours. Functions of management in general aviation and airport operations including information systems, maintenance, regulatory impact, physical facilities, flight operations, political forces and administration.

3663 Air Transportation: The Industry. Prerequisite: 50 credit hours. Broad understanding of the air transportation industry and an in-depth knowledge of the organizational structures, managerial functions and operational aspects of today's major, national, and regional air carriers. Historical perspectives, regulators and associations, economic characteristics, labor relations and marketing of modern air carriers.

4100 Specialized Studies in Aviation. 1-3 credits, maximum 6. Prerequisites: junior or senior standing and 6 hours credit in AVSED courses. Independent studies, seminars, and training in selected areas of aviation.

4113 Aviation Safety. Prerequisite: senior standing or consent of instructor. Overview of flight safety including studies in human factors, weather, aircraft crashworthiness, accident investigation, and aviation safety programs. Students will be introduced to elements of aviation safety in ground and flight operations.


4200 Internship in Aviation. 1-12 credits, maximum 12. Prerequisites: junior or senior standing, consent of instructor. Individually supervised internships in aviation career areas. Directed field experiences related to the participants area of concentration.

4213 Current Trends and Issues in Aviation. Prerequisites: 3663 and senior standing or consent of instructor. Analysis of current issues facing management in various segments of the aviation industry. Specific areas include issues affecting the airline industry and general aviation. Application of previously learned concepts to case studies of practical problems to develop deeper understanding of the subject.

4231 Flight Instructor: Airplane Flight Laboratory. Lab 2. Prerequisites: 4133, commercial pilot and instrument rating, FAA Second-class Medical Certificate and 18 years old. Dual flight instruction to meet the requirements for the FAA flight instructor: airplane certificate. Flight instruction conducted under FAR Part 141. Special fee required.

4333 General Aviation Management. Prerequisite: 3663 and senior standing or consent of instructor. Analysis of current issues facing management in various segments of the aviation industry. Specific areas include issues affecting the airline industry and general aviation. Application of previously learned concepts to case studies of practical problems to develop deeper understanding of the subject.


4343* Aviation Weather. Prerequisite: GEOG 3033 or equivalent. Familiarization with weather products needed to enhance flight safety.

4703* Cockpit Resource Management. Prerequisite: 3243, Commercial Pilot Certificate/Instructor Rating or consent of instructor. Decision making and communication to improve effective cockpit management. Ten hours in a dual flight control multi-engine simulator. Special fee required.

4771 Flight Instructor: Multi-engine Flight Laboratory. Lab 2. Prerequisites: Flight Instructor Certificate and FAA Second-class Medical Certificate. Dual flight instruction to meet the requirement for adding a multi-engine flight instructor rating to the flight instructor certificate. Flight instruction conducted under FAR Part 141. Special fee required.

4990 Pilot Proficiency Flight. 1-2 credits, maximum 4. Lab 32. Prerequisites: possess current FAA flight certificate/rating corresponding to AVSED flight courses. Required for students entering the aviation education program who possess all FAA certificates/ratings required for the aviation sciences degree.

5000* Master’s Report or Thesis. 1-3 credits, maximum 3. Master’s degree enrollment for a total of two credit hours if writing a report or three hours if writing a thesis.

5020* Seminar in Aerospace Education. 1-3 credits, maximum 6. Prerequisite: consent of instructor. Individual research problems in aerospace education.

5113* Aviation Safety Program Development. Prerequisite: 4113 or equivalent, or consent of instructor. Individual research projects in aviation safety.

5120* Current Issues in Aerospace Education. 1-3 credits, maximum 6. Prerequisite: consent of instructor. Current issues in aerospace education.

5131* Earth Observation Systems. Study of earth orbiting systems that collect data on the earth’s water, land and atmosphere.

5824* Biochemical Laboratory Methods. Lab 6. Prerequisites: 4113 or 5753, or concurrent enrollment in either, and CHEM 2113 and 2122, or 3324. Lecture and laboratory course in basic biochemistry and molecular biology methods for separation and analysis of biological materials, including chromatography, electrophoresis, centrifugation, use of radioisotopes, molecular cloning, and DNA sequencing.

5853* Metabolism. Prerequisite: 5753 or 4113. Reaction sequences and cycles in the enzymatic transformations of fats, proteins and carbohydrates, energy transfer, biosynthesis and integration in the metabolic pathways.

5910* Practicum in Aerospace Education. 1-3 credits, maximum 6. Prerequisite: consent of instructor. Directed observation and supervised clinical experiences in aerospace education.


6203* Aviation Physiology. Prerequisite: 5203 or equivalent. The study of the complexities of pilot performance as it relates to human physiology, human factors and aviation safety.

Biochemistry (BIOCH)

2344 Chemistry and Applications of Biomolecules. Lab 3. Prerequisite: CHEM 1225. A descriptive survey of organic functional groups and biomolecule modes. Formation and function of these molecules in microorganisms, plants and animals as they relate to biotechnology, environmental sciences and health related issues. A terminal course for students in applied biological science education. Not recommended for pre-professional students or students planning graduate study in biological sciences.

3653* Survey of Biochemistry. Prerequisite: CHEM 3015 or 3053. An introduction to the chemistry of living systems. Chemical properties of the constituents of living organisms. Modes of formation, reactions and function of these compounds in microorganisms, plants and animals.

3720 Biochemical Laboratory. 2-3 credits, maximum 6. Lab 3-6. Prerequisite: 3653 or concurrent enrollment. Qualitative and quantitative examination of biochemical and molecular biological materials and reactions. Hands-on experience with contemporary aspects of chemical and molecular biology techniques. Available fall semesters for two hours for non-majors, pre-veterinary, premedical, and nutrition students. Available spring semesters for three hours for biochemistry majors and others desiring an extensive biochemical laboratory experience.

4113* Biochemistry. Prerequisite: 3653. An extension and expansion of 3653 emphasizing applications of biochemistry, molecular biology and genetic engineering to studies on protein structure and function, regulation of cell function, metabolism and disease processes.

4224* Biophysical Chemistry. Prerequisites: CHEM 1515, MATH 2733, Classical and statistical thermodynamics, transport processes, electrochemistry, and kinetics, with emphasis on biological applications.

4990 Special Problems. 1-6 credits, maximum 10. Training in independent work, study of relevant literature and experimental investigation of an assigned problem.

5000* Research. 1-6 credits, maximum 6. For M.S. thesis.

5753* Biochemical Principles. Prerequisite: CHEM 3153 or equivalent. Chemistry of cellular constituents; introduction to the biochemical processes in living systems. The first in a series of courses for graduate students in biochemistry and related fields.

Biochemistry 215
Biosystems Engineering (BIOEN)

6643* Neurophysiology. Prerequisite: 5616. Fundamental concepts of the motor and sensory components of the nervous system with emphasis on integrative mechanisms.

1012 Engineering Software. Lab 2. Prerequisite: ENG 1311 (or concurrent enrollment); engineering major. Introduction to microcomputer software packages useful in engineering analysis and report preparation. Elementary CAD applications.

2022 Introduction to Engineering Design. Lab 4. Prerequisite: sophomore standing in the College of Engineering, Architecture and Technology. Implementation of creativity and the design process to solve engineering problems. Evaluation of the role and the integration of user considerations, specifications, materials selection, human and legal factors, economic factors, and feasibility in the design process.

3213 Machinery for Production and Processing. Lab 2. Prerequisites: 1012, 2012 and EIVGSC 2112. Function, design, operation and application of machine elements used in the production and processing of biological materials.

3233 Soil and Water Resource Engineering. Prerequisite: ENGS 2213, 3233. Engineering analysis applied to soil and water resources. Design principles and practice for engineering systems including pumping plants, irrigation and drainage systems, and erodible channels.


4513 Instrumentation in Biological Process Control System. Prerequisite: 3023 or equivalent. Analysis and synthesis of transducers for online measurement and control of biological processes. Emphasis on selection of measurement techniques and transducers to sense physical properties of biological materials. Application to agricultural and food processing industries.
5513* Experimental Engineering Analysis. Prerequisite: STAT 4023. Design and analysis of engineering experiments, error sources and prediction equations using statistical theory.

6000* Research and Thesis. 1-10 credits, maximum 30. Prerequisite: approval by the student's advisory committee. Independent research and doctoral thesis preparation under the cognizance of a graduate faculty member in the student's field of specialization.

6313* Stochastic Methods in Hydrology. Prerequisites: 4313 or CIVEN 5843 and STAT 4053 or equivalent. Stochastic and statistical hydrologic analyses of surface water and groundwater systems. Analysis of urban and rural drainage and detention systems. Same as LIVEN 6843.

6323* Advanced Irrigation Engineering. Prerequisite: 3323 or equivalent. Hydraulic theory and design and operation of surface, sprinkler, and trickle irrigation systems. Management of water and energy in irrigated agriculture.

6333* Fluvial Hydraulics. Prerequisite: 3013 or equivalent. Principles of sediment detachment and transport in fluvial systems. Design of stable channels and flow resistance relationships for sediment-laden flows.


6503* Similitude in Research. Prerequisite: MATH 2223. Theory of similitude and its use in planning, conducting and analyzing experiments in engineering and biological sciences.

6520* Problems in Soil and Water Engineering. 2-6 credits, maximum 6. Prerequisite: consent of instructor. Problems associated with erosion control, drainage, flood protection and irrigation.

6540* Problems in Farm Power and Machinery. 2-6 credits, maximum 6. Prerequisite: consent of instructor. Literature review and analytical studies of selected farm power and machinery problems. Written report required.

6580* Problems in Transport Processes. 2-6 credits, maximum 6. Prerequisite: consent of instructor. Literature review and analysis of heat and mass transport and interval diffusion in biological materials. Transport phenomena at interfaces, thermal and cryogenic processing, drying, packed and fluidized bed systems. Thermal and moisture control processing affecting quality of food products. Written report required.

6610* Advanced Research and Study. 1-10 credits, maximum 20. Prerequisite: approval by the student's advisory committee. Research and study at the doctoral level on the topic related to the student's doctoral program and field of interest.

Botany (BOT)

3005 (N)Field Botany. Lab 6. Prerequisite: BIOL 1114 or 1304 or equivalent. Botanical field techniques, the vegetation of North America, and the flora of Oklahoma. Terminology of description, use of taxonomic keys, techniques of specimen preservation, field recognition of plant taxa and communities and controlling ecological factors, economic and wildlife significance of dominant taxa, principles of classification and nomenclature. Four weekend field trips required.

3013* Biological Microtechnique. Lab 3. Prerequisite: BIOL 1403 or 1603. Techniques for preparation of biological materials for microscopic examination. Same course as ZOOL 3013.

3024* Plant Diversity. Lab 4. Prerequisite: BIOL 1403. Forms and life histories of selected plants with emphasis on some of the less familiar forms. The diversity of plant forms as well as basic similarities in life histories; importance of each form to man and his environment. Field trips required.


3223* Plant Anatomy. Lab 3. Prerequisite: BIOL 1403. Structure of cells, tissues and organs of plants. Consideration of structure as related to ontogeny, phylogeny and function.

3460* Plant Physiology Laboratory. 1-2 credits, maximum 2. Lab 2-4. Prerequisite: 3463 or concurrent enrollment. Skills in techniques for working with plants, experiments involving nutrition, respiration, photosynthesis, water relations, translocation, hormones, growth and development. Students having credit in BIOL 3014 should enroll for one hour; all others enroll for 2 hours credit.

3463* Plant Physiology. Prerequisite: BIOL 1403. Plant subcellular structure, water relations, water absorption and ascent of sap, translocation, gaseous exchange, nutrition, enzymes, respiration, photosynthesis, growth, development, reproduction, tropisms, hormones, dormancy and seed germination.

3693* (N)Plant Geography. Prerequisite: BIOL 1403. Discussion of the natural geography of the world's plants and the factors controlling it, especially environmental and biological, with emphasis on evolutionary trends and events.

4023* Community Ecology. Prerequisite: BIOL 3034 or equivalent. Plant and animal communities, community theory, the role of competition, predation, and demography in structuring plant and animal communities, succession, current controversies in ecology, with emphasis on the primary literature.

4123* Ethnobotany. Prerequisite: one course from AGRON 1213, BIOL 1403 or 1604, HORT 1013, BOT 3024, or consent of instructor. Uses of plants by past and present cultures for food, fiber and medicinal purposes. The role of plants in traditional rituals and religious practice.

4374* Agrostology. Lab 4. Prerequisite: BIOL 1403. Grasses and the principles involved in their classification. Field trips required.

4400 Undergraduate Research. 1-2 credits, maximum 5. Prerequisite: consent of instructor. Undergraduate research problems in botany.

4993 Senior Honors Thesis. Prerequisites: departmental invitation, senior standing, Honors Program participation. A research project under the direction of a faculty member resulting in a written report to be judged by a second faculty member as well. An oral presentation made at a departmental seminar. Required for graduation with departmental honors in botany.

5000* Research. 1-6 credits, maximum 6. Research for the M.S. degree.

5104* Mycology. Lab 4. Prerequisite: graduate standing. A systematic study of the fungi, with emphasis on taxonomy, comparative morphology and fungal biology. Taught in the Department of Plant Pathology. Same course as PLP 5104.

5110* Problems in Botany. 1-5 credits, maximum 8. Prerequisite: consent of instructor. Special studies in any area of botany.

5153* Ecosystem Analysis. Prerequisite: BIOL 3034; CHEM 3015 or equivalents. Theory and principles of ecosystem ecology focusing on metabolism and biogeochemical cycles in terrestrial and aquatic systems. Application of principles to current issues of environmental change and management. Same course as ZOOL 5153.
Botanical Limnology. Lab 3. Prerequisite: BIOL 1403. Taxonomy, ecology, and physiology of freshwater algae and vascular aquatic plants, with special reference to their role in overall limnological dynamics. Field trips required.

Cytogenetics Laboratory. Lab 4. Prerequisite: AGRON 5342 or concurrent enrollment. Cytogenetic research techniques, especially karyotyping: observation and interpretation of cytogenetic phenomena including mitosis, meiosis and chromosomal aberrations.

Physiology of Ion Metabolism. Prerequisite: 3463 or equivalent. Physiology of ion absorption, translocation, metabolism and functions in higher plants.

Advanced Ecology. Lab 3. Prerequisite: 4023 or BIOL 3034. Physiological and evolutionary aspects of plant ecology as revealed by recent research. Spring recess field trip required.

Physiology of Plant Growth and Development. Prerequisite: 3463 or equivalent. Molecular mechanisms of growth and development, subcellular organization and function, plant hormones, photomorphogenesis, germination and dormancy, senescence and abscission, plant rhythms. Application of physiological principles to agriculture.

Plant Tissue Culture. Lab 3. Prerequisite: 3463 or BIOL 3014. Skills in sterile technique, media preparation, embryogenesis and organogenesis. Survey of the major types of tissue culture and their application to crop and horticultural species. Introduction to general principles of genetic engineering of plant cells.

Plant Developmental Genetics. Prerequisites: 3463 and BIOL 3024 or equivalent. Discussion of morphogenesis, embryogenesis, gametogenesis, and the regulation of gene expression during plant development. Emphasis on recent genetic, experimental, and molecular studies of development in higher plants.

Plant Morphology. Lab 3. Prerequisite: 3024. Comparative study of the form and life cycle of representative genera of the major taxa of vascular plants. Field trips required.

Botany Seminar. 1 credit. Maximum 6. Required of senior and graduate majors.

Environmental Plant Physiology. Prerequisite: 3463 or equivalent. Effects of light, temperature, water, soil and other environmental factors on physiological responses of plants; photosynthesis, water relations, water and temperature stress, flowering, dormancy and germination.


Business Administration (BUSAD)

Business Freshman Orientation. Prerequisite: freshman standing only. Required of all first semester freshmen in the College of Business Administration. An orientation to the CBA and OSU; survival skills; and a study of the career opportunities and curriculum in the various business departments.

Special Topics. 1-6 credits. Maximum 6. Prerequisite: consent of instructor. Special topics and independent study in business.

Study Abroad. 12-18 credits, maximum 36. Prerequisites: consent of the Office of International Programs and associate dean of student's college. Participation in a formal study abroad program spending a semester or year in full-time enrollment at a university outside of the U.S.

Strategy and Integration in Organizations. Prerequisites: FIN 5113, MGMT 3123, MKTG 3213. Integration of concepts from the business core courses using tools such as simulation and case analysis. Planning model, policy models, and strategy development.


Business Projects. 1-6 credits, maximum 6. Prerequisite: consent of instructor. Special advanced topics, projects and independent study in business.

Business Colloquium. 3-9 credits, maximum 9. Prerequisites: junior standing and consent of the instructor and the dean. Study of an interdepartmental and interdisciplinary nature of various important issues and aspects of the business and economic environment. Provides an intellectual challenge for the able student with a strong interest in scholarship.

New Venture Creation. Prerequisite: business core courses or consent of instructor. Steps involved in starting a new business. Development of a business plan fora venture of student's choosing. Examination of franchising or acquisition of an existing business as alternative steps to business ownership.

Computer Applications in Business. Prerequisites: admission to MBA program or consent of MBA director; demonstrated personal computer usage proficiency. Introduction to management information systems, statistical and optimization packages, financial modeling languages and micro-computers. Algorithmic programming in FORTRAN/BASIC/COBOL.

Research Methods for Business. Prerequisite: STAT 2023, admission to MBA program or approval from MBA director. Role of Bayesian and inferential statistics in business research and management decision making. Measurement, scaling, survey methods, and forecasting. Applications to marketing; managerial, human resource; financial, and production planning; and other related business topics. Use of computers in statistical analysis.

Entrepreneurship and Venture Management. Prerequisite: admission to MBA program or consent of MBA director. Enterprise creation and problems faced by entrepreneurs in early growth stages of business ventures. An interdisciplinary problem-solving approach with emphasis on "live" case studies and plans for new business ventures. Emphasis is on entrepreneurship rather than problems faced by going concerns.

Selected Master of Business Administration Topics. 3-6 credits, maximum 6. Prerequisite: admission to the Master of Business Administration program. Selected topics dealing with business decision making and contemporary business issues.

The External Environment of Business. Prerequisite: admission to MBA program or approval from MBA director. Social, ethical, regulatory and political forces as they impact on the organization. Attention to organizational response to these forces through management policies and strategies.

Analysis of the Multinational Firm. Prerequisite: admission to MBA program or consent of MBA director. Identification and analysis of the managerial, financial and market problems facing the multinational firm. Focus is empirical, and stressing application of ecological and quantitative tools to the study of the multidimensional nature of the international business environment.

Research and Thesis. 1-9 credits, maximum 30. Prerequisite: approval of advisory committee.

Seminar in Business Administration. 3-6 credits, maximum 6. Prerequisite: consent of instructor. Interdisciplinary in nature; focused on research methodology.

Business Communications (B COMM)

Written Communication. Prerequisite: 50 semester credit hours. Analysis of business communication problems in terms of generally accepted communication principles. Practice in written messages; specifically, special goodwill letters, neutral and good-news, disappointing, persuasive and employment messages.

Organizational Communication. Prerequisite: 50 credit hours. Communication theory and process; common and special problems associated with interpersonal and organizational communication affecting business decisions and operations. Principles and methods of basic and applied research in business and communication; practice in administrative report writing. Analysis of selected business cases.

Business Report Writing. Prerequisite: six hours of English. Fundamentals of writing business reports, including coverage of mechanics, content, and structure of business reports. Practice in writing business reports as well as oral presentations of reports.

Seminars in Administrative Communication. Understanding and application of valid and relevant communication principles and theories. Designed to develop management-level personnel who can effectively and efficiently use oral and written communications as administrative tools to organizational functioning.

Business Communication Applications. 1-3 credits, maximum 3. Application of communication techniques to the business setting. Interpersonal communication skills necessary for the manager in a business organization. Problems and applications within the modern business setting.
Business Education (BUSED)

6000*
Doctoral Thesis. 1-10 credits, maximum 10. Prerequisites: advanced graduate standing and approval of department head. Independent research for the doctoral thesis. Credit is given upon completion of the thesis.

Business Honors (BUHON)

4053

4063
Topics in Contemporary Business. Prerequisites: junior standing, admission to the Honors Program. Topics of interest in the contemporary business and economic environment. The social role of the corporation; U.S. competitiveness and business and environmental issues.

4073
Literature in Business. Prerequisites: junior standing, admission to the Honors Program. Foundations of American business through selected literary masterpieces.

4083
Applied Research Processes. Prerequisites: junior standing, admission to the Honors Program. The relevant aspects of the philosophical, historical and ethical issues in scientific inquiry and business research methods. Preparation for completion of senior honors thesis.

Business Professions (BUSPR)

2313
Production Keyboarding. Lab 2. Continued skill development in correct techniques, speed and accuracy with major emphasis on the application of skill.

2630
Automated Office Applications. 1-3 credits, maximum 3. Lab 4. Prerequisites: 2313 or equivalent and 24 semester credit hours. Application of automated office equipment to work processes in the office. Operation and use of word-processing equipment for text editing, operation and use of the microcomputer in text editing and other office information systems, and transcription of office communications.

3523
Office Problems in Keyboarding. Lab 2. Prerequisite: 2313 or equivalent. Problems in office situations requiring application of keyboarding knowledge and skills. Emphasis on quality work at high speeds.

3530
Field Study. 1-6 credits, maximum 6. Prerequisite: consent of department head. Individual investigations conducted in absenta and internships; periodic conferences and reports during the progress of the study.

5770
Current Issues in Vocational Business Programs. 1-3 credits, maximum 6. Prerequisite: graduate standing or consent of instructor. Problems, materials, methods, history and current theory and philosophy of vocational business programs.

Cell and Molecular Biology (CLMOL)

3112
Cytology. Prerequisites: BIOL 1304 and BIOL 1403 or 1604; CHEM 1314 and 1515. Structures found within living cells, the dynamics of these structures and the functions which they perform.

3254*
Immunology. Lab 1. Prerequisite: MICRO 2124. Vertebrate host's ability to defend itself against foreign intrusion. Chemistry and biology of the acquired immune response. Same course as MICRO 3254.

4001
Professional Transitions in Microbiology and Cell and Molecular Biology. Prerequisites: declared microbiology or cell and molecular biology major with minimum 70 hours earned and consent of instructor. Understanding major areas and employment activities in microbiology, cell biology and molecular biology fields. Evaluating and understanding scientific and professional literature, and making the transition from undergraduate education to postgraduate education or employment. Same course as MICRO 4001.

4123*
Virology. Prerequisite: BIOL 3014 or one course in biochemistry. Corequisite: 3224. Virus-host interactions including structure-function of animal, plant, and bacterial viruses. Discussion of the molecular biology of virus infection and development. Same course as MICRO 4123.

4264*
Cell Physiology. Lab 3. Prerequisite: BIOCH 3653 or BIOL 3014. Cellular activities and fundamental physiological processes. Same course as ZOOL 4264.

4273*
Developmental Biology. Prerequisites: BIOL 3024 and corequisite BIOL 3014 or one course in biochemistry. The molecular biology and molecular genetics of developmental processes such as cell division, differentiation, migration, cell-cell communication, and gene expression in a wide variety of organisms.

4323*
Bioenergetics. Prerequisites: BIOCH 3653 or BIOL 3014. Bioenergetic reactions and mechanisms involved in energy production in plants, animals and microbial systems. Same course as MICRO 4323.

4990
Special Problems. 2-4 credits, maximum 8. Prerequisite: consent of instructor. Minor investigations in the field of cell and molecular biology.

4993
Senior Honors Project. Prerequisites: departmental invitation, senior standing, Honors Program participation. A research project under the direction of a faculty member resulting in a written report to be judged by a second faculty member. Required for graduation with departmental honors in CLMOL.

Chemical Engineering (CHENG)

2033
Introduction to Chemical Process Engineering. Lab 3. Prerequisite: CHEM 1515. Application of mathematics and scientific principles to solving chemical engineering problems. Simple material and energy balances applied to process design. The nature and application of unit operations and unit processes to the development of chemical processes.
Chemical Engineering Thermodynamics. Lab 3. Prerequisites: ENGS 2213; concurrent enrollment in 2033 and CHEM 3434. Application of thermodynamics to chemical process calculations. Behavior of fluids, including estimation of properties by generalized methods. Study of chemical thermodynamics, including heats of reaction, chemical reaction and phase equilibrium.

Chemical Reaction Engineering. Lab 3. Prerequisites: 3013 and 3473. Applications of heat, mass, and momentum transfer, unit processes, and unit operations principles to the analysis of bench and pilot-scale equipment. Interpretation of experimental data and the presentation of results are emphasized.

Chemical Engineering Laboratory I. Lab 6. Prerequisite: 3013 and 3473. Applications of heat, mass, and momentum transfer, unit processes, and unit operations principles to the analysis of bench and pilot-scale equipment. Interpretation of experimental data and the presentation of results are emphasized.

Chemical Engineering Laboratory II. Lab 6. Prerequisite: 4002. A continuation of 4002.

Chemical Engineering Design I. Prerequisites: 3113, concurrent enrollment in 4002. Economic analysis of process plants and systems of equipment; methods for estimating plant investment requirements and operating costs; economic evaluation and optimal design of chemical process systems; basic equipment and process design calculations.

Chemical Engineering Design II. Prerequisite: 4124. A continuation of CHENG 4124. Economic analysis of process plants and equipment. Design of chemical processing equipment and chemical plants. Application of computer techniques to chemical engineering design.

Transport Phenomena. Prerequisite: 3013. Physical and mathematical similarities and differences of momentum, heat and mass transfer. Molecular theories of viscosity, thermal conductivity and diffusion. Shell balance techniques, Navier-Stokes equations, differential equations of energy and continuity in multiphase, reactive and nonreactive systems used to solve simple transport phenomena problems. Transport phenomena in turbulent flow systems with convective heat and mass transfer complemented with unsteady state transport.

Chemical Reaction Engineering. Lab 3. Prerequisite: senior standing. Principles of chemical kinetics rate concepts and data treatment. Elements of reactor design principles for homogeneous systems; introduction to heterogeneous systems.

Seminar. Prerequisite: senior standing; Recent developments in chemical engineering and the process industries.

Process Control Laboratory. 2-5 credits, maximum 5. Lab 4-8. Prerequisites: 3013 and MATH 2233. Experimental study of control loop performance including: process dynamics, sensors, feedback controllers, and control valves. Analog and digital techniques including: pneumatic and electronic components, programmable controllers, and computer simulation with colorographics.

Chemical Process Instrumentation and Control. Prerequisites: 3013 and MATH 2233. Instruments for measuring temperature, pressure, composition and other process variables; different modes of control and their influence on process stability. System analysis and design through linearization technique.

Special Problems. 1-5 credits, maximum 5. Lab 3-15. Prerequisite: senior standing. Training in independent work, study of relevant literature and experimental investigation of an assigned problem.

Master's Thesis. 1-6 credits, maximum 6. Prerequisite: approval of major professor. Methods used in research and thesis writing.

Professional Practice. 2-6 credits, maximum 8. Prerequisites: senior standing and consent of instructor. Application of chemical engineering principles to the solution of real-life engineering problems in an actual or simulated industrial environment. Includes application of design and testing procedures, economic evaluation and reporting on one or more assigned projects.

Special Topics In Chemical Engineering. 2-3 credits, maximum 6. Lab 2-6. Prerequisite: consent of instructor. Small group and individual projects in unit operations, unit processes, chemical kinetics, computer applications, process modeling or any of a wide range of chemical engineering topics. May be repeated for credit if subject matter varies.

Advanced Chemical Reaction Engineering. Prerequisites: 4473. Advanced principles and applications of chemical kinetics in catalysis, heterogeneous systems, non-ideal reactions, polymerization and biological reactions.

Selected Diffusional Unit Operations. Mass transfer in fluids. Diffusion in liquids and gases. Equilibrium stage and transfer unit concepts. Mass transfer concepts of diffusional unit operations such as absorption, adsorption, crystallization, drying, humidification and liquid extraction.

Biomedical Engineering. Prerequisite: consent of instructor. Application of fundamental chemical engineering principles to challenges posed by biotechnology. Fermentation technology, biological mass transfer and kinetics, and bioprocess-ing design and scale-up.

Fundamentals of Polymer Engineering. Fundamental principles in the engineering of macromolecules. Various aspects of polymer engineering including definitions and nomenclature, polymer physical chemistry, mass-transfer, rheological and mechanical properties, industrial production and applications.
6113* Chemical Engineering Science II. Prerequisite: 6202. Continuation of 6203. Theoretical aspects of fluid dynamics, heat transfer and mass transfer. Boundary layer theory, multiphase flow. Theory of diffusion and interphase mass transfer. Analogies between heat, mass and momentum transfer.

6233* Advanced Chemical Engineering Thermodynamics. Prerequisite: 5843. Phase equilibrium in multicomponent systems. Irreversible processes. Properties of fluids and the prediction of properties by statistical methods. Application of thermodynamics to unit operations.

6400* Advanced Topics in Chemical Engineering. 3-6 credits, maximum 9. Topics in chemical engineering unit operations in design. Advanced mathematical techniques in chemical engineering problems. May be repeated for credit if subject matter varies.


Chemistry (CHEM)

1014 (L,N)Chemistry in Civilization. Lab 2. Symbols, methods and contributions to society of the chemical sciences. Includes polymers, pollution, energy, consumer chemicals, drugs, nuclear science and other topics. No credit for students with credit in 1215, 1314.

1215 (L,N)General Chemistry. Lab 2. Prerequisite: MATH 0123 or high school equivalent. The beginning chemistry course recommended for students in the applied biological sciences. No credit for students with credit in 1014, 1314.

1225 (N)General Chemistry. Lab 2. Prerequisite: 1215 or advanced placement. A continuation of general chemistry, recommended for students in the applied biological sciences. No credit for students with credit in 1515.

1314 (L,N)General Chemistry. Lab 2. Prerequisite: MATH 1513 or concurrent enrollment in 1613, 1715 or a higher level math course. The beginning chemistry course recommended for students in basic biological sciences (including premedical science and pre-veterinary science), physical sciences and engineering. No credit for students with credit in 1014, 1215.

1413 (L,N)Inquiry-based Chemistry. Lab 3. Prerequisite: PHYS 1313 recommended. Directed inquiry and hands on study of chemical reactions. Recommended for elementary education majors as model course to learn and teach science.

1515 (L,N)General Chemistry. Lab 2. Prerequisite: 1314 or advanced placement. A continuation of general chemistry. No credit for students with credit in 1225.

2113 Principles of Analytical Chemistry. Prerequisites: 1515 and MATH 1513 or 1715. Modern theories of solutions, separation techniques and methods of analysis.

2122 Quantitative Analysis Laboratory. Lab 6. Prerequisite: 2113 or concurrent enrollment. Laboratory work related to material covered in CHEM 2113.

2990 Special Problems in Chemistry for Non-majors. 1-2 credits, maximum 2. Prerequisite: 1515 or concurrent enrollment. Independent training in chemistry at the lower-division level.

3015* The Chemistry of Organic Compounds. Lab 4. Prerequisites: 1215 and 1225 or equivalent. Terminal, one-semester non-major's course in organic chemistry, following the general principles of nomenclature, structures, bonding, methods of preparation, reactions and uses of acyclic, cyclic, and aromatic compounds. No credit for students with credit in 3053 or 3112.

3053* Organic Chemistry. Prerequisite: 1515 or equivalent. Hydrocarbons and their derivatives, including specific compounds of theoretical, physical or industrial importance. No credit for students with credit in 3015.

3112 Organic Chemistry Laboratory. Lab 6. Prerequisites: 3153 or concurrent enrollment. Laboratory exercises related to theoretical principles covered in CHEM 3053 and 3153. No credit for students with credit in 3015.

3153* Organic Chemistry. Prerequisite: 3053. A continuation of 3053.

3164 Physical Science for Teachers. Lab 2. Prerequisites: 1314, GEOG 1114, PHYS 1114. Capstone course in physical science for potential science teachers. Review of physics and chemistry principles and phenomena as related to the curriculum.

3353 Descriptive Inorganic Chemistry. Prerequisite: 1225 or 1515. Structures and properties of the elements and their many compounds in the broadest sense which includes the modern technologically important materials, organometallics, and inorganic substances of biological significance.

3434* Physical Chemistry I. Prerequisites: 2113, MATH 2155. Introductory theoretical analysis of molecular structure, chemical bonding and macroscopic chemical systems using quantum theory, classical and statistical thermodynamics and kinetics. Students who are not chemistry majors may receive graduate credit.

3532* Physico-Chemical Measurements. Lab 6. Prerequisites: 2122, 3434. Apparatus, experimental methods and calculations employed in physico-chemical investigations.

3553* Physical Chemistry II. Prerequisite: 3434. A continuation of 3434. Students who are not chemistry majors may receive graduate credit.

4020* Modern Methods of Chemical Analysis. 1-5 credits, maximum 5. Lab 2. Prerequisites: 2122, 3434. Theoretical and laboratory study of modern techniques, reagents and instruments employed in analytical chemistry.

4101* Laboratory and Chemical Safety. Instruction on chemical safety, prudent laboratory practices, and federal, state, and OSU regulations on safety.


5000* Thesis. 1-6 credits, maximum 6. Investigations, chiefly experimental, with necessary conferences. Familiarizes the student with methods used in research in chemistry.

5011* Graduate Seminar. Preparation and presentation of seminars, usually on subjects of current interest taken from the literature. Completion of 1 credit hour required for M.S. degree.

5103* Physical and Chemical Separations. Prerequisite: one year of physical chemistry. Principles of bulk and multi-stage separation methods: chromatography, liquid-liquid extraction and zone melting.

5113* Equilibrium and Kinetics in Analytical Chemistry. Prerequisite: one year of physical chemistry. Physical and chemical principles of equilibrium and kinetics as applied to analytical problems.

5220* Modern Topics for Teachers. 1-6 credits, maximum 6. Prerequisite: teaching experience. Designed to help elementary and secondary science teachers improve their subject matter competence in chemistry. Content varies, depending on the needs of specific groups of teachers.

5223* Chemistry of High Polymers. Prerequisites: 3153 and 3434 or equivalent. Preparation and polymerization of organic monomers; properties and uses of resulting high polymers; theories of polymerization; inorganic and natural organic polymers.

5260* Inorganic Chemistry I. 1-3 credit hours, maximum 3. Prerequisites: 3353 or equivalent, and 3 hours of physical chemistry. Bonding theory, molecular symmetry and structure, characterization of inorganic compounds, coordination chemistry, crystal field theory, solution chemistry, and mechanisms of inorganic reactions in solution.

5283* Solid-state Chemistry. Prerequisite: 5260. Structure, bonding, and properties of crystalline and amorphous inorganic solids. Emphasis on the characterization of inorganic solids and phase transitions in inorganic solids.


5372* Spectrometric Identification of Organic Compounds. Lab 3. Prerequisite: 4320. Lectures on ultraviolet, circular dichroism, infrared, nuclear magnetic resonance (NMR) and mass spectrometry (MS). More advanced techniques in NMR and MS stressed. Hands-on training and use of modern spectrosopic instrumentation in laboratory.

5443* Mechanism and Structure in Organic Chemistry. Prerequisites: 3153 and 3553. Relationship of properties of organic compounds to their structure; mechanisms of organic reactions.

5563* Chemical Thermodynamics I. Prerequisite: 3553. Statistical and classical thermodynamics applied to chemical systems.
Civil Engineering (CIVEN)


3143 Structural Analysis. Lab 3. Prerequisite: 3113. Analysis of internal forces and deflections of structures subjected to static loading. Beams, trusses, and framed structures analyzed by computer programs designed for the analysis of structures.

3523 Reinforced Concrete Design. Lab 3. Prerequisite: 3113. Introduction to the design of reinforced concrete members and connections in accordance with AISC specifications.

3614 Engineering Surveying. Lab 3. Prerequisite: MATH 1813 or MATH 1715. Principles and techniques of vertical and horizontal measurements related to engineering and construction projects. Linear and angular measurements, differential leveling, traverses, topographic surveys, construction surveying, horizontal and vertical curves, earthwork quantities, and design of route systems.

3623 Engineering Materials Laboratory. Lab 3. Basic construction materials including Portland cement concrete, asphalt concrete, aggregates, and composite materials. Behavioral characteristics, use, and quality control of these materials. Basic statistical procedures used for material specifications. Laboratory sessions provide "hands on" experience in performing standard tests.

3633 Transportation Engineering. Prerequisite: 3614 or consent of instructor. Planning, design, and operations of transportation facilities. Vehicle characteristics and human factors in design. Traffic stream variables and their measurement techniques. Basic traffic flow models. Highway and street intersection capacity and level of service. Traffic control concepts. Transportation systems management. Application of statistical analysis and operations research to analyze transportation problems.


3823 Human Impact on the Environment. The activities of humans and how they affect the aquatic, terrestrial and atmospheric environment.

3833 Hydraulics. Prerequisites: CHEM 1515, PHYSC 2014. Basic hydraulic principles and their applications in civil engineering problems. Fundamentals of surface, water and pressure forces, water flow in pipes and networks, water pumps, water flow in open channels, hydraulics of wells, hydraulic similarity and model studies; and water measurements. Basic principles and concepts will be highlighted by laboratory demonstrations and computer solution techniques.

3843 Hydrology I. Prerequisite: ENGSC 3233. Basic principles of surface and groundwater hydrology and their application in engineering problems. The hydrologic cycle, weather and hydrology, precipitation, evaporation, transpiration, subsurface waters, stream flow, hydrographs, hydrologic and hydraulic stream routing, probability of hydrologic events, application of hydrologic models. Same course as BIOEN 4313.

3853 Environmental Engineering Laboratory. Lab 3. Prerequisite: 3813. Performance of experiments with bench scale environmental engineering unit operations, review of chemical principles, and analysis of water and wastewater treatment, solid and hazardous waste management, and air pollution abatement. Emphasis on the development of experimental results that can be used in the design of full-scale units.

4010 Civil Engineering Research. 1-4 credits, maximum 12. Prerequisite: senior standing or consent of instructor. Research and investigation of civil engineering problems.

4042 Senior Seminar. Prerequisite: senior standing or consent of instructor. Topics relevant to the professional practice of civil engineering. Written communications skills are stressed. Resumes, letters of introduction and job interviews are discussed in detail. Management principles and project management are introduced. The advantages of professional registration and professional and technical society membership are covered. Other topics such as professional ethics, income taxes and investments are discussed.

4043 Senior Design. Prerequisites: 3513, 3523, senior standing. Major comprehensive design experience using the team approach. Industry practitioners provide design projects and analyze and critique results. Extends the undergraduate experience and provides the student with opportunities to analyze and design complex structures.
4143* Environmental Engineering Design. Prerequisites: 3813, 3853, 4833, ENSCG 3233. Factors involved in the design of engineered environmental systems. Solving “real world” environmental engineering problems. Design experience using decision making techniques, integrating and expanding upon current knowledge, and defending engineering decisions made. Economic, environmental, social and regulatory aspects of environmental engineering design.

4273* Construction Planning and Scheduling. Lab 3. Prerequisites: senior standing and consent of instructor. Critical-path methods of planning, scheduling and controlling construction projects. Includes both computer and noncomputer techniques.

4711* Basic Soils Testing Laboratory. Lab 3. Prerequisite: 3713. Laboratory measurement of the physical and mechanical properties of soils; specific gravity, grain size distribution, plasticity, compaction, compressibility, and shear strength.

4763* Construction Estimating. Lab 2. Prerequisite: senior standing. The construction industry, its makeup, operation, estimating and bidding procedures. Theory and practice of estimating materials, labor, equipment and overhead costs for various types of construction. Emphasis on preliminary cost estimates during the conceptual design phase of a construction project.

4833* Unit Operations in Environmental Engineering. Prerequisites: 3813, ENSCG 3233. Fundamental principles of water and wastewater treatment, including basic theory and development of design parameters. Application of these to the design of unit operations and processes in various treatment plants.

5000* Master’s Thesis or Report. 1-6 credits, maximum 6. Prerequisite: graduate standing. A student studying for a master’s degree will enroll in this course for 2 credit hours if a report is to be written; 6 credits if a thesis is to be written.

5010* Civil Engineering Seminar. 1-3 credits, maximum 6. Prerequisites: graduate standing and approval of major professor. Review of literature of major fields of civil engineering.

5013* Aquatic Chemistry. Prerequisites: 5813 or concurrent enrollment. CHEM 1515 or equivalent. Application of chemical principles to environmental problems. Chemical kinetics, chemical equilibrium, acid-base chemistry, and development of pc-pH diagrams and coordination chemistry. Precipitation and dissolution reactions and oxidation-reduction reactions.

5020* Civil Engineering Research. 1-6 credits, maximum 6. Prerequisites: graduate standing and approval of major professor. Research and investigations other than thesis studies.

5030* Engineering Practice. 1-6 credits, maximum 9. Prerequisite: approval of adviser. Professional supervised civil engineering practice involving authentic projects for which the student assumes a degree of professional responsibility. Activities must be approved in advance by the student’s adviser and may consist of engineering experience on-campus or off-campus, or both. Periodic reports both oral and written are required as specified by the adviser.

5080* Engineering Problems. 1-3 credits, maximum 6. Prerequisite: graduate standing. Problems of particular interest to graduate students in the field of applied science.

5123* The Legal and Regulatory Environment of Engineering. Prerequisite: junior, senior or graduate standing. The U.S. and Oklahoma court systems. Tort law and labor law having an impact on engineering and construction. Union organization and activities. Government contracts and the laws governing them. Discussion of the Occupational Safety and Health Act and Americans with Disabilities Act. In-depth look at environmental policy, laws, and regulations affecting engineering including NEPA, CWA, SDWA, RCRA, CERCLA, and CAA. Water law.


5143* Project Engineering and Management. Prerequisite: graduate standing or consent of instructor. Design and construction of civil engineering projects. Topics include owner’s study, formation of project teams, design coordination, construction, and project closeout.

5153* Contract Administration. Prerequisite: graduate standing or consent of instructor. Methods and techniques of tracking and control of construction projects. Evaluation of current research findings to contract implementation.

5163* Construction Equipment Management. Prerequisite: graduate standing or consent of instructor. Analysis of construction equipment. Performance under various operating conditions. Application of engineering fundamentals to construction methods. Selection and costs of equipment, prediction of equipment production rates, and unit costs of work in place.

5173* Concrete Construction. Prerequisite: graduate or consent of instructor. Design of formwork for concrete structures. Analysis of loads, deflections, and stresses of forming systems. Evaluation of economics of formwork designs.

5213* Environmental Geotechnology. Prerequisites: background in soil mechanics and basic chemistry. A study of the ability of soil to retain pollutants, effect of pollutants on chemical, physical and geotechnical properties of soil. Description of soil remediation technologies.

5233* Geotechnical Engineering Investigations. Prerequisites: 3713, 4711, and basic geology course. Description of methods of subsurface exploration, sampling, and in situ testing. Discussion includes a review of engineering geophysical methods, equipment and methods for boring and sampling of soil and rock, measurement of ground water conditions, and in situ testing equipment and methods such as cone penetration test, pressure meter test and others.

5243* Use and Design of Geosynthetics. Prerequisites: 3713, 4711. Description of various types of geosynthetics available for engineering uses. Pertinent engineering properties required to design for various functions, basic design methodology for geosynthetics for various functions, and construction and performance considerations.

5263* Terrain Analysis. Prerequisites: Basic courses in soil mechanics and geology. Prediction of geotechnical engineering characteristics of geological landforms from remote sensing imagery. Emphasis on photographic stereo interpretation. Training and practice of this media in land-use applications and environmental problems.

5303* Systems Analysis for Civil Engineers. Prerequisite: senior or graduate standing. Synthesis of systems modeling and simulation techniques, mathematical optimization procedures, and evaluation tools of multi-attribute systems including utility theory and decision analysis. Mathematical optimization techniques in the design of environmental systems. Solving “real world” environmental problems. Selection of alternative transportation systems.

5313* Highway Traffic Operations. Prerequisite: 3633. Level of service, capacity and service volume concepts. Operational characteristics of uninterrupted-flow and interrupted-flow traffic facilities. The 1985 HCM procedures for analyzing the capacity of freeways, multilane and two-lane rural highways, urban arteries, signalized and unsignalized street intersections, and transit and pedestrian facilities. Administrative and planning actions for congestion management. Design alternatives and improvement strategies for effective use of urban arterial street width.


5353* City Planning and City Organization. Lab 3. Prerequisite: senior or graduate standing. Order the growth of a city. The application of techniques of transportation, urban and rural growth, city, and city engineering organization. Subdivisions, zoning, park system, water front, street systems, airports and transportation terminals, and traffic control. Functional organization of a city and city engineering organization.


5403* Advanced Strength of Materials. Prerequisite: 3113. General states of stress and strain, theories of failure, energy principles, beam bending, shear center, torsion of prismatic shafts, beams on elastic foundations, plates and shells, elastic stability.

5413 Classical Methods of Structural Analysis. Prerequisite: 3413. Advanced analysis of indeterminate frames, trusses and arches by classical, numerical, and energy methods with emphasis on methods for hand computations.


5433* Energy Methods in Applied Mechanics. Prerequisites: 3113, MATH 2233 or MAE 3323. Advanced structural mechanics from the standpoint of energy principles and variational calculus applied to the analysis of structures, mechanisms, dynamics, and vibrations.

5443 Theory of Elastic Stability. Prerequisite: 5403. General theory of elastic stability; buckling of columns; analysis of beam-columns; stability analysis of structural frames, thin-walled beams of open cross-section, and plate structures.

5453 Engineering Analysis. Prerequisite: ENGSC 2112. Advanced, classical mathematical skills for engineers. Dimensional analysis, general tensor analysis, curvilinear coordinates, partial differential equations, perturbation theory, integral equations, special functions, eigen function analysis, integral transform methods, variational methods.


5503 Computer-aided Structural Analysis and Design. Prerequisites: 3413; 3513 and 3523 (or concurrent enrollment); senior or graduate standing. Major comprehensive design experience. Promotion of a design office atmosphere using a team approach. Industry practitioners provide design projects and critique results. Analysis and design of complex structures and preparation of contract documents and drawings. Emphasis on modern computer-based computation and presentation tools.

5513 Advanced Reinforced Concrete Design. Prerequisite: 3523. Advanced topics in reinforced concrete design with emphasis on frames, slabs, and earthquake-resistant structures.

5523* Advanced Steel Structure Design. Prerequisite: 3513. Advanced topics in steel design such as plastic design, plate girders, composite design, fatigue and fracture, stability, and bracing design.


5543 Bridge Design. Prerequisites: 3513 and 3523. Structural design of steel and concrete highway bridges, including bridge types, parts of a bridge, loads and load distribution, analysis, design, and bridge rating. Emphasis on topics of special interest to students.

5553 Fatigue and Fracture Mechanics. Prerequisite: MAE 4333 or consent of instructor. Fracture processes in engineering materials including design considerations, failure avoidance and predictability. Fatigue processes and high-strength, toughness-limited materials emphasized. Same course as MAE 5533.

5643* Pavement Evaluation and Rehabilitation. Lab 1. Prerequisite: 3693 or consent of instructor. Principles of asphalt concrete design methods including material characteristics and performance. Evaluation of Hveem and Marshall mix design methods. Asphalt cements, rubberized asphalt polymer asphalts, emulsions, cutbacks, and aggregates. Laboratory sessions focused on the engineering properties of the materials discussed.

5653* Asphalt Materials and Mix Design. Lab 1.5. Prerequisite: 3633 or consent of instructor. Principles of asphalt concrete mix design including material characteristics and performance. Principles of asphalt concrete mix design methods. Asphalt cements, rubberized asphalt polymer asphalts, emulsions, cutbacks, and aggregates. Laboratory sessions focused on the engineering properties of the materials discussed.

5713* Soil Mechanics. Prerequisites: 3713 and 4711. Application of soil mechanics principles and concepts in geotechnical areas of permeability and seepage, settlement analysis, bearing capacity, lateral earth pressures and retaining walls, slope stability, and metatable soils.

5723* Foundation Engineering. Prerequisites: 3713 and 4711. Types of structural foundations including footings, mats, rafts, piles and drilled shafts. Site characteristics, exploration programs, field data, test results and construction materials and methods as basis for selection of type of foundation and design. Geotechnical design procedures and considerations.


5743 Soil-Structure Interaction. Prerequisites: 3713 and senior or graduate standing in civil engineering. The mechanical interaction effects between soils and structures using suitable engineering procedures such as finite differences and finite element methods. Civil engineering problems where interaction effects are most dominant including grade beams (beams on elastic foundation), axially- and laterally-loaded piles, cantilever and anchored sheet pile walls.

5753* Engineering Soil Stabilization. Prerequisites: 3713 and 4711. Theoretical and practical aspects of engineering soil stabilization as a method for improving and upgrading low quality and unstable soils for engineering purposes. Use of lime, fly ash, portland cement, asphalt, and other physical and chemical admixtures. Application of deep foundation stabilization methods such as preloading, deep compaction, injection, and reinforcement.


5813* Environmental Laboratory Analysis. Lab 3. Prerequisite: 4833 or concurrent enrollment. Analytical procedures for water and wastewater containing contaminants. Emphasis on the chemical theory of procedures, analytical work and an understanding of the significance or need for such laboratory data for surface and groundwater management and water and wastewater treatment processes and design.

5823* Environmental Risk Assessment and Management. Prerequisites: an introductory class in statistics and background in engineering, management or science. Environmental risk assessment and management. Applies elements of statistics, probability and environmental simulation to determine the public health and ecological risks from activities of humans.

5833 Water Quality Management. Physical, chemical and biological factors in pollution and natural purification of rivers and lakes in relation to point and nonpoint sources of pollution. Development of low flow statistics and pollution loading functions for subsequent modeling projects. Dissolved oxygen and nonpoint source contamination models developed and applied.

Civil Engineering 225
Hydrology II. Prerequisite: 3843. Physical phenomena of the surface water hydrolological processes. Derived and to empirical models for evaporation, infiltration, basin runoff and unsteady flow routing will be presented. Basic flood analysis techniques will also be studied.

Bioremediation. Prerequisite: 3813 or equivalent standing. Emphasis on contaminant remediation. Engineering factors to promote successful bioremediation. Design project required.

Advanced Unit Operations in Environmental Engineering. Prerequisite: 4833. Theory and design of advanced physical-chemical water and wastewater treatment processes applied to municipal, industrial, and hazardous waste situations.

Air Pollution Control Engineering. Causes, effects and control of atmospheric pollution.

Residuals and Solid Waste Management. Theory, design and operation of systems for handling, treatment, and disposal of process sludges (water treatment, wastewater treatment, industrial) and solid wastes. Potential material reclamation options.


Water Resources Planning and Management. Application of engineering economics and microeconomic theory to the planning and management of water resources projects including flood control, hydropower, water supply, and urban stormwater. Systems analysis approaches, primarily linear and dynamic programming, and their application in water resources.

Water Treatment. Prerequisite: 4833. Theory, design and operation of water treatment plants. Sizing of various unit processes. Water treatment plant control procedures.

Unit Operations and Processes Laboratory. Lab 3. Prerequisite: 4833, 5813 or equivalent. Bench and pilot-scale experiments as physical models of water and wastewater treatments. Techniques of data collection and analysis applied to design of physical, chemical and biological processes.

Biological Waste Treatment. Lab 3. Prerequisite: 4833 or equivalent. Fundamentals of microorganisms and their role in the treatment processes. Standard suspended-growth and fixed biofilm wastewater and sludge suspensions and treatment system design calculations.

Open Channel Flow. Prerequisite: 3833. Open channel hydraulics, energy and momentum concepts, resistance, channel controls and transitions, flow routing, and sediment transport.

Ground Water Quality. Prerequisite: graduate standing or consent of instructor. Ground water protection legislation. Fate and transport of nutrients, metals, other anions and cations, organics, bacteria and viruses in the subsurface environment. Pollution containment, abatement techniques. Aquifer restoration.

Groundwater Pollution Control. Theory, design and operation of groundwater pollution control systems. Includes examples from site specific applications as well as regional or national focus.


Ph.D. Research and Thesis. 1-16 credits, maximum 30. Independent research under the direction of a member of the graduate faculty by students working beyond the level of Master of Science degree.

Structural Dynamics. Analysis of bars, frames, towers, multi-story building and truss structures subjected to dynamic disturbances; investigation of lumped and distributed mass systems; natural frequencies, response spectra, applications to blast loading and earthquake analysis.


Plate and Shell Structures. Prerequisite: 5403. Bending of thin plate structures to include rectangular and circular plates. Analysis of orthotropic plates by classical and numerical methods. Introduction to shell bending theory.

Structural Geotechnical Engineering. Analysis of groundwater flow and related release. Qualitative and quantitative identification of ground failure hazards including flow characteristics and changes in transmissivity. Sizing of various unit processes. Water treatment plant control procedures.

Communications, Speech and Disorders (CDIS)

Phonetics. Prerequisite: sophomore standing. Analysis and description of speech at the segmental and suprasegmental levels. Development of students’ perceptual and analytic skills in speech sound production. Practice using the International Phonetic Alphabet for broad and narrow transcription. Overview of the speech production mechanism and process.

Survey of Communication Disorders. Prerequisite: sophomore standing. The normal development of speech, language, and hearing. The characteristics, diagnosis and treatment of speech, language, and hearing disorders among all age groups. Suggestions for related professions involved with people with communication disorders.

(S)Speech and Language Development. Prerequisites: 2213, 3213 and acceptance into professional program. Normal acquisition of phonology, morphology, semantics, syntax and pragmatics in children. Biological, cognitive, social bases of language acquisition. Description of dialect variations, second language acquisition, and atypical language development. The relationship between spoken and written language development.

Clinical Practicum. 1-3 credits, maximum 3. Lab 2-6. Prerequisites: 3013, 4323, 4413, senior standing and consent of adviser. Supervised clinical practicum in speech-language pathology and audiology.

Clinical Methods and Issues. Prerequisites: 2213, 3213, 3224 and declared speech pathology major. Fundamental processes and procedures of clinical practicum, report writing, goal selection, and production, assessment and recording of speech and language behaviors; development of interpersonal skills with clients, families, and other professionals; problem solving skills; knowledge of professional organizations and credentialing.

Clinical Observations. Lab 2. Prerequisites: 2213, 3213, 3224; declared speech pathology major. Observation and critiquing of speech and language pathology and audiology clinical activities. Monthly group meetings.

Sign Languages. Prerequisite: junior standing or consent of instructor. Introduction to methods of sign language currently used among the U.S. deaf society socially and educationally including traditional American Sign Language (ASL), Manually Coded English (MCE, SEE), and Sign Spelling. Linguistic aspects of sign and various sociological, psychological, and adaptive communication issues having an impact on the deaf community.

Aural Rehabilitation for the Acoustically Handicapped. Prerequisites: 2213, 3123, 3213, 3224. Clinical aspects of habilitation and rehabilitation programs for the deaf and the hard-of-hearing, including speech reading, auditory training, speech conservation, speech and language therapy, hearing aid orientation and counseling. Amplification units studied.

Anatomy and Physiology of the Speech Mechanism. Lab 1. Prerequisite: 3213. Structure and function of the respiratory, phonatory, articulatory, and neural systems involved in the oral communicative processes. Laboratory experiences required.

Language Analysis. Prerequisites: 3224, ENGL 2443. Applications of content, form, and use analysis methods to language samples of individuals with communication disorders. Analysis of word, phrase, sentence and discourse levels. Variations as a function of age, culture, modality (spoken or written), and disorder type.

Diagnostic Procedures in Communication Disorders. Prerequisites: 3013, 3224. Speech and language diagnostic testing and procedures, interpreting diagnostic information and deriving appropriate treatment goals.

(N)Speech Science. Prerequisite: 4214. Scientific basis of the acoustic parameters, the perceptual and productive processes of speech, and the interrelationships of those factors during speech communication. Laboratory experience required.

Language Assessment and Intervention. Prerequisite: 3224. Fundamentals of language assessment diagnosis and intervention; goal selection and procedural processes for language treatment with infants, toddlers and preschool-age children.


Stuttering. Prerequisite: junior standing or consent of instructor. Recent research into the nature, causes and treatment of stuttering.

Independent Study in Communication Sciences and Disorders. 1-3 credits, maximum 3. Prerequisite: junior standing and consent of instructor. Directed readings or research in communication sciences and disorders.

Senior Honors Thesis. Prerequisites: departmental invitation, senior standing, Honors Program participation. A guided reading and research program ending with an honors thesis under the direction of a faculty member. Required for graduation with departmental honors in speech pathology.

Research and Thesis. 1-3 credits, maximum 6. Prerequisite: consent of graduate faculty. Research in speech, language and hearing sciences and disorders.

Research Methods in Communication Disorders. Prerequisite: 3213. Research methods with emphasis on those used most frequently in speech and language pathology and audiology; experience devising and implementing research.


Clinical Audiology. Prerequisites: 3123, 4133, 4313. Hearing disorders and their etiologies. Clinical application of pure tone and speech audiometric tests, including special diagnostic tests. Application to clinical management of the hearing impaired.


Neurological Communication Disorders. Prerequisite: 4214. Communication changes occurring with aging and common neurological diseases and trauma. Neuropsychological bases and etiology. Evaluation and treatment of aphasia and right hemisphere disorders.


Motor Speech Disorders. Prerequisite: 5153. Nature, evaluation and treatment of neurologically-based motor speech disorders such as dysarthria and apraxia.

Cognitive Communication Disorders. Prerequisite: 5153. Nature, evaluation and treatment of acquired cognitive communication disorders secondary to traumatic injury or dementia.

Advanced Practicum. 1-6 credits, maximum 9. Prerequisite: consent of instructor. Practical experience for the advanced student on or off campus.

Communication Disorders in Infants and Toddlers. Prerequisite: 2213. The speech and language functioning of young children with particular emphasis on those who are at risk or have communication and language disorders. Symptoms, evaluation, prevention and intervention approaches. Family assessment including interdisciplinary and multidisciplinary approaches. Impact of prenatal, perinatal and postnatal biological and environmental risks on developmental outcomes.


Voice Disorders. Prerequisite: 4313. The physiology of the vocal mechanism and factors which cause voice deviations. Recent research on diagnostic and intervention procedures in a variety of disorders. Independent study, observations in medical settings, and special demonstrations.

Adaptive Communication Systems. Prerequisite: major in communication science and disorders or consent of instructor. Evaluation and management of communication disorders in individuals requiring specially adapted educational intervention programs. Adaptive communication technologies.

Physically-based Communication Disorders. Prerequisites: 4214, 4313. Recent research in the etiology, assessment and management of communicative disorders in individuals with orofacial, physical and other multiple anomalies.
Computer Science

Computer Science (COMSC)

1002

Computer Literacy. Lab 2. For students with little or no personal computer skills. Use of
Internet and productivity software such as word processing and spreadsheets.

2103

(A) Computer Programming. Lab 2. Prerequisite: MATH 1513 or equivalent. Introduction to
computer programming using a block-structured high-level computer language, including
subprograms and arrays. Principles of problem solving, debugging, documentation, and
good programming practice. Elementary methods of searching and sorting. Course not
intended for computer science majors.

2113

(A) Computer Science I. Prerequisite: MATH 1513 or equivalent. Introduction to computer
science using a block-structured high-level computer language, including subprograms,
arrays, recursion, records and abstract data types. Principles of problem solving, debug-
ging, documentation and good programming practice. Elementary methods of sorting and
searching. Use of operating system commands and utilities.

4343*  Data Structuresand Algorithm Analysis I. Prerequisite: 2133. Storage, structures, data and information processing. Topical topics include trees and tree processing, graphs and graph processing, searching, sorting.

4443*  Compiler Writing I. Prerequisites: 2133, 3443. Syntax and semantics of procedure-oriented languages. Informal and operational techniques used in their compilation. Study of languages for particular application areas, including nonalgebraic languages.

4513*  Numerical Mathematics: Analysis. Prerequisites: MATH 2233, MATH 3013, knowledge of FORTRAN. Machine computing, algorithms, and analysis of errors applied to interpolation and approximation of functions solving equations and systems of equations, discrete variable methods for integrals and differential equations. Same course as MATH 4513.

4570*  Special Topics in Computing. 1-3 credits, maximum 5. Advanced topics and applications of computer science. Typical topics include operating systems, multiprocessor systems, programming systems or various mathematical and statistical packages. Designed to allow students to study topics not provided in existing courses.

4793  Artificial Intelligence. Prerequisites: 2133, 2653. Broad coverage of core artificial intelligence (AI) topics, including search-oriented problem solving, knowledge representation, logical inference, AI languages, history and philosophy of AI.

4863  (S)Social Issues in Computing Sciences. Prerequisite: senior standing. Social implications of computer use or misuse with emphasis on the effects on the individual, society and other human institutions. Social responsibilities of people involved in using or applying computers.

4993  Senior Honors Project. Prerequisites: departmental invitation, senior standing, Honors Program participation. A guided reading and research program ending with an honors project under the direction of a faculty member, with a second faculty reader and an oral examination. Required for graduation with departmental honors in computing and information science.

5000*  Research and Thesis. 1-6 credits, maximum 6. Prerequisite: consent of major professor. A student studying for a master's degree who elects to write a thesis or a report must enroll in this course.

5013*  Linear Programming. Prerequisites: MATH 3013 or INDEN 3014. FORTRAN, a simple algorithm to solve deterministic linear optimization models considering maximization and minimization objectives; degeneracy, alternative optima and no feasible solutions. Revised simplex procedures. Duality theory, economic interpretations, dual simplex and complementary pivoting. Sensitivity analysis and parametric programming. Special cases of linear optimization problems and underlying mathematical foundations. Large-scale models including computational considerations. Same course as INDEN 5013.

5030*  Professional Practice. 1-9 credits, maximum 9. Prerequisites: graduate standing in computer science, consent of the department head. Experience in the application of computer science principles to problems encountered in industry, participation in problem solving in the role of junior computer scientist, junior software engineer, or computer science intern. All problem solutions documented. Required written report to the major professor.

5070  Seminar and Special Problems. 1-6 credits, maximum 6. Prerequisite: consent of instructor. Designed to allow students to study advanced topics not provided in existing courses.

5113  ComputerOrganization and Architecture. Prerequisite: 3443. Computer architecture, computer control, microprogrammed control, addressing structures, memory hierarchies, hardware description languages, specific architectures, hardware simulation, emulation.

5145  Computer Science Migration. Lab 2. Prerequisite: graduate standing. A survey of computer science for students whose undergraduate major was not computer science. Programming in high-level languages. Programming in assembly language. Algorithm design and analysis. Computer system fundamentals. Fundamental data structures.

5253*  Digital Computer Design. Prerequisite: ECEN 3223. Analysis and design of digital computers. Arithmetic algorithms and the design of the arithmetic/logic unit (ALU). Serial and parallel data processing; control and timing systems; microprogramming; memory organization and addressing input/output interfaces. Same course as ECEN 5253.

5273*  Advanced Software Engineering. Lab 2. Prerequisite: 4273. Continuation of 4273. Advanced theory and practice of software design methodology. Large-scale design and implementation on problems. Experimental design for software engineering. Same course as ECEN 5273.

5283*  Computer Network Programming. Prerequisite: 2133, 3443. Mathematical concepts related to computer and telecommunications software development. Client-server programming using various application program interfaces, including STREAMS, the Transport Layer Interface (TLI), and Berkeley Sockets. Application development using TCP/IP protocols.


5323*  Design and Implementation of Operating Systems II. Prerequisite: 4323. Task systems and concurrent programming, synchronization and inter process communication. Theoretical investigation of resource sharing and deadlock, memory management, strategies, and scheduling algorithms, queuing theory, distributed operating systems. System accounting, user services and utilities.

5333*  Compiler Writing II. Prerequisite: 4443. Continuation of 4443. Theory and practice of compiler writing techniques. Compiler writing systems. A formal approach to computer languages.


5413*  Data Structuresand Algorithm Analysis II. Prerequisite: 4343. Data structures and their application in recursive and iterative algorithms. Static and dynamic data structure representations and processing algorithms. Dynamic and virtual storage management.

5423*  Information Organization and Retrieval. Prerequisites: 3423, 4343 or equivalents. An overview of database management systems, entity-relationship model, relational model, relational algebra, relational calculus, structural query language, relational database design with normalization theorems, database integrity constraints, object-oriented model.


5513*  Numerical Analysis I. Prerequisite: 4513 or MATH 4513. Algorithms and error analysis; solution of equations; interpolation and approximation theory.

5543*  Numerical Analysis for Differential Equations. Prerequisites: 4513 or MATH 4513 and 4233. Advanced numerical methods for solving algorithms, analysis of truncation and rounding errors, convergence and stability applied to discrete variable, finite element, and spectral methods in ordinary and partial differential equations. Same course as MATH 5543.

5553*  Numerical Analysis for Linear Algebra. Prerequisites: MATH 3013 and COMSC 4513 or MATH 4513. Advanced machine computing, algorithms, analysis of rounding errors, condition, convergence, and stability applied to direct and iterative solution of linear systems of equations, linear least squares problems, including LU and QR factorization, conjugate gradients, QR algorithm, and Lanczos method. Same course as MATH 5553.

5653*  Automata and Finite State Machines. Prerequisite: 5313. Finite state model, state diagrams and flow tables, equivalent states and equivalence of models. Formal grammars, context-free languages and their relation to automata. Turing machines, computability and recursive function. Same course as MATH 5653.

5663*  Computability and Decidability. Prerequisite: 5313. Effectiveness, primitive recursiveness, general recursiveness, recursive functions, equivalence of computability, definitions, decidability, and recursive algorithms. Same course as MATH 5663.
5793* Artificial Intelligence and Expert Systems. Prerequisites: 4793, graduate standing in computer science. Advanced knowledge representation and expert systems programming, including reasoning under uncertainty. Applications to planning, intelligent agents, natural language understanding and machine learning. Development of an expert system or research report required. Common lectures with ECEN 5293, INDEN 5933, and MAE 5793.

6000* Research and Dissertation. 2-15 credits, maximum 30. Prerequisites: graduate standing and approval of advisory committee. Independent research under the direction of a member of the graduate faculty. For students working toward a Ph.D. degree.

6023* Nonlinear and Integer Optimization. Prerequisites: 5013 or INDEN 4014; FORTRAN or PASCAL. Theoretical and practical aspects of nonlinear and integer optimization. Development and application of optimization techniques for unconstrained and constrained problems; sequential search, gradient, penalty and barrier, and projection methods. Development and application of integer and mixed integer techniques for unconstrained and constrained problems; implicit enumeration, branch and bound, and cutting methods. Same course as INDEN 6023.

6240* Advanced Topics in Computer Organization. 2-6 credits, maximum 12. Prerequisites: 5113 and 5253. Structure and organization of advanced computer systems, parallel and pipeline computers, methods of computation, alignment networks, conflict-free memories, bounds on computation time.

6253* Advanced Topics in Computer Architecture. Prerequisite: 5253 or ECEN 5253. Innovations in the architecture and organization of computers, with an emphasis on parallelism. Topics may include pipelining, multiprocessors, data flow, and reduction machines. Same course as ECEN 6253.

6300* Advanced Topics in Programming Languages. 2-6 credits, maximum 12. Prerequisite: 5313. Interpreter models of programming language semantics, Vienna definition language, lambda calculus, ISAR/ML definition, Knuth semantic systems and their formulation, translational and denotational semantics. May be repeated with change of topics.

6350* Advanced Topics in Operating Systems. 2-6 credits, maximum 12. Prerequisite: 5323. Design and analysis of operating systems. Concurrent processes, server scheduling, models of auxiliary storage, memory management, virtual systems, performance algorithms. May be repeated with change in topics.

6400* Advanced Topics in Information Systems. 2-6 credits, maximum 12. Prerequisites: 5413, 5423. Principles of distributed database systems. Overview of relational database management systems (DBMS) and computer networks, distributed DBMS architecture, distributed database design, distributed concurrency control, query processing, distributed DBMS reliability.


6600* Advanced Topics in Analysis of Algorithms. 2-6 credits, maximum 12. Prerequisite: 5413. Analysis of various algorithms. Sorting, searching, computational complexity, lower bounds for algorithms; NP-hard and NP-complete problems; parallel algorithms; proof of correctness of algorithms. May be repeated with change of topics.

6623* Algebraic Structures of Formal Grammars. Prerequisites: 5313, 5653. Context-free languages, Kleene languages, Dyd languages, context-sensitive languages; use of algebraic systems to define languages; linear bounded automata.

6700* Advanced Topics in Artificial Intelligence. 2-6 credits, maximum 12. Prerequisite: 5793 or consent of instructor. Machine learning; computer perception and robotics; logic programming; natural language understanding; intelligent agents; medical informatics. May be repeated with change of topics.

Construction Management Technology (CONST)

1213 Introduction to Construction. Lab 1. Overview of the entire construction industry with emphasis on construction materials, methods and systems. Both building and heavy highway construction drawings and their interpretation.

2253 Construction Drawings and CAD. Lab 6. Interpretation and production of construction drawings, architectural and engineering drafting using both drafting machines and computer aided drafting.

2273 Computer Application in Construction. Lab 3. Prerequisites: 1213 and MATH 1513. Disk operating systems, introduction to programming in Basic, word processing, spreadsheets. Applications to the construction industry.

2333 Construction Practices and Procedures. Light, heavy and industrial construction. Foundation layout, framing and finish work, site investigations, excavation, precast concrete, tilt up, structural steel and metal building construction and project management.


3263 Estimating I. Prerequisite: 2252 or 2253. Quantity take-off with emphasis on excavation, formwork and concrete, masonry, rough carpentry and miscellaneous specialty items.

3323 Construction Practice. Prerequisites: junior standing and consent of department head. Supervised field experiences in construction during the junior or senior year, emphasizing the wide variety of layout, concrete placement, framing and finish techniques employed.

3363 Timber and Form Design. Lab 3. Prerequisite: MECDT 3232. Basic timber structures with emphasis on concrete form applications.

3463 Environmental Building Systems. Prerequisite: PHYSIC 1214. Plumbing, heating, air-conditioning, electrical and lighting systems as applied to residences and commercial buildings.


3663 Concrete Design. Lab 3. Prerequisite: MECDT 3232. Analysis and design of reinforced and pre-stressed concrete in accordance with the ACI building code.

4050 Advanced Construction Management Problems. Lab 1-6. Prerequisite: junior standing and consent of instructor. Special problems in construction management.

4263 Estimating II. Lab 3. Prerequisite: 3263. Extensive use of actual contract documents for quantity take-off, pricing and assembling the bid for several projects. Use of computers in estimating.

4273 Computer Estimating. Lab 3. Prerequisite: 4263. Various software programs applied to estimating for building construction. Automated take off (Digitizer) systems.


4293 Construction Manager Concepts. Prerequisites: senior standing and last semester prior to graduation. Capstone course utilizing knowledge of estimating, scheduling, bidding, construction management, CAD, TQM, partnering, safety, and other managerial resources. Defining the expanding role of the construction manager in industry.

4443 Construction Safety and Loss Control. Prerequisite: senior standing. A detailed study of OSHA Part 1926 - Construction Safety and Health Compliance and related safety topics; all elements of the OSHA 30-hour training course; students completing the course are OSHA Certified Competent Persons and methods of loss control.

4563 Construction Law and Insurance. Prerequisite: senior standing. Legal and insurance problems as they pertain to the construction industry.

4781 Seminar. Prerequisites: senior standing and consent of instructor. Career placement and promotion within the construction industry. Aspects of the collective bargaining process. Functions of committees as service to the industry.

Curriculum and Instruction Education (CIED)

0123 Improving College Reading Skills. Lab 1. Individualized instruction and lab experiences for the improvement of college reading and learning skills, including vocabulary, reading rate, comprehension and learning strategies. May be repeated for additional improvement of reading level. Credit established by State Regents policy. Graded on a satisfactory-unsatisfactory basis.

1230 Reading and Study Skills for College Students. 1-4 credits, maximum 4. Lab 1-4. Instruction and laboratory experience for the improvement of reading rate, vocabulary, comprehension and study skills. Graded on pass-fail basis.
3122 Utilization of Instructional Media. Familiarizes students with a broad range of instructional media and with principles and techniques related to their selection, utilization and evaluation.

3123 Microcomputer Technologies for Education. Lab 2. Literacy level interaction with microcomputer principles and techniques related to selection, evaluation and classroom integration of instructional and tool application software.

3153 Teaching Mathematics at the Primary Level. Lab 2. Prerequisites: MATH 1513 or 1493, MATH 3403 and 3603, or consent of instructor. Developmental levels in selection and organization of content and procedures for primary mathematics education.

3223 Role of the Teacher in American Schools. Prerequisites: junior standing and filed Declaration of Intention to Pursue a Program in Teacher Education. One-half day per semester on-site lab required. Introduces students to the concept of the school as an institution and an introduction to the role of the teacher as a professional in the schools. Socialization of the student socio-economic class and education. The nature of multicultluural education, school experiences of women and ethnic groups, school governance, professional organizations, ethics, and the nature of teaching.

3283 Foundations of Reading Instruction. Current theories of developmental reading instruction at the primary and intermediate grade levels.

3430 Early Lab and Clinical Experience in Elementary Education I. 1-2 credits, maximum 3. Lab 3-6. Directed observation and teaching in schools, kindergarten through grade eight. Concurrent seminar explores multicultural education and mainstreaming programs. Graded on a pass-fail basis.

3450 Early Lab and Clinical Experience in Elementary Education III. 1-2 credits, maximum 3. Lab 3-6. Prerequisite: 3430. Advanced clinical experience in schools, kindergarten through grade eight. Concurrent seminar includes formal study of instructional planning. Graded on a pass-fail basis.

3620 Field Experiences in the Middle School. 1-4 credits, maximum 4. Lab 2-8. Prerequisites: 2450 and consent of instructor. Seminars, directed observation, and participation in a particular subject area of the middle school (grades 5-9). Experience in meeting the mental, social, physical and cultural differences among children. Graded on a pass-fail basis.

3710 Field Experiences in the Secondary School. 1-3 credits, maximum 3. Lab 2. Prerequisite: consent of instructor. Seminars, directed observation and participation in a particular subject area of the secondary school. Develops experiences in meeting the mental, social, physical and cultural differences among children. Graded on a pass-fail basis.

3813 Topics of Middle School Mathematics. Prerequisite: consent of instructor. Strategies for teaching the topics of the middle grades and the mathematics basic skill areas of the middle grades (grades 5-9).

4000 Field Studies in Education. 1-4 credits, maximum 4. Independent study and/or field experiences, such as spending a semester in an experimental program working with handicapped children in schools, in-depth studies in research projects, internships with school personnel. Graded on a pass-fail basis.

4003 Teaching Fundamental Concepts of Mathematics. Prerequisite: full admission to Teacher Education. Teaching of the basic skill areas. Study and comparison of contemporary basic mathematics textbooks. Recommended to be taken concurrently with public school practicum experiences.

4013 Humanizing the Educational Process. Provides the student with a greater personal awareness and understanding of the dynamics of human relatedness within the classroom teaching-learning process.

4023 Children's Literature. Survey, evaluation, selection, and utilization of materials for children; extensive reading with emphasis on books which meet the needs and interest of children through grade six.

4043 Classroom Applications of Microcomputers. Lab 2. Prerequisite: 3132 or equivalent. Instructional computing course for educators; principles involved in programming a microcomputer; extended applications of tool software and telecommunications; issues and strategies for planning and implementing computer technologies in the schools.

4053 Teaching Geometry in the Secondary School. Prerequisite: full admission to Teacher Education. Overview of the present secondary geometry curriculum and future trends. Axiomatic development of Euclidean geometry, proofs and transformational geometry from the perspective of the secondary mathematics teachers. Study and comparison of contemporary basic mathematics textbooks. Recommended to be taken concurrently with 3710 and MATH 4043.

4063 Teaching Mathematical Modeling. Prerequisites: concurrent enrollment in MATH, full admission to Teacher Education. Strategies for teaching mathematics modeling. Problem classroom topics.

4113 Multi-media Program Production. Prerequisite: 3122. Design and production of synchronous automatic sound slide programs coordinated with subject matter content. Includes photographic techniques, audio recording and sound-mixing methods, graphics, and synchronizing techniques. Individual projects required.

4123 (Student Teaching). The development of major educational ideas and programs with emphasis on the development of public education in the United States from the Colonial period to the present.

4142 Teaching Mathematics at the Intermediate Level. Lab 0-2. Prerequisites: 3153 and full admission to Teacher Education. Selection and organization of content, procedures for instruction, and evaluation of outcomes in teaching the mathematics of the intermediate grades. Some attention to instruction in upper grades of the elementary school.

4143 Teaching LOGO in the Schools. Lab 0-2. Prerequisite: 3132 or equivalent. Instructional computing course for educators using LOGO language. Includes methods and integration techniques for teaching LOGO in grades K-12.

4213 Introduction to the Visual Arts in the Curriculum. Lab 4. Provides an understanding of the theoretical basis for the use of art activities in developing sensory perception and aesthetic sensitivity as an integral part of the curriculum. Includes a wide range of opportunities for student involvement in experimentation and exploration of art with a variety of two- and three-dimensional art media. Emphasis on both creative expression and appreciation of the visual arts in the home, school and community as a vital aspect of instruction in the school, preschool level through grade eight.

4222 Application of Advanced Technologies to Instruction. Prerequisite: 3122 or 3132 or consent of instructor. Production, utilization, application of media available through advanced technologies. Systematic instructional technology approach to teaching-learning process.

4233 Reading Diagnosis and Remediation. Lab 1. Prerequisites: 3283, full admission to Teacher Education. Identification and treatment of reading problems in the classroom including group and individual diagnostic procedures. Practical experiences required.

4253 Language Arts in the Elementary School Curriculum. Prerequisite: full admission to Teacher Education. The purposes, selection and organization of content, teaching and learning procedures, and evaluation of outcomes in elementary school listening, speaking, and writing.

4260 Skill Development in the Reading Program. 1-3 credits, maximum 3. Lab 0-4. Prerequisite: 3283. Relationship between reading skills, child development and curriculum, and instructional strategies for sequential skill development in reading.

4270 Reading in Content Areas in the Elementary School. 1-3 credits, maximum 3. Lab 0-4. Prerequisite: 3283. Integration of reading instruction in the elementary school curriculum with emphasis upon application of reading to various content areas.

4293 Teaching Reading in the Elementary School. Lab 0-8, Prerequisites: 3283, 4233, full admission to Teacher Education. Application of skills, techniques and materials utilized in the effective teaching of reading in the elementary schools.

4313 Young Adult Literature. Survey of print and non-print materials, including multicultural and multilingual materials utilized in the needs and interests of young people. Same course as LIBSC 4313.

4323 Social Studies in the Elementary School Curriculum. Prerequisite: full admission to Teacher Education. Purposes, selection and organization of content, teaching and learning procedures and evaluation of outcomes in elementary social studies.

4343 Science in the Middle Level Curriculum. Prerequisite: enrollment in 3620 and full admission to Teacher Education. Objectives, organization, and selection of science content and the analysis of teaching, learning, and evaluation procedures for middle level science.

4353 Science in the Elementary School Curriculum. Prerequisite: full admission to Teacher Education. The purposes, selection and organization of content, teaching and learning procedures and evaluation of outcomes in elementary school science.

4363 Design and Management of the Elementary School Classroom. Prerequisites: ABSED 3113, FRDC 3253, or consent of instructor, and full admission to Teacher Education. Design and management of the physical, social, intellectual, cultural, special needs, and learning materials aspects of the school classroom, kindergarten through grade eight. Purposes, selection, and organization of classroom management systems and teaching approaches.

4450 Internship in Elementary Education. 1-12 credits, maximum 12 Lab 3-36. Prerequisites: enrollment in Teacher Education. Clinical experience as associate (student) teacher in schools, kindergarten through grade eight. Graded on a pass-fail basis.

4460 Kindergarten-Primary Education: Methods. 2-3 credits, maximum 3. Prerequisite: full admission to Teacher Education. Purposes, methods of teaching, classroom design and management, classroom routine, and selection and organization of content in kindergarten-primary education.

4473 Reading for the Secondary Teacher. Prerequisites: full admission to Teacher Education and consent of instructor. Materials and procedures in the teaching of reading in secondary schools for content area teachers.

4560 Environmental Education. 1-4 credits, maximum 4 Lab 1. Development of (teacher/leader) competencies in the content, methods, philosophy, and historical perspective of contemporary environmental education curricula using both indoor and outdoor settings as a multidisciplinary learning laboratory.

4703* Computer Applications in the Middle School Science Curriculum. Prerequisite: 3132 or consent of instructor. Principles and techniques related to using microcomputer technology in teaching middle school science; microcomputer interfacing, simulation, and interactive videodisk.

4713 Teaching and Learning in the Secondary School. Prerequisite: full admission to Teacher Education. Purposes, selection and organization of curriculum content, teaching and learning theories and procedures, and evaluation of outcomes for diverse students. Teaching techniques and materials in grades 7-12 subject areas. Available in certification disciplines: art, English/language arts, foreign languages, mathematics, science, social studies.

4720 Internship in the Secondary Schools. 1-12 credits, maximum 12 Lab 3-36. Prerequisites: 3223 or equivalent, 3710, 4713, 4723 and continued full admission to Teacher Education. Supervised observation and student teaching in fields in which the student intends to qualify for teaching certification. Development of awareness of and experience with mental, social, physical and cultural differences among adolescents. Graded on a pass-fail basis.

4724 Planning and Management in the Multicultural Secondary Classroom. Prerequisites: 4713 or degree plan equivalent with "C" or better; verification of student teaching placement; continued full admission to Teacher Education. Taken concurrently with the student teaching internship. Includes student teaching seminar (one hour). Based on curriculum and teaching theory in 4713, planning and organizing for the secondary classroom in a diverse society, grades 7-12. Classroom management and discipline approaches as well as teacher research, parental involvement, school climate and community relations. Available in discipline-specialized sections: English/language arts, mathematics, science and social studies.

4730 Methods and Materials in the Schools. K-12. 1-3 credits, maximum 3. Prerequisites: 4713 or equivalent, verification of student teaching internship placement, and full admission to Teacher Education. Continuation of 4713 or equivalent specialized methods course. Taken concurrently with the student teaching internship experience in grades K-12. Available to students in discipline-specialized sections: art, foreign languages.

4743 Multicultural Concerns in the Role of the School. Prerequisite: junior or senior standing. Extends the student's multicultural awareness by focusing on international problems and expanding their meaning to include the school and its relationship to existing international concerns in other types of societies. Consideration of such international problems as natural resources, environment, food supply, urbanization, and conflict resolution.

5000* Master's Report or Thesis. 1-6 credits, maximum 6. Prerequisite: consent of adviser. Students studying for a master's degree enroll in this course for a total of 2 credit hours if they write a report or 6 hours if they write a thesis.

5023 Comparative Education. A systematic investigation of educational institutions in various nations for the purpose of an enlarged, critical view of American education.

5033 Teaching Foreign Languages in the Schools. Prerequisite: graduate standing or full admission to Teacher Education. Curriculum, materials, methods and procedures related to foreign languages (grades K-12).

5043 Fundamentals of Teaching. Prerequisite: ABSED 5213 or 5463. Theory and research on teaching applied to classroom teaching behavior.

5053 Fundamentals of Curriculum Development. A study of curriculum that includes philosophy, history, decision making, major concepts and terms.

5103 Advanced Computing Applications in Education. Lab 0-2. Prerequisite: 4043 or equivalent. Includes educational applications involving authoring systems, database management, hardware interfacing, and non-instructional uses within the school environment. Impact of current issues on instructional computing.

5113 Videotape Television for Instruction. Prerequisite: 4113. Educational design and production of videotape using single camera, small studio production and other technology. Individual and team projects.


5130 Advanced Studies in Children's Literature. 1-3 credits, maximum 6. Prerequisite: 4023. The history of children's books against a world background of prevailing political, economic and social factors influencing cultural patterns and values. The tools of research in children's literature and the nature and direction of contemporary children's book publishing in the United States and abroad.

5143 Photographic Instruction. Prerequisite: 3122. Photography skills emphasizing 35mm and instamatic type cameras with application to instruction and other communication situations, such as photo-copying, use of high-contrast film for graphics, and simple photography projects for school-age students.

5145 Language Arts in the Curriculum. Content and current issues in the language arts. Materials and methods for teaching the communication skills.

5153 Computer-Based Instruction Development. Lab 0-2. Prerequisite: 4043 or equivalent. Examination of curriculum strategies, related research issues, and techniques for developing computer-based instruction. Students will develop and evaluate computer-based instruction with case studies.

5173 Kindergarten-Primary Curriculum (K-2). Current kindergarten-primary (K-2) curriculum models and programs including aims, content, methodology and evaluation. Current trends and issues in early childhood education; curriculum design and implementation. Primary for administrators, supervisors, teachers and advanced students in early childhood education.

5223 Teaching Science in the Elementary School. Materials, methods and classroom procedures related to science in the elementary school.

525" Intermediate (4-6) Mathematics Education. The study of the theory and research on mathematics curriculum and instruction at the intermediate (4-6) grade levels. Problem solving, fractions, decimals, percent, and applications.


527" Practicum in School Mathematics. 1-3 credits, maximum 6. Lab 2-6. Prerequisite: 5263. Diagnostic and therapeutic procedures in mathematics with students of all ages. Laboratory classes provide for clinical experiences in evaluation and instruction with children experiencing difficulty in mathematics.

5273" Kindergarten-Primary (K-3) Mathematics Education. Prerequisite: 3153 or consent of instructor. Theory and research on mathematics learning and teaching from the preschool level through the early elementary years. Study and analysis of children's construction of mathematics knowledge and the implications for teaching.

5280" Workshop in Science Education. 1-4 credits, maximum 4. Develops and/or implements elementary and secondary science programs.

5283" Teaching Social Studies in the Schools. Curriculum, materials, methods and procedures related to social studies.

5350" The Visual Arts in the Curriculum. 1-3 credits, maximum 6. Lab 2. Prerequisite: 4213. Creative approaches to the use of two- and three-dimensional media as they relate to various aspects of education. Opportunities available for periodic group and individual evaluation in order to give direction and significance to future growth.

542" Developmental Reading at the Primary Level. Prerequisites: 5283, 9233, 4293 or 4473 or consent of instructor. Analysis of sequential growth in reading from the preschool level through the early elementary years. Examination of the reading process and instructional procedures.

543" Developmental Reading at Intermediate, Middle and Secondary Levels. Prerequisites: 3283, 4233 and 4293 or 4473 or consent of instructor. Analysis of sequential growth in reading from the preschool level through the early elementary years. Examination of the reading process and instructional procedures.

5433" Developmental Reading. 1-6 credits, maximum 6. Lab 2-4. Prerequisite: 5463. Application of diagnostic and therapeutic procedures with readers of all ages. Laboratory classes provide for clinical experience in evaluation and instruction in developmental and remedial programs in reading for children.

5513" Effective Teaching of Mathematics in the Secondary School. Prerequisite: consent of instructor. Directed advanced practicum in secondary school mathematical education. Includes study of current research findings in mathematical education, teaching strategies, materials and evaluation procedures in the secondary school. For experienced classroom teachers, superintendents, principals and supervisors.

5623" Multicultural and Diversity Issues in Curriculum. Understanding of the historical and contemporary perspectives toward cultural diversity. Development of an awareness of diverse culture and languages; understanding of critical issues of race, class, gender, and ethnicity in education; perennial issues of multiculturalism in public education and in global society; a comprehensive overview of principles and current research on bilingual and multicultural education.

5633" Developmental Reading for College and Adult Learners. Identification of the needs, materials, curricula, and instructional strategies for college and adult readers. The study of illiteracy. Consideration of the development, organization and supervision of programs for such learners.

5720" Education Workshop. 1-8 credits, maximum 8. For teachers, principals, superintendents and supervisors who have definite problems in instruction or administration. Students must register for the full number of credit hours for which the workshop is scheduled for a particular term.

5730" Seminar in Education. 1-6 credits, maximum 6. Prerequisite: consent of instructor. Seminar topics may differ depending upon the nature of current interests and topics in American education.

5750" Seminar in Mathematics Education. 1-6 credits, maximum 6. Lab 0-6. Prerequisite: consent of instructor. Problems, issues and trends in mathematics education.

5753" Educational Technology Strategies. Lab 1. Prerequisite: 5043 or 5053 or consent of instructor. Principles of designing instructional units and courses incorporating integrated advanced technologies within the framework of the current educational environment. Contemporary education issues. Advanced educational technologies: importation, information amassment, accessibility, linkage to curricula, support, planning, and teacher empowerment. Assumes concept of teacher as designer/conductor vs. teacher as consumer.

5773" Administration and Supervision of Audiovisual Materials. Prerequisite: 3122. Building, planning, selecting and purchasing equipment and materials, surveying existing materials, and planning and financing adequate programs. For administrators or teachers who are responsible for audiovisual programs.

5823" Institutional History of Education. History of elementary, secondary, and higher education in Western Civilization with emphasis upon the development of the American educational institution.

5850" Directed Study. 1-3 credits, maximum 3. Lab 1-3. Prerequisite: consent of instructor. Directed study for master's level students.

5883" Educational Sociology. The manner in which social forces and institutions influence education and the educational system in the United States.

6000" Doctoral Thesis. 1-15 credits, maximum 15. Required of all candidates for the Doctor of Education degree. Credit is given upon completion of the thesis.

6033" Analysis of Teaching. Students examine research related to teacher-classroom behavior, classroom climate and student behavior and develop competencies in several observational systems.

6080" Seminar in Science Education. 1-6 credits, maximum 6. Problems, issues and trends in science education. The focus at the pre-service or in-service level.


6152" Theory to Practice in Education. Prerequisite: consent of instructor. A culminating seminar demonstrating the application of theory from several disciplines to the practical problems of education: curriculum development, organization, teaching strategies and evaluations.

6152" Current Issues in Art in the School Curriculum. Problems, issues and trends in art education programs of the elementary and secondary schools and their relationship to the total curriculum. For teachers, supervisors and administrators.

6453" Seminar in Reading. Prerequisite: 12 credit hours in teaching of reading. Research in reading including evaluation of research proposals. Problems and issues in reading instruction are discussed using knowledge gained through both research and classroom practice.

6683" Developmental Reading and Exceptionality. Prerequisite: 5423 or 5433. Developmental reading needs of various groups of exceptional individuals. Methods and materials of instruction.

6850" Directed Reading. 1-6 credits, maximum 6. Prerequisite: consent of instructor. Directed reading for students with advanced graduate standing to enhance students' understanding in areas where they wish additional knowledge.

6880" Internship in Education. 1-8 credits, maximum 8. Lab 3-24. Prerequisite: consent of instructor. Directed off-campus experiences designed to relate ideas and concepts to problems encountered in the management of the school program.
Design, Housing and Merchandising (DHM)


1103 Basic Apparel Assembly. Lab 4. Basic apparel assembly techniques. Problems including basic fit, spreading and cutting methods and equipment, and use and application of sewing equipment including lock, chain, and overedge.

1123 Graphic Design for Interiors. Lab 6. Interior design majors only. Drafting and visual communication techniques related to interiors.

1433 Fashion Innovation and Marketing. The process of fashion innovation; variables of fashion affecting production and distribution of consumer goods; development of present structure in the fashion industry.

2003 Creative Problem Solving in Design and Merchandising. Participatory problem solving in design and merchandising; critique of proposed solutions as a positive process of evaluation.

2110 Fashion Showmanship. 1 credit, maximum 8. Preparation, production and evaluation of special fashion-related events. Professional learning experiences will include modeling techniques, organization and directing procedures.


2303 Materials and Finishes for Interior Building Systems. Lab 4. Prerequisites: 1003, 1123, 2903. Materials and procedures used in the design and production of interiors and building systems.

2343 Design and Space. Lab 6. Prerequisites: 1123, 2223 and 2313. Creative exploration of three dimensional spaces in interior design.

2573 Textiles. Lab 2. Study of textiles emphasizing fibers, yarns, fabric structures, and finishes for end-use application.


2993 Communication and Presentation Techniques for Apparel and Interior Design. Lab 4. Prerequisite: 1003. ART 1103 and SPCH 2713. Creative communication methods and techniques including a variety of media for two- and three-dimensional presentations in apparel and interior design.

3002 Professional Image and Dress. Role of appearance and dress in creating a professional image for men and women. Figure and wardrobe analysis, professional clothing needs, individualized clothing decisions.

3012 Flat Pattern Design. Lab 4. Prerequisites: 2203 and MATH 1513. Interpretation of dress design developed through the medium of flat pattern; introduction to pattern drafting.

3023 Advanced Flat Pattern Design. Lab 4. Prerequisite: 3013. Advanced apparel design problems using flat pattern and CAD techniques.

3102 Fashion Sketching. Lab 4. Prerequisites: 1003 or 3 credit hours of art and completion of 60 credit hours. Principles and techniques of sketching in the fashion field.

3153 Mass Production of Apparel and Related Products. Lab 4. Understanding and applying mass production strategies for apparel and related products. Design for production and production operations including CAD marker making and material utilization, production simulation modeling, and costing.

3203 Functional Clothing Design. Lab 4. Prerequisites: 2573, 3013 and 4 credit hours of chemistry. Problem-solving approach to functional clothing design for specialized market segments (athletic sportswear, occupational clothing, children's wear, clothing for the handicapped) including performance evaluation of selected materials using standard methods of textile testing.

3213 (H)Heritage of Dress. Prerequisite: 3 credit hours of history. Survey of historic modes of dress as they reflect the social, economic and cultural life of a people. Application of design principles to modern dress.

3223 (H)Heritage of Interiors. Religious, civic, commercial, and domestic architecture and furnishings prior to and including the 18th Century with emphasis on the periods which have greatly influenced housing and interior design.

3243 Design of Interior Components. Lab 4. Prerequisite: pass proficiency review. Design, materials and finishes for interior design components including custom furnishings and interior treatments and modification.

3253 Environmental Design for Interior Spaces. Lab 4. Prerequisite: pass proficiency review. Design factors and human performance criteria for lighting, acoustics and thermal/ atmospheric comfort as they relate to the practice of interior design.

3263 Interior Design Studio I: Residential. Lab 4. Prerequisite: pass proficiency review. Studio course utilizing the design process in the analysis and planning of residential environments.

3283 Supervised Field Experience. 1-3 credits, maximum 6. Prerequisite: 3243 or consent of instructor. Field experience in specialized residential, commercial and institutional design with both historic and contemporary elements.

3353 (S)Socio-Economic Aspects of Housing. Family housing needs, present social and economic conditions affecting housing and building processes and the roles of business and government in housing.

3363 Interior Design Studio II: Small Scale Contract. Lab 4. Prerequisites: 3243 and 3263. Studio course utilizing the design process in the analysis and planning of small office, institutional and retail environments with emphasis on materials, lighting, codes and accessibility.

3373 Computer-aided Design for Interiors. Lab 4. Prerequisite: 1123. Computer-aided design and drafting for two-dimensional and three-dimensional interior systems.

3433 Fashion Retailing. Prerequisites: 1433, ACCTG 2103, ECON 1113. Marketing structures at retail level; job descriptions and responsibilities at management level; financial and control functions.

3533 Decorative Fabrics. Lab 4. Prerequisite: 3 credit hours in art. Historic and contemporary textile designs. Creation of textile designs using personal inspirations, cultural expressions and a variety of techniques.

3553 Profitable Merchandising Analysis. Prerequisites: ACCTG 2103, MATH 1513 or 1483. Relationship analysis of profit and loss statement. Retail mathematical calculations necessary to plan and control merchandising results, open-to-buy, mark-up, mark-down, turn-over, stock-sales ratio.

3643 Apparel and Accessories for Special Markets. Prerequisites: 1433, PSYCH 1113, SOC 1113, and completion of 60 credit hours. An analysis of the apparel and accessory needs of specialized market segments and the products designed to meet those needs, with consideration given to both product design and merchandising.

3663 Fashion Promotion Media. Lab 2. Prerequisites: 1433 and completion of 60 credit hours. Advertising and other special-purpose media used in the promotion of fashion merchandise. Study and application of procedures used in planning, evaluating and directing effective sales promotion activities.

3823 Professional Practices for Interior Design. Prerequisites: 2343, 3223 and 2303. Future professional role and responsibilities, business procedures and employer-employee relationships which characterize the employment situation in interior design.

3853 Merchandise Display Essentials. Lab 2. Prerequisites: 1003, 1433 and completion of 60 credit hours. Study and application of principles and practices in arranging and displaying merchandise for commercial and educational purposes. Supervised experience working with merchandise from retail stores.

3991 Pre-internship Seminar. Prerequisites: 24 credit hours of required OHEM courses with a 2.50 major GPA and SPCH 2713. Skills requisite to completion of a directed, practical experience in a work situation within the fashion industry.

3994 Internship. Prerequisites: 3433, 3553, 3663 and 3991 (apparel merchandising students); 3013 and 3991 (apparel design and production students). Diet included practical experience in an approved work situation related to the fashion industry.

4003 (S)Environmental Perspectives on Apparel and Interior Design. Prerequisites: completion of 96 credit hours. Analysis of apparel and interior design, development and use from physical, technological, economic, political, religious, social and aesthetic perspectives.
Design, Housing and Merchandising

4011 Post Internship Seminar. Prerequisite: 3994. Study and comparison of student work experiences. Individual student conferences, review of merchant supervisor reactions.

4143* Design for Special Needs. Problems and alternative strategies for apparel and interiors for special groups, e.g., the aging, children, the handicapped, special markets. Includes field study or design project.

4163* Textiles and Apparel in the International Economy. Prerequisites: 2913, ECON 1113, and 90 hours. Broad multi-disciplinary study of textiles and apparel in the international economy.

4200 Professional Internship. 1-6 credits, maximum 6. Prerequisites: 3823 and consent of instructor. A supervised internship experience which simulates the responsibilities and duties of a practicing professional.

4250* Special Unit Course in Design, Housing and Merchandising. 1-6 credits, maximum 6. In-depth study of specific areas of design, housing and merchandising.

4300 Honors Creative Component. 1-3 credits, maximum 3. Prerequisites: College of Human Environmental Sciences Honors Program participation, senior standing. Guided creative component for students completing requirements for College Honors in the College of Human Environmental Sciences. Thesis, creative project or report under the direction of a faculty member in the major area, with second faculty reader and oral examination.

4403* Creative Costume Design. Lab 4. Prerequisite: 2203. Interpretation of garment design developed through the medium of draping on dress forms.

4423* Interior Design Studio III: Large Scale Contract. Lab 4. Prerequisites: 3253, 3363 and 3823. Studio course utilizing the design process in the analysis of large scale office planning and institution design including systems and specifications.

4429* Interior Design Studio IV. Lab 4. Prerequisite: 4263. Studio course developing comprehensive interior design projects in historic preservation and adaptive reuse and an advanced design project.

4432* Heritage of Interiors II. Prerequisite: 3233 or consent of instructor. Exploration of the architectural, interiors and furnishings of a variety of structures. Residential, commercial, governmental, institutional, and recreational buildings of different cultures of the 19th and 20th centuries.

4435* Facility Management for Contract Interiors. Prerequisites: 3213, 3013 and 4243 or consent of instructor. Application of design principles and construction techniques in the development of original designs.

4443* Facility Management for Contract Interiors. Philosophy and principles of facility management and the practice of coordinating the physical workplace in relation to the workforce and organizational structure of the corporate environment.

4453* Entrepreneurship and Product Development for Apparel and Interiors. Prerequisites: ECON 1113 and completion of 90 credit hours. In-depth study of entrepreneurship concepts as applied to manufacturers and retailers of apparel and interior products including product development, accounting and control, merchandising and buying, operation and management, advertising and promotion.

4523 Critical Issues in Design, Housing and Merchandising. Prerequisite: senior standing. Capstone course examining critical issues in design, housing and merchandising in the context of central themes from general education.

4810* Analysis of Current Literature Including Research in Design, Housing and Merchandising. 1-2 credits, maximum 2. Analysis of current research in relation to design, housing and merchandising.

4820 Professional Internship. 1-6 credits, maximum 6. Prerequisites: 3823 and consent of instructor. A supervised internship experience which simulates the responsibilities and duties of a practicing professional.

4850* Special Unit Course in Design, Housing and Merchandising. 1-6 credits, maximum 6. In-depth study of specific areas of design, housing and merchandising.

4900 Honors Creative Component. 1-3 credits, maximum 3. Prerequisites: College of Human Environmental Sciences Honors Program participation, senior standing. Guided creative component for students completing requirements for College Honors in the College of Human Environmental Sciences. Thesis, creative project or report under the direction of a faculty member in the major area, with second faculty reader and oral examination.

4983* Textiles and Apparel in the International Economy. Prerequisites: 2913, ECON 1113, and 90 hours. Broad multi-disciplinary study of textiles and apparel in the international economy.

5000* Master's Thesis. 1-6 credits, maximum 6. Prerequisites: graduate standing and consent of major professor. Research related directly to design, housing and merchandising for the master's thesis.

5003* Theoretical Perspectives for Design, Housing and Merchandising. A study of terminologies associated with theory. Exploration of key theories and their application to practice and research in design, housing and merchandising.

5110* Research Developments in Design, Housing and Merchandising. 1-3 credits, maximum 3. Current development and needs in research in design, housing and merchandising including application of research methods to design, housing and merchandising and research planning.

5113* Theories of Creative Process in Design and Merchandising. A study of the creative processes used in art, science, business and hybrid disciplines, with application to design and merchandising.

5233* Design Evaluation. Prerequisite: consent of instructor. Theoretical perspectives on evaluation of applied design; examination and evaluation of historic and contemporary designers, their philosophies and their work.

5240* Master's Creative Component. 1-6 credits, maximum 6. Prerequisites: consent of major professor and department head. An in-depth design application of theoretical design models and philosophies. A maximum of six hours to be used by graduate students following Plan III for the master's degree.

5273* Interpretive Theories of Material Culture. A theoretical analysis of the influences of cultural values and characteristics upon the design, acquisition and use of apparel, furnishing and building products, and the cultural diffusion of those material goods.

5343* Constructed Environment and Human Behavior. Prerequisites: 5110, 5273, PSYCH 1113, SOC 1113. An exploratory and evaluation of the physical attributes of the constructed environment and the interrelationships with the social and psychological aspects of human behavior.

5360* Advanced Studies in Design, Housing and Merchandising. 1-6 credits, maximum 6. Investigation into special areas in the fields of design, housing and merchandising.

5383* Design, Housing and Merchandising in Higher Education. Prerequisite: 9 credit hours in design, housing and merchandising. Development and organization of curricula and teaching methods for design, housing and merchandising.

5440* Apparel Merchandising and Design Career Internship. 1-6 credits, maximum 6. Prerequisites: consent of instructor and department head. An individualized career-oriented internship. Selected learning experiences in approved work situations in the fashion industry or in selected educational or research activities related to apparel merchandising and design.

5533* Functional Apparel: Theory and Design. Lab 4. Prerequisites: 2573, 4013, 5110. A holistic approach to the study of apparel design with an emphasis on integrating knowledge of the needs and functions of the individual, the structural properties of textiles and apparel design.

5653* Merchandising Trends, Practices and Theories in Apparel and Interior Industries. Prerequisite: nine credit hours in marketing or merchandising. Current trends in merchandising; theories, concepts and processes related to management level problems.

5810* Problems in Design, Housing and Merchandising. 1-3 credits, maximum 6. Prerequisites: consent of instructor and department head. Individual and group investigations and discussions of special problems in the various phases of design, housing and merchandising.

5830* Design, Housing and Merchandising Seminar. 1-6 credits, maximum 6. Prerequisite: consent of instructor. A selected group of current issues in design, housing and merchandising.

6000* Doctoral Thesis. 1-12 credits, maximum 30. Prerequisite: consent of major professor. Research in design, housing and merchandising for the Ph.D. degree.

6133* Research Methods in Design, Housing and Merchandising. Prerequisite: consent of instructor. Survey and discussion of research methods, experiences in research design and analysis of data.

6203* Theories of Dress and Communication. Appearance as a type of nonverbal communication related to appearance. Theoretical structures depicting the use of dress in communication.

6303* Sociological, Psychological and Economic Aspects of Consumer Behavior. Prerequisite: 5653. Analysis and integration of social, psychological and economic theories related to consumer acquisition of products. Application and testing of these theories as appropriate to apparel and interior consumption processes.

6403* Merchandising Theory Application and Strategy Implementation. Prerequisite: 5653. Integration of marketing, merchandising, and management theories, strategies, models, and frameworks. Application of theories and implementation of strategies relevant to apparel and interior industries.
6410* Independent Study in Design, Housing and Merchandising. 1-3 credits, maximum 6. Prerequisite: consent of instructor. Selected areas of design, housing and merchandising for advanced graduate students working toward the doctorate degree.

6810* Advanced Problems in Design, Housing and Merchandising. 1-6 credits, maximum 6. Prerequisite: consent of instructor and department head. Intensive individual or small group study of problems in various areas of design, housing and merchandising for advanced graduate students who are working toward doctoral degrees.

6830* Design, Housing and Merchandising Seminar. 1-3 credits, maximum 6. Prerequisite: consent of instructor. Problems and recent developments in design, housing and merchandising.

Economics (ECON)

1113 (S)The Economics of Social Issues. Issues-oriented approach. Basic economic principles introduced and developed through study of important social issues: for example, inflation, unemployment, poverty, discrimination, crime, population growth and environmental quality. Develops the economist's approach to social problems, and evaluates the contribution of economics to their solution. No credit for students with prior credit in 2013 or 2023. No general education credit for students also taking ECON 2013 or AGEC 1114. 2013 (S)Introduction to Macroeconomics. Prerequisite: 15 semester credit hours. The functioning and current problems of the aggregate economy: determination and analysis of national income, employment, inflation and stabilization; monetary and fiscal policy; and aspects of international interdependence. No general education credit for students also taking ECON 1113 or AGEC 1114.

2023 Introduction to Microeconomics. Prerequisite: 2013. Goals, incentives and outcomes of economic behavior with applications and illustrations from current social issues: operation of markets for goods, services and factors of production; the behavior of firms and industries in different types of competition; income distribution; and international exchange.

3010 Special Topics in Economics. 1-3 credits, maximum 9. Prerequisites: 2023, prior approval of instructor. Analysis of a contemporary topic in economics. Course content will vary to reflect changing social issues and trends in applied economics.

3023* Managerial Economics. Prerequisite: 2023. Application of economic theory and methodology to decision problems of private industry, non-profit institutions and government agencies; demand and cost analysis, forecasting, pricing and investment.

3113* (S)Intermediate Microeconomics. Prerequisite: 2023. How the market system organizes economic activity and an evaluation of its performance. Principles of price theory developed and applied to the interactions of consumers, producers and resource owners in markets characterized by different degrees of competition.

3123* (S)Intermediate Macroeconomics. Prerequisite: 2023. Development of a theoretical framework for studying the determinants of national income, employment and general price level, National income accounting, consumption, investment, government spending and taxation, the behavior of and the demand for money, monetary, fiscal and incomes policies considered with regard to unemployment, inflation and economic growth.

3213 Game Theory and Experimental Economics. Prerequisite: three credit hours in economics. The fundamentals of strategic actions presented in a game theory context and the validation of these ideas with economic experiments.

3313 Money and Banking. Prerequisite: 2023. The economics of money and banking. Operations of commercial banks and the structure and operation of the banking industry. Organization and operation of the Federal Reserve System and its effects on interest rates, employment and prices. An introduction to monetary economics and international banking concludes the course.

3423* (S)Public Finance. Prerequisite: 3 credit hours in economics. The economics of the government sector. Scope of government activity, efficiency in government expenditures, federal budget, fiscal and debt management policy. Principles of taxation. Major tax sources, tax distribution, tax issues. Current public finance problems such as revenue sharing, negative income tax, urban transport systems and national health insurance.

3513* (S)Labor Economics and Labor Problems. Prerequisite: 3 credit hours in economics. Economic analysis of contemporary labor market problems and survey of U.S. unionism. The labor force, education and training, discrimination, inflation and unemployment theories of the labor movement, economic impact of unions and public policy toward labor.

3523* (S)Poverty and Economic Insecurity. Prerequisite: 3 credit hours in economics. Problems, programs and proposals for dealing with poverty and economic insecurity.

3613* (S)International Economic Relations. Prerequisite: 3 credit hours in economics. International trade and finance, international economic organizations; the foreign economic policy of the U.S.

3713* (S)Government and Business. Prerequisite: 3 credit hours in economics. Methods of measuring the extent of monopoly power in American industries and ways of evaluating the effects of this power on consumer welfare. U.S. antitrust laws, their enforcement and landmark court decisions under these laws.

3813* Developmental Economic Thought. Prerequisite: 3 credit hours in economics. The ideas of great economists with emphasis upon economic concepts and systems of thought in relation to social, ethical and political ideas under evolving historical conditions.

3823 American Economic History. Economic development and economic forces in American history; emphasis upon industrialization and its impact upon our economic society since the Civil War. Same course as HIST 4513.

3903* (S)Economics of Energy and the Environment. Prerequisite: 2023. Issues related to the development and use of energy resources, and the management of the natural environment.

4000 Economics Honors Seminar. 3-6 credits, maximum 6. Prerequisite: Honors Program participation. Special topic in economics for junior and senior students in the Honors Program. Special problem areas of the economy or the economics discipline. Appropriate for Honors students in any major.

4010* Basic Studies in Economics. 1-6 credits, maximum 6. Prerequisite: 3 credit hours in economics. Economic concepts, theory, issues and problems. Designed for elementary and secondary teachers. Economics education teaching methods included.

4123 Econometric Methods. Prerequisites: 2023, STAT 3013 or 4013. Basic quantitative methods used in economic analysis emphasizing applications to economic problems and interpretation of empirical results. Statistical analyses, regression and forecasting techniques using computer programs.

4223 Business and Economic Forecasting. Prerequisites: 2023, STAT 3013 or 4013. Forecasting business and economic variables. Regression models and time series models such as exponential smoothing models, seasonal models, and Box-Jenkins models. Evaluation of methods and forecasting accuracy. Application of methods using computer programs.

4313 Advanced Banking. Prerequisite: 3313. Central and commercial banking, including Federal Reserve policymaking, banking structure, capital adequacy and taxation of banks. Friedman's proposals for monetary and banking reform.

4413 State and Local Government Finance. Prerequisite: 3 credit hours in economics. State and local government revenue and expenditure patterns in a federal fiscal system; intergovernmental fiscal problems; taxation in a federal system; adjustment to economic growth and change.

4513 Labor and Public Policy. Prerequisite: 3513 or MGMT 3313 or BUSL 3213. Public policy affecting union management relations; common law, state and federal legislation; Wagner, Taft-Hartley and Landrum-Griffin Acts; labor dispute adjustment with emphasis on the theory, legal status and practice of arbitration, in both private and public sectors.

4643* (S)International Economic Development. Prerequisites: 2023, economics of developing countries. Problems of underdeveloped economics related to the world economy; obstacles to economic growth and policies for promoting growth.

4713* (S)Economics of Industries. Prerequisite: 2023. Industrial organization of major U.S. industries. The structure-conduct-performance paradigm is used to evaluate how costs and concentration interact with pricing, marketing and R&D decisions to affect industry profitability, technological progress, and the efficient allocation of resources. Case studies included.
Economic Analysis of Law. Prerequisite: 3 credit hours in economics. Use of economic analysis to explain why certain laws exist and to evaluate the effects of various alternative rules of law on economic efficiency and behavior. Emphasis on the economics of the common law areas of property, contracts, and torts. Also, products liability, crime and punishment, distributive justice, and discrimination.

Comparative Economic Systems. Prerequisite: 2023. Comparative analysis of the economic theory and institutions of capitalism, socialism, and mixed systems.

Urban and Regional Economics. Prerequisite: 3 credit hours in economics. Urban and regional economics: the spatial aspects of poverty, land use, the urban environment and rural-industrial development.

Economics Honors Thesis. Prerequisites: departmental invitation, senior standing, Honors Program participation. A guided reading and research program ending with an honors thesis under the direction of a faculty member, with second faculty reader and oral examination. Required for graduation with departmental honors in economics.

Research and Thesis. 1-6 credits, maximum 6. Workshop for the exploration and development of research topics. Research leading to the master's thesis.

Research Report. Prerequisite: consent of committee chairperson. Supervised research for M.S. report.

Research and Independent Studies. 1-3 credits. Prerequisite: consent of departmental committee under a workshop arrangement or supervised independent studies.

Contemporary Environmental Policy. Economic, social and political factors that influence the formulation and implementation of environmental policy. Environmental policy instruments (including pollution taxes, standards and marketable pollution permits), measurement of environmental damages and risk, Risk comparison, regulatory issues, health risk assessment, and risk communication. Political-economic considerations.

Managerial Economics. Economic theory applied to business decision making. Concepts of microeconomics and macroeconomics related to understanding the economic system, analysis of policy, forecasting, and international economics. No credit for Ph.D. students in economics.

Microeconomic Theory I. Prerequisites: 3113, MATH 2265 or MATH 2713. Contemporary price and allocation theory with emphasis on comparative statics.

Macroeconomic Theory I. Prerequisites: 3123, MATH 2265 or MATH 2713. National income, employment and the price level from the point of view of comparative statics.

Mathematical Economics I. Prerequisites: 3113, MATH 2265 or equivalent. Mathematical concepts of single variable and multivariate calculus, topological properties of Euclidean space, convergence, linear algebra, optimization theory and the Kuhn-Tucker Theorem with applications from economic theory.

Econometrics I. Prerequisite: 4213 or STAT 4043. Theory and application of econometrics to economic problems. Topics include OLS, GLS, distributed lags, serial correlation, heteroskedasticity, and simultaneous equations.

Monetary Economics I. Contemporary issues in monetary theory and policy. Demand for money and supply of money theory, interest rate theory and issues in monetary policy.

Economics of the Public Sector I. Allocation and distribution effects as well as incidence of governmental budget policies.

Economics of the Public Sector II. Fiscal policy as a means of promoting economic stabilization and growth.

Labor Market Theory and Analysis. A critical evaluation of the theoretical and empirical literature dealing with labor market processes: wage determination and the impact of unions on relative wages; estimation of aggregate labor supply; resource allocation and labor mobility; the inflation-employment tradeoff and the economics of labor market discrimination.

International Finance. Open economy macroeconomics and the role of devaluation, fiscal and monetary policy in the open economy, monetary approach to the balance of payments, portfolio balance and asset market approaches to the determination of exchange rates.

Economic Development I. Characteristics and problems of less-developed countries. Criteria of growth and development with emphasis on strategies for development. The role of capital, labor, technology, progress and entrepreneurship. Growth models.

International Trade. International trade and commercial policy. Comparative advantage, general equilibrium and modern trade theories; welfare implications of international resource allocation models; the theory of protection and international interdependence.

Economic Development II. Major problems of development policy. Inflation and mobilization of capital, investment criteria, agriculture, foreign trade, population and manpower, planning and programming methods.

Industrial Organization I. Organization and operation of the enterprise sector of a free enterprise economy; interrelations of market structure, conduct and performance; public policies affecting these elements.

Industrial Organization II. Alternative market structures and their relationships to market performance; the empirical evidence concerning these. Public policies toward business, including emphasis on U.S. antitrust laws and economic analysis of their enforcement; theories of public utility regulation.

Regional Economic Analysis and Policy. Selected topics in location theory, regional economic growth and policies toward regional development in the U.S.

Urban Economics. The urban area as an economic system. Problems of economic policy in urban environment.

Research and Thesis. 1-12 credits, maximum 30. Prerequisite: approval of advisory committee. Workshop for the exploration and development of research topics. Research leading to the Ph.D. dissertation.

Seminar in Economic Policy. 1-3 credits, maximum 6. Intensive analysis of selected problems in economic policy. Individual research, seminar reports and group discussion of reports.


Microeconomic Theory II. Prerequisite: 5123. Contemporary price and allocation theory with emphasis on general equilibrium analysis. Welfare economics.

Macroeconomic Theory II. Prerequisite: 5133. National income, employment and the price level from the point of view of dynamics. Growth models.

Mathematical Economics II. Prerequisite: 5223. A mathematical approach to general equilibrium and welfare economics.

Econometricst. Prerequisite: 5243. Advanced econometric theory covering single and simultaneous equations models, seemingly unrelated regressions, limited dependent variable models, causality, and pooled models.

Monetary Economics II. Intensive analysis of classical monetary theory and individual research on selected problems in monetary economics. The ideas of Patinkin, Wickess, Fisher and Keynes.

History of Economic Thought. Economic theories from the 18th century until the present with emphasis on the origin and improvement of analytical tools.

Seminar in Economics Systems. Selected topics dealing with the economic theory and institutions of capitalism, socialism, communism, and fascism. Individual research, seminar reports, and group discussion of reports.

Orientation to Education. Lab 1. Study of the profession of education with emphasis on the skills, qualities and student support services available throughout the campus. Graded on a pass-fail basis.

Innovative Education Studies. 1-3 credits, maximum 6. Designed to meet unique or special needs of individuals involved in education. Topics include contemporary approaches to meeting educational challenges on the professional as well as the personal classroom experience. Graded on a pass-fail basis.

Study Abroad. 12-18 credits, maximum 18. Prerequisites: consent of the Office of International Programs and associate dean of the college. Participation in a formal study abroad program in which a semester or year is spent in full-enrollment at a university outside the U.S.
Educational Administration and Higher Education (EAHED)

5000* Thesis or Report. 1-10 credits, maximum 10. Prerequisite: consent of instructor. Master's students may earn up to two hours of credit for a report or six hours of credit for a thesis. Students working on a specialist's report may earn a maximum of 10 hours of credit.

5633* Community Education. Purpose, organization and administration of community education and its various components.

5720* Education Workshop. 1-4 credits, maximum 8. Analysis of organizational, administrative, and instructional problems by common schools and higher education personnel.

5813* Public School Administration. The scope and function of public school administration.

5973* Historical Background of Contemporary Issues in Higher Education. The history of American colleges and universities to the present; an overview of major contemporary issues in American higher education.


6003* Educational Ideas. Seminar for majors in EAHED. Decision-making processes utilized in educational systems today.

6233* Critical Issues in Higher Education. A look at several important issues concerning recent and contemporary American colleges and universities.

6243* Connecting Theory and Practice in Administering Schools. Prerequisite: 5000-level course in school administration or equivalent. Application of research findings and theoretical concepts to best practices in administering educational organizations.

6253* The Principalship. Prerequisites: 5813, 6243 and 6263. Strategies, techniques and solutions the principal can utilize in the operation of a public school. Developing policy statements, handbooks, budgets and schedules.

6263* Professional Development and Instructional Improvement. Prerequisite: 5000-level course in supervision or equivalent. Developmental perspectives of human, conceptual and technical skills needed for continuing professional development and instructional improvement through supervisory processes.

6323* Public School Finance. Prerequisite: graduate standing. Development of conceptual bases in economics of education, taxation, distribution systems, policy analysis; application to Oklahoma school finance; and introduction to budget development.

6332* The Business Function in School Administration. Prerequisite: 5000-level course in business management or equivalent. Analysis and critique of practice of budget planning and development, administration and evaluation. Selected topics in school accounting and other business management functions.

6353* The Superintendence. Prerequisite: consent of instructor. Integration of theory and practice through examination of roles and responsibilities of the superintendent. Particular emphasis on leadership, communications, and the changing nature of public education.

6393* The Human Factor in Administering Schools. Prerequisite: 5000-level course in school personnel administration or equivalent. Analysis and critique of current issues in school personnel administration such as recruitment, selection, promotion, morale, salary, staff relations and teacher assessment.

6420* The Politics of Education. 2-3 credits, maximum 3. Activities of schools as they relate to the political environment, e.g., voter behavior, change strategies and community power structures.

6433* Special Topics in Education Law. Prerequisite: 5000-level course in school law or equivalent. Analysis and critique of selected topics in school law relating to public school administration.

6463* Higher Education Law. National and state constitutional provisions, laws, and court cases concerning higher education. Considerable legal research required.

6473* Practicum in Instructional Supervision. Prerequisite: 6263 or consent of instructor. Application of modern approaches to instructional supervision through practice in recording and analyzing teacher behavior in actual classroom settings. Clinical and group methods for improving instruction are considered.

6573* Special Topics in Education Facilities. Prerequisite: 5000-level course in school facilities or equivalent. Analysis and critique of validity of selected established standards and research in education facilities.

6583* The Impact of College on Students and on Society. The psychological and sociological impact that attending four-year colleges and universities has on undergraduates from their freshman year until they graduate.

6603* Organizational Theory in Education. Prerequisite: 6243. Selected organizational typologies, conceptualizations and theoretical frameworks as they relate to organizational behavior and behavior of personnel in organizations.

6613* Organizing, Developing and Administering Community Education. Relationship between education and the community, with special emphasis on community needs/resources and the development of a total community education program. Skills and competencies for planning, implementing and evaluating community education programs are explored.

6650* Problems in Educational Administration. 1-4 credits, maximum 8. Prerequisite: consent of instructor. Special administrative problem in common schools or higher education, e.g., school plant, school/community relations, administration and the instructional programs, attrition and finance.

6683* The Community College. The American two-year college including historical and philosophical development, curricula, students and the learning process, faculty and instruction, administration and governance, support and control. Principles, practices and problems of community colleges in America.

6703* Finance in Higher Education. Prerequisite: 6753. Problems and prospects of financing American education, with in-depth discussion of selected topics, e.g., social capital, federal aid, faculty salaries and state support.

6710* Special Problems. 1-4 credits, maximum 8. Prerequisite: teaching or administrative experience. Assists administrators with either recurrent or unique problems arising in common schools or in higher education. Emphasizes evaluation and planning related especially to staff, programs and faculty needs.
Electrical and Computer Engineering (ECEN)

3013 Experimental Methods. Lab 4. Prerequisites: ECEN 3613, concurrent enrollment in 3113 and 3313. Basic electronic and electromagnetic measurements and instrumentation techniques and devices. Operating principles and application of various instruments used in the practice of electrical engineering. Experiments in electronics and electromagnetic fields, designed to reinforce principles introduced in ECEN 3313 and ECEN 3613. Data processing and reduction techniques.

3113 EnergyConversion I. Lab 2. Prerequisite: 3613, concurrent enrollment in 3013, 3313. Physical principles of electromagnetic and electrochemical energy conversion devices and their application to conventional transformers and rotating machines. Network and phasor models; steady-state performance.

3213 Microcomputer Principles and Applications. Lab 2. Prerequisite: junior standing or above. Introductory microcomputers. Digital logic elements and number systems, memory components and organization. Microprocessor and microcomputer system architecture, assembly language programming, software development, interfacing techniques.


3313 Electronic Devices and Applications. Prerequisites: 3713, concurrent enrollment in 3013, 3313. Semiconductor electronic components including MOSFETs, BJTs, JFETs, and OpAmps. Emphasis on device models and use of solid state electronic devices to analyze, synthesize and design amplifiers and switching circuits. SPICE simulations are extensively utilized. Basic building blocks for analog and digital applications.

3413 Controls I. Prerequisites: ENGS 2122; ENGS 2613, MATH 2233, MATH 3013, concurrent enrollment in 3613 and 3713. Laplace and z-transforms, solutions to differential and difference equations. Transfer functions and block diagram manipulation. Modeling of mechanical and electrical systems. Introduction to feedback and control system design using the root locus diagram.


3613 ElectromagneticFields. Prerequisites: ENGS 2613, MATH 2233, concurrent enrollment in 3413, 3713. Development of Maxwell's equations and their application to engineering problems in electrostatics, magnetostatics, plane wave propagation, and transmission line theory.

3713 NetworkAnalysis. Prerequisites: ENGS 2613, MATH 2233; concurrent enrollment in 3413 and 3613. Laplace transform, transfer functions, magnetically coupled circuits and two-port networks.


4010 Technical Problems and Engineering Design. 1-12 credits, maximum 12. Prerequisite: consent of instructor. Individual independent study projects selected in consultation with the instructor; analysis or design problems, literature searches and computer simulations may be involved.

4013 Senior Design Laboratory I. Lab 2. Prerequisites: 3013, 3313, 3413, and 3213 or 3233. Complete design cycle for several small design projects, each including establishing objectives, synthesis, analysis, construction, testing and evaluation. Use of modern laboratory equipment and fabrication techniques. Development of communication skills.

4023 Senior Design Laboratory II. Lab 2. Prerequisite: 4013. Continuation of ECEN 4013. Student project team designs, builds, tests and presents results for realistic projects from university and industrial sponsors. Formulation of specifications, consideration of alternative solutions, feasibility considerations, detailed system descriptions, economic factors, safety, reliability, aesthetics, ethics and social impact.

4133 Power Electronics. Prerequisite: 3113. Power electronic devices, components, and their characteristics; DC to AC conversion; fundamentals of inverters and waveshaping devices; application aspects; control aspects; characteristics and state-of-the-art. Review of advanced power inverter and power conditioning topologies.

4153 Power System Analysis and Design. Prerequisite: 3113. Power system component models from circuit theory. Formulation and design of the load flow model and the optimum economic generator allocation problem utilizing computer methods.


4243 Computer Architecture. Prerequisites: 3213 and 3233. Functional organization and hardware design of digital computer systems with emphasis on microprocessor-based systems. CPU organization, features of microprocessors including advanced 32-bit CPUs, system design including cache, virtual memory, error detection and correction, I/O operations including direct memory access and peripheral interface design.
Computer Engineering Projects. Lab 2. Prerequisites: 3233, 4013 and 4213. Team projects involving design and testing of hardware interfaced with mini- and micro-computers in instructional laboratory. Emphasis on software and hardware documentation. IEEE-488 bus; interface chips; comparison of mini- computer operating systems; IEEE-488 bus; bus analyzer; LSI interface chips; mini- and micro-computers as laboratory tools and system components.

Software Engineering. Lab 2. Prerequisites: COMSC 2133, 3443 or ECEN 3213. Fundamental characteristics of the software life cycle. Tools, techniques, and management controls for development and maintenance of large soft- ware systems. Software metrics and models. Human factors and experimental design. Same course as COMSC 4273.

Computer Networks. Prerequisites: 3213 or COMSC 3443; UNIX knowledge. Computer networks, distributed systems and their system- atic design. Introduction to the use, structure, and architecture of computer networks. Network- working experiments to describe network topo- logy. ISO reference model. Same course as COMSC 4283.


Communication Electronics. Prerequisite: 3313. Design of tuned voltage and power amplifiers, oscillators and mixers, modulation and detection, and parametric amplifiers.

Controls II. Prerequisites: 3413, 3513, 3713. Design of analog and digital feedback control systems, review of functions and state variable models for continuous-time and discrete-time systems, implementation between pole locations and time response, frequency do- main design, root locus design, continuous- time and discrete-time compensation tech- niques, state variable feedback and pole positioning design.


Data Communications. Prerequisite: 4503. Signal detection in noise. Tradeoffs between bandwidth, signal power and error rate. Transmission multiplexing and error handling. Elements of computer network design. Data link protocols.


Active Filter Design. Lab 2. Prerequisites: 3413 and 3713. Introduction to operational amplifiers as network elements; filter specifications; design of active filters. Labora- tory design projects and computer simulations.


Real Time Digital Signal Processing. Prereq- uitise: 4763 or equivalent. DSP Processor ar- chitectures and programming. A/D, D/A, polled and interrupt-driven I/O. Realtime implementa- tion of FIR/IR filters, the FFT, and other DSP algorithms on special purpose DSP hardware from Motorola, Texas Instruments and others. Link between DSP theory and practical imple- mentation.


Thesis or Report. 1-6 credits. maximum 6. Prerequisite: approval of major professor. A stu- dent studying for the master’s degree will en- roll in this course for a maximum of six credit hours.

Professional Practice. 1-8 credits, maximum 5. Prerequisite: 3613. As- sessment and feedback on the development and implementa- tion of image understanding applications. Techniques for robotics, automated inspection, vision and advanced image understanding.

Digital Computer Design. Prerequisite: 3233, Analysis and design of digital computers. Arithmetic algorithms and the design of the arith- metic/logic unit (ALU). Serial and parallel data processing; control and timing systems; mi- croprogramming; memory organization alter- natives; input/output interfaces. Same course as COMSC 5253.


ComputerVision. The development of machine vision and advanced image understanding techniques for robotics, automated inspection, biomedicine. Object recognition, motion analy- sis, object tracking, segmentation, representa- tion, and 3-D analysis.

5313* Solid-state Electronics I. An advanced study of electrically and error control. Data Transportation and Protection. Some systems and computer communication networks. Trade-offs between bandwidth, signal-to-noise concepts and introduction to information theory. 5543*

5533* Advanced Power Electronics. Prerequisite: 4133. Characteristics of high power semiconductor devices and the application of such devices to power conditioning, inversion, and wave shaping at high power levels.

5563* CMOS Analog Integrated Circuit Design. Prerequisite: 4313. Advanced study of solid state CMOS linear integrated circuits. Topics include: Op Amps, comparators, multipliers, D/A and A/D converters and Op Amp building blocks. Op Amp building blocks include, differential pairs, current mirrors, gain, output stages, and references, VLSI layout and circuit simulation using SPICE.


5513* Stochastic Systems. Prerequisites: 3513 and 4503 or STAT 4033. Theory and applications involving probability, random variables, functions of random variables, and stochastic processes, including Gaussian and Markov processes. Correlation, power spectral density, and nonstationary random processes. Representation of linear systems to stochastic processes. State-space formulation and covariance analysis.


5533* Modern Communication Theory. Prerequisite: 5513. Noise as a random process, analog and digital signal detection in the presence of noise, optimum receiver design using signal space concepts and introduction to information theory. Trade-offs between bandwidth, signal-to-noise ratio and the rate of information transfer. Exploration of satellite transmission, deep space and terrestrial communication systems and computer communication networks.

5543* Data Transportation and Protection. Data and its representation; finite field matrices, pseudorandom sequences; information protection: space division networks; synchronization; and channel and error control.

5553* Telecommunications Systems. Prerequisite: graduate standing. Ways and means voice, data and video traffic is moved long distances. Data networks (Ethernet and Token Ring Local Area Networks; FDDI and SMDS Metropolitan Area Networks; Internet, Frame Relay, and ATM Wide Area Networks); the telephone system (POTS, network synchronization and switching, ISDN, SONET, cellular telephone); and video (NTSC, switching and timing, compressed video standards such as MPEG and P×64, HDTV).


5623* Antenna Theory. Prerequisite: 3613. Fundamental antenna parameters, including directivity, efficiency, radiation resistance, and pattern. Analysis of dipole, loop, aperture, broadband, and traveling wave antennas. Array theory. Introduction to numerical techniques used in modern antenna design.


5653* Foundations of Electrodynamics I. Prerequisite: 3613. Rigorous derivation of Maxwell's equations utilizing Coulomb's law and postulates of special relativity; the invariance of Maxwell's equations under Lorentz transformations for four-vector treatments of Maxwell's equations, scalar and vector potential functions, solutions of the Laplace and Poisson equations, solutions of the homogeneous and inhomogeneous wave equations with applications to guided waves, radiation and scattering.

5713* System Theory. Prerequisite: graduate standing or consent of instructor. Introduction to the theory of deterministic linear and nonlinear systems. Applications of matrix methods and vector differential and difference equations to the analysis of lumped-parameter electrical networks, mechanical and fluid systems and discrete-time systems. Computer simulations of system dynamics. Frequency domain techniques in signal and system analysis using Fourier, Laplace and Z-transforms. Introduction to stability criteria for nonlinear systems.

5723* Nonlinear Systems Analysis I. Prerequisite: 5713. Fundamentals of stability, phase plane and phase space techniques; method of perturbations, asymptotic, orbital and structural stability; subharmonic generation; generalized approaches to nonlinear systems analysis.

5733* Network Theory. Prerequisites: 5513, 5713 or equivalent. Introduction to mathematical analysis of networks and learning rules, and on the application of neural networks to certain engineering problems in image and signal processing and control systems.

5753* Digital Processing of Speech Signals. Prerequisite: 4763 or 5763. Digital signal processing; speech production; digital modeling of speech; short time analysis and synthesis; the short time Fourier transform and linear predictive coding and solution of the normal equations; vocal tract spectrum calculation; speech coding; homomorphic processing; applications of speech processing. Introduction to more advanced topics as time permits.

5763* Digital Signal Processing. Introduction to discrete linear systems; frequency-domain design of digital filters; quantization effects in digital filters; digital filter hardware, discrete Fourier transforms; high-speed convolution and correlation with application to digital filtering; introduction to Walsh-Fourier theory.

5773* Fuzzy Systems Theory and Application. Prerequisite: 5723 or MAE 5723. Fuzzy set theory; basic definitions, operations with fuzzy sets and fuzzy relations; extension principle; fuzzy functions; possibility theory; fuzzy systems; fuzzy models and system identification; approximate reasoning; fuzzy control and stability of fuzzy systems; fuzzy neural networks. Same course as MAE 5773.


5833* Fiber-Optic Communication Systems. Prerequisite: graduate standing or consent of instructor. Fundamentals of fiber-optic communication systems described in detail. Technical advances and increased capability of each system. Historical framework of how technical capability at the time forced technical decisions. A systems engineering point of view, emphasizing optimization of all components of the optical fiber link.

5853* UltrafastOptoelectronics. Prerequisite: graduate standing or consent of instructor. Emphasis on ultrafast laser pulses with electronic circuitry. Increased device performance. Opto-electronic/electrical pulses as short as 0.2 psec. High performance areas illustrating the power of advanced techniques in applications.

6000* Research. 1-3 credits, maximum 30. Prerequisite: consent of major professor. Independent research for students continuing graduate study beyond the level of the M.S. degree.

6050* Special Topics. 1-9 credits, maximum 9. Prerequisite: consent of instructor. Subjects to be selected by the graduate faculty in electrical engineering to cover state-of-the-art advances.
6253 Advanced Topics in Computer Architecture. Prerequisite: 5253 or COMSC 5253. Innovations in the architecture and organization of computers, with an emphasis on parallelism. Topics may include pipelining, multiprocessors, data flow, and reduction machines. Same course as COMSC 6253.


6450 Control Systems II. 1-3 credits, maximum 6. Prerequisites: 5413 and 5523. Advanced topics in optimal control systems. Dynamic programming and the maximum principle applied to stochastic systems. Optimum state estimation and the separation theorem. Selected topics from recent developments in adaptive and stochastic control.

6523 Information Theory. Prerequisite: 5513 or consent of instructor. Mathematical theory of information (Shannon theory) including information measure and transmission rates and capacities. Source coding theory including algebraic and error-correcting codes. Design of waveforms for noise immunity. Information transfer in learning systems.

6823 Advanced Optical Techniques. Prerequisite: 5813 or 5853. State-of-the-art optical devices and research methodologies. Investigation and discussion of contemporary developments in non-linear optical devices and laser applications. Includes both analytical and experimental techniques.

Electronics and Computer Technology (ECT)


1104 Fundamentals of Electricity. Lab 3. Prerequisite: MATH 1513. Elementary principles of electricity covering basic electric units. Ohm’s law, Kirchoff’s law, circuit solutions, network solutions, magnetism, inductance and capacitance.

1244 Circuit Analysis I. Lab 4. Prerequisites: 1104, co-requisite MATH 1613. Analysis of AC electric circuits. The use of network theorems and phasors, coupled circuits, resonance, filters, and power.

2213 Essentials of Electricity. Lab 2. Prerequisites: MATH 1513, 1613. Electric circuits and machines, including Ohm’s law, magnetism, direct-current motors, generators and controls, alternating current, single-phase circuits, polyphase circuits and alternating current machinery. For non-electronics majors only.

2303 Technical Programming. Lab 3. Prerequisites: 1104, MATH 1513 or completion of comparable engineering science courses. Introduction to machine programming using industrial standard languages, emphasis on problems from science and technology.

2544 Pulse and Digital Techniques. Lab 3. Prerequisites: 1244 and 1225. Electronic circuits used in digital control and computation. Pulse generation, Boolean algebra and logic circuits.

2625 Solid State Devices and Circuits. Lab 1. Prerequisites: 1244, MATH 1613. Diodes, transistors, LSI linear devices; their operation and applications in electronic circuits.

3104 Elements of Electricity and Electronics. Lab 1. Prerequisite: MATH 1513. Essentials of electricity, controls, and electronics for non-majors. No credit for ECT majors.


3234 Nondestructive Testing. Lab 2. Commonly used nondestructive testing in industry; radiography. Magnelux, liquid penetrant, ultrasonic and eddy current testing.


3263 Electronic Digital Systems. Lab 3. Prerequisites: 2544, 2533. Introduction of microcomputers from a hardware point of view, combining a study of machine language programming and microcomputer hardware in a highly laboratory-oriented presentation. Interfacing the microcomputer as a programmable controller of external systems and devices.


3354 Advanced Circuits I. Lab 1. Prerequisites: 2634, 3113, MATH 2133. Fundamentals of mixers, oscillators, detection, modulation, amplifier strips, feedback, coupled circuits and impedance matching.


4050 Advanced Electronic Problems. 1-4 credits, maximum 4. Prerequisites: junior standing and consent of head of department. Special problems in the electronic area.

4153 Data Communications. Lab 3. Prerequisites: 3263, 3363, 3354 and 3733. Data communications including point-to-point, LANs, WANs, and switched networks. Topologies, protocols, routing, and network technologies. Link, packet, and circuit switching; voice, data, and video information. Firewalls, encryption, modulation techniques, OSI, TCP/IP, Internet, and ISDN. Laboratory focus on design, assembly, test, demonstration, oral and written presentation of the design project. Capstone course for the computer option.

4314 Elements of Control. Lab 3. Prerequisites: 3113, 3123, 3363, GENT 3123. Principles of analog and digital control, with emphasis on the analysis of feedback control systems in their various conceptual configurations. Application of feedback control theory to the analysis and design of present day circuits and systems. Use of circuit analysis software.

4353 Advanced Circuits II. Lab 3. Prerequisites: 3123, 3354, 3363, 4314. Theory and application of specific special circuits. Laboratory focus on design, assembly, test, demonstration, and oral presentation of the design project. Capstone course for the electronics option sequence.

4654 Microwave Techniques. Lab 3. Prerequisites: 3113, 3354, GENT 3123. Communication principles and measurement techniques in the UHF and microwave frequency bands, coaxial and waveguide transmission lines, antenna systems and signal transmission, modulation and detectors, oscillators and amplifiers, introduction to signal transmission and modulation methods.

4832 Senior Project. Lab 3. Prerequisite: 20 credit hours of upper-division electronics courses or consent of instructor. For the student’s last semester. A synthesis of all pertinent skills and knowledge developed in the curriculum. Students work as product design group developing a useful or marketable electronics product or device through design, assembly, test, and demonstration phases. Graded written and oral presentations.

Engineering (ENGR)


1311 Introductory Engineering Graphics. Principles, techniques and skills of graphics as used in engineering.
Engineering Design with CAD. Lab 2. Introduction to engineering design using modern design methodologies and state-of-the-art computer-aided design tools. Hands-on design, construction and testing through participation in a design project contest.


Co-op Industrial Practice I. 1-6 credits, maximum 12. Prerequisites: sophomore standing and permission of Co-op coordinator. Pre-engineering industrial practice. Written reports as specified by advisor. Application of credit to meet degree requirements varies with level and department.

Orientation Projects. Lab 2-6. 1-3 credits, maximum 3. Prerequisite: pre-engineering standing. Enrollment in independent study or small groups. Projects to assist students with special needs to adjust to engineering curriculum.

Co-op Industrial Practice II. 1-6 credits, maximum 12. Prerequisites: junior standing and permission of Co-op coordinator. Pre-engineering industrial practice. Written reports as specified by adviser. Application of credit to meet degree requirements varies with level and department.

Study Abroad. 12-18 credits, maximum 36. Prerequisites: OSU GPA of 3.00 or higher and consent of the Office of International Programs and the associate dean of the College. Participation in a formal study abroad program spending a semester or year in full-time enrollment at a university outside the U.S.

Introduction to Engineering for Transfer Students. Prerequisite: transfer status with 28 or more credit hours. Adjustments from previous college situation needed to select a proper course of studies based on abilities, aptitudes and interests.

Acoustics of Music and Speech. Prerequisite: 45 credit hours completed. Algebra base treatment of the physical principles of sound in music and speech, and the sense of hearing. Sound production by musical instruments, acoustic response of auditoriums, and principles of sound reinforcement.

Co-op Industrial Practice III. 1-6 credits, maximum 12. Prerequisites: senior standing and permission of Co-op coordinator. Pre-engineering industrial practice. Written reports as specified by adviser. Application of credit to meet degree requirements varies with level and department.

Topics in Technology and Society. 1-3 credits, maximum 6. Problems of society relating to technology and added problems stemming from their solution. Minimal reliance on mathematics; for engineering and nonengineering students.

Elementary Dynamics. Prerequisite: 2112. Kinematics and kinetics of particles, systems of particles, and rigid bodies from a Newtonian viewpoint utilizing vector algebra and calculus. Work energy and impulse momentum principles.

Strength of Materials. Prerequisite: 2112. Bending moments, deformation and displacements in elastic and plastic deformable bodies.

Thermodynamics. Prerequisites: CHEM 1515, PHYS 2014, MATH 2145. Properties of substances and principles governing changes in form of energy. First and second laws.

Introduction to Electrical Science. Prerequisites: PHYS 2114 and MATH 2155. Elements of electrical engineering; AC and DC circuits, mesh and node formulation of network equations, steady-state response to sinusoids, energy, power and power factor.

Fluid Mechanics. Prerequisite: MATH 2155 or concurrent enrollment and CHEM 1515, PHYS 2014. The study of fluid properties, statics, conservation equations, dimensional analysis and similitude, viscous flow in ducts, inviscid flow, boundary layer theory, open channel flow, turbomachinery and fluid measurement techniques.

Materials Science. Prerequisite: CHEM 1515. Introduction to the relationship between structure and properties of materials and engineering applications. Atomic, microscopic and macroscopic properties.

Engineering Technology (See specific technology programs listed alphabetically)

English (ENGL)

Remedial Composition for International Graduate Students. Lab 2. Sentence structure, paragraphing, idiomatic usage, punctuation, vocabulary, pronunciation and documentation. Graded on a satisfactory-unsatisfactory basis.

Basic Composition. Intensive instruction in grammar and error avoidance (especially the differences between spoken and written English), paragraph structure, and essay writing. May be used for skills remediation or to satisfy high school curricular deficiency in English. Graded on a satisfactory-unsatisfactory basis.

Studies in English Composition. 1-2 credits, maximum 2. Special study in composition to allow transfer students to fulfill general education requirements as established by Regent's policy.

International Freshman Composition I. Lab 2. Restricted to students whose native language is not English. Expository writing with emphasis on structure and development. Special attention to problems of English as a second language. This course may be substituted for 1113.

International Freshman Composition II. Prerequisite: 1013 or 1113. Restricted to students whose native language is not English. Expository composition with emphasis on technique and style in writing research papers. May be substituted for 1213.

Freshman Composition I. The fundamentals of expository writing with emphasis on structure, development and style.

Freshman Composition II. Prerequisite: 1013 or 1113. Expository composition with emphasis on technique and style through intensive and extensive readings.

Critical Analysis and Writing I. Prerequisites: English ACT score of 30 and 3.50 overall high school or transfer GPA. Review of fundamentals as necessary. Individualized instruction in writing on topics based on discussion of student's interests. Class size limited. This course may be substituted for 1113.

Critical Analysis and Writing II. Prerequisites: "A" or "B" in 1113 or 1313, English ACT score of 30 and consent of course director. Individually directed writing growing from discussions of books and ideas. Class size limited. This course may be substituted for 1213.

Survey of American Literature II. Readings in the great works of the most important writers of Britain and America, such as Shakespeare, Dickens, Twain, Faulkner, and others.

Introduction to Technical Writing. Prerequisite: 1113. Does not meet any part of the six-hour composition requirement for the bachelor's degree. Technical literature and publications in the student's area of specialization. Emphasis on clarity, simplicity and careful organization.

Languages of the World. A comprehensive survey of world languages. The essential structural and historical organization of languages. The process of languages as a basic human function. Same course as FLL 2443.

Introduction to Film. Lab 2. How motion pictures shape identity. How the elements of film editing, cinematography, and sound may be "read."

Introduction to Creative Writing. Literary composition with emphasis on techniques and style through readings and writings in fiction, poetry and drama.

Survey of British Literature I. The beginnings through the Neo-Classic Period.

Survey of British Literature II. The Romantic Period to the present.

Survey of American Literature I. The Puritans through the Romantic Period.

Survey of American Literature II. The Romantic Period to the present.

Fiction Writing. Prerequisite: 2513. Directed readings and practice in writing fiction with special attention to techniques.

Poetry Writing. Prerequisite: 2513. Directed readings and practice in writing poetry with special attention to techniques.
3653 (H)History of American Film. The history of the American cinema, the selected examples of British and American literature.

3663 (H)World Literature I. Selected literary masterpieces exemplifying ideals and values in Western cultures.

3673 (H)World Literature II. Selected literary masterpieces exemplifying ideals and values in non-Western cultures. Emphasis on the study of non-Western literature available in English.

3183 (H)Classical Mythology. The heritage of classical Greek and Roman myths as revealed in selected examples of British and American literature.

3193 (H)Popular Fiction. Origins and development of a literary tradition in its historical and cultural context.

3200 Special Problems in Language and Literature. 1-3 credits, maximum 3. Prerequisite: 9 credit hours of English. Specialized readings and independent study.

3203 Advanced Composition and Rhetoric. Prerequisite: 9 hours of English. Theories of regulative grammar and rhetoric as applied to the writing process.

3240 Criticism. 3 credits, maximum 6. Study and application of principal critical theories in literature, film or technical writing.

3232 Technical Writing. Prerequisites: 1113, 1213, and junior standing. Applied writing in areas of specialization. Intensive practice in professional writing modes, styles, research techniques and editing for specialized audiences and/or publications. This course may be substituted for 1213 with an "A" or "B" in 1113 and consent of the student's college.

3333 (H)Short Story. Origins, development, theory and craft of the short story.

3353 (H)Film as Literature. Film and literature as narrative forms.

3363 (H)Drama. Origins, development, theory and craft of drama.

3410 (H)Popular Fiction. 3 credits, maximum 6. Study of certain popular genres of fiction including science fiction, detective fiction, Western fiction, horror and the grotesque, the romance, American humor. Course content varies by semester. Exploration of the characteristics and evolution of the genre while developing skills in reading, writing and thinking critically.

3453 (H)History of American Film. Lab 2. Introduction to the history of the American cinema, the principal eras in American film history, key directors, and the main genres. Basic approaches to film history and key theorists.

3603 (H)British Literature to 1600. Historical development. Major writers and their works.

3633 (H)British Literature 1600-1800. Historical development. Major writers and their works.

3643 (H)British Literature 1800-1900. Historical development. Major writers and their works.

3653 (H)British Literature Post 1900. Historical development. Major writers and their works.

3703 (H)American Literature to 1800. Historical development. Major writers and their works.

3713 (H)American Literature 1800-1900. Historical development. Major writers and their works.

3723 (H)American Literature Post 1900. Historical development. Major writers and their works.

4003* History of the English Language. Prerequisite: 9 credit hours of English. The growth of the English language.

4013* English Grammar. Prerequisite: 9 credit hours of English. The traditional terminology and concepts of English grammar leading or evolving into the several current systems of description.

4053* Descriptive Linguistics. Prerequisite: 9 credit hours of English. The methodology of linguistic analysis.

4083* Applied Linguistics. Prerequisite: 9 credit hours of English. The application of linguistic theory to literary analysis.


4253* (H)Aesthetics of Film. Major theoretical approaches to the art of cinema: auteurism, semiotics, structuralism, historicism.

4303* (H)British Drama 1500-1660. Genre development. Major writers and their works.


4323* (H)British Drama Post 1800. Genre development. Major writers and their works.

4333* (H)American Drama. Genre development. Major writers and their works.


4453* (H)Contemporary Literature. Genre development. Major writers in the novel, poetry, or drama and their works.

4520* Problems in English. 1-3 credits, maximum 6. Prerequisite: 12 credit hours of English. Specialized readings and independent studies.

4523* Technical Writing Internship. Prerequisite: 6 credit hours of English including 3323. Practice in writing resumes, proposals, abstracts and articles. Concentrated review of mechanics, proofreading, editing and interviewing techniques. Second eight weeks will include internship experience.

453* Advanced Technical Writing. Prerequisite: 6 credit hours of English including 3323. Specialized writing projects growing out of areas of specialization with emphasis on practical and marketable skills.

454* Technical Editing. Prerequisite: 9 credit hours of English. Scientific and technical editing skills; emphasis on editing project.

4553* Document Design. Prerequisite: six credit hours of English, including 3323. Design theories and practice for hard copy, computer screens and visuals. Students will learn about design standards, page layout, instructional design, desktop publishing, typography, reading theory, and current research in visual design.

4563* (H)Scientific and Technical Literature. Prerequisite: 6 credit hours of English. Scientific and technical style.

463* Advanced Fiction Writing. Prerequisite: 303. Student practice and composition.

4643* Advanced Poetry Writing. Prerequisite: 3043. Student practice and composition.

4653* Advanced Scriptwriting. Prerequisite: 3053. Student practice and composition.

4703* (H)Chaucer. The Canterbury Tales in Middle English.

4713* (H)Milton. The more notable minor poems, prose selections and the major poems-Paradise Lost, Paradise Regained and Samson Agonistes-studied critically in context of the 17th century.

4723* (H)Shakespeare. Major plays and selected criticism.

4730* Single Author or Work. 3 credits, maximum 6. The works of a single author such as Hawthorne, Coleridge, or Faulkner or a single work and selected criticism such as The Bible, The Prelude, Moby Dick, Ulysses.

4773* (H)Literature by Women. The collection of literature written by women in England and America, classical and modern figures.


<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>Notes</th>
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<tbody>
<tr>
<td>4853</td>
<td>(H)American Novel to 1900. Genre development. Major writers and their works.</td>
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<tr>
<td>4933</td>
<td>(H)Regional Literature. Literature of a nation such as Ireland or Canada, or of a region such as the American Southwest. Topic varies by semester.</td>
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<tr>
<td>4963</td>
<td>Issues in English: Senior Seminar in Creative Writing. Prerequisite: senior standing. A capstone course for creative writing majors. Issues and professions related to the degree. A cross-genre workshop and seminar designed to aid in understanding the whole of progression as writers and thinkers. Aids student in the completion of required creative thesis.</td>
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<tr>
<td>4973</td>
<td>Issues in English: Technical Writing. Prerequisite: senior standing. A capstone course for technical writing majors. Issues and professions related to the degree.</td>
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<tr>
<td>5013</td>
<td>Introduction to Graduate Studies. Principles and procedures in scholarly research.</td>
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<tr>
<td>5023</td>
<td>Old English. Major works in Old English.</td>
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<tr>
<td>5043</td>
<td>Traditions in Literary Criticism and Theory. A survey of the major documents in literary theory and criticism from Plato to 1965.</td>
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<tr>
<td>5063</td>
<td>Seminar in Shakespeare. Intensive study of a limited number of plays. Assignment of problems to individual students.</td>
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<tr>
<td>5073</td>
<td>Old English Poetry. Prerequisite: 5023. Beowulf in Old English and selected criticism.</td>
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<tr>
<td>5083</td>
<td>Seminar in Chaucer. The Canterbury Tales in Middle English; language study, criticism.</td>
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<tr>
<td>5093</td>
<td>Seminar in Milton. Poetry, major prose, and criticism.</td>
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<tr>
<td>5120</td>
<td>Studies in Teaching English as a Second Language. 1-3 credits, maximum 6. Selected topics in teaching English as a second language; e.g. cross-cultural communication, materials preparation, bilingual education.</td>
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<tr>
<td>5123</td>
<td>Social and Psychological Aspects of Language. An introduction to language acquisition, processing, and production, and their interaction with social contexts.</td>
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<tr>
<td>5130</td>
<td>Studies in English Grammar. 3 credits, maximum 6. Selected study of current topics in grammatical theory as it applies to the teaching of English.</td>
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<tr>
<td>5140</td>
<td>Seminar in Linguistics. 3 credits, maximum 6. Selective study of current topics in linguistics.</td>
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<tr>
<td>5143</td>
<td>Seminar in Descriptive Linguistics. An introduction to phonology, morphology, syntax and semantics.</td>
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<td>5163</td>
<td>Middle English Literature. Major works in Middle English.</td>
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<td>5210</td>
<td>Seminar or Directed Study. 1-6 credits, maximum 9. Specialized readings or independent studies.</td>
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<tr>
<td>5213</td>
<td>Teaching Freshman Composition. Materials and methods of instruction in freshman composition.</td>
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<tr>
<td>5243</td>
<td>Teaching English as a Second Language. Theories of second language acquisition. Materials and methods of instruction.</td>
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<td>5293</td>
<td>Interdisciplinary Uses of English. Interdisciplinary study with emphasis on multiple uses of literature and writing; for example film, new media, popular culture, American studies.</td>
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<tr>
<td>5313</td>
<td>Internship. Teaching English as a Second Language. Supervised teaching of beginning through advanced English as a second language courses.</td>
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<tr>
<td>5333</td>
<td>Seminar in TESL: Testing. Standardized testing for teaching English as a second language.</td>
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<td>5353</td>
<td>Studies in the History of Rhetoric. An exploration of selected topics and texts in the history of Western rhetoric from Plato to the present.</td>
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<td>5410</td>
<td>Seminar in British Literature of the 16th Century. 3 credits, maximum 6. Selected writers and their works, themes and literary developments of the 16th century.</td>
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<td>5420</td>
<td>Seminar in British Literature of the 17th Century. 3 credits, maximum 6. Selected writers and their works, themes and literary developments of the 17th century.</td>
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<tr>
<td>5440</td>
<td>Seminar in British Literature of the 18th Century. 3 credits, maximum 6. Selected writers and their works, themes and literary developments of the 18th century.</td>
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<tr>
<td>5460</td>
<td>Seminar in British Literature of the 19th Century. 3 credits, maximum 6. Selected writers and their works, themes and literary developments of the 19th century.</td>
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<tr>
<td>5480</td>
<td>Seminar in Modern Literature. 3 credits, maximum 6. Selected writers and their works, themes and literary developments of modern literature.</td>
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<tr>
<td>5520</td>
<td>Internship in Technical Writing. 1-6 credits, maximum 6. Practice in writing appropriate documents such as proposals, manuals (software, hardware, reference, training), articles, functional specifications in job-simulation situations. Review of academic materials as appropriate.</td>
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<td>5533</td>
<td>Seminar in Advanced Technical Writing. Specialized writing projects growing out of student's special interests and emphasizing the student's career preparation. Coverage of manuals, proposals, and visual aids used to communicate technical information.</td>
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<tr>
<td>5543</td>
<td>Seminar in Scientific and Technical Editing. Managing technical documentation production; developing scientific and technical editing skills; special emphasis on editing project.</td>
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<tr>
<td>5563</td>
<td>History of Scientific and Technical Language. Structural, stylistic and rhetorical analysis of selected scientific and technical works.</td>
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<tr>
<td>5573</td>
<td>Theories of Communication. Survey of a broad range of theories of communication and application of those theories to technical communication.</td>
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<tr>
<td>5580</td>
<td>Seminar in Early American Literature. 3 credits, maximum 6. Selected writers and their works, themes and literary developments of the 17th and 18th centuries.</td>
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<tr>
<td>5590</td>
<td>Seminar in Contemporary Literature. 3 credits, maximum 6. Selected writers and their works, themes and literary developments in contemporary literature.</td>
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<td>5730</td>
<td>Seminar in Fiction Writing. 3 credits, maximum 6. Writing fiction at the professional level.</td>
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<td>5740</td>
<td>Seminar in Poetry Writing. 3 credits, maximum 6. Writing poetry at the professional level.</td>
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<td>5750</td>
<td>Seminar in Scriptwriting. 3 credits, maximum 6. Scriptwriting at the professional level.</td>
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<td>5990</td>
<td>Special Problems. 1-3 credits, maximum 6. Investigation into a designated area of English leading to material for creative component option (M.A.). Graded on a pass-fail basis.</td>
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<td>6110</td>
<td>Seminar in Single Author or Work. 3 credits, maximum 9. A study of one text and its various readings; or a study of the development and range of a writer's work in the English language.</td>
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<tr>
<td>6130</td>
<td>Studies in Fiction Writing. 3 credits, maximum 6. Prerequisite: 5730. Individual projects in fiction.</td>
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<tr>
<td>6140</td>
<td>Studies in Poetry Writing. 3 credits, maximum 6. Prerequisite: 5740. Individual projects in poetry.</td>
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<tr>
<td>6150</td>
<td>Studies in Scriptwriting. 3 credits, maximum 6. Prerequisite: 5750. Individual projects in scriptwriting.</td>
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<tr>
<td>6210</td>
<td>Seminar or Directed Study. 1-6 credits, maximum 9. Specialized readings or independent studies.</td>
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</table>
6220* Seminar in Genre. 3 credits, maximum 9. The development, traditions, concerns or characteristics of genre in selected texts. Major genres and subgenres considered.

6250* Seminar in Race, Region or Gender. 3 credits, maximum 9. A study of the complex relations between race, region or gender and the texts that represent them.

6253* Studies in New Media. Selected work in new media, for example film, literary adaptation to film, film and television.

6260* Studies in Literary Criticism. 3 credits, maximum 9. Selected work in literary criticism, for example ancient and neo-classical, 19th century, 20th century.

6353* Topics in Rhetorical Theory. Study of advanced topics in rhetorical theory and research. May focus on an important thinker, or a specific theme, or some combination of thinkers and themes.

6410* Topics in Linguistics. 3 credits, maximum 9. Prerequisite: 5143. Study of advanced topics in linguistic theory and research.

6420* Topics in Second Language Acquisition. 3 credits, maximum 9. Prerequisite: 5243. Study of topics in second language theory and research.


Entomology (ENTO)

2003 (N)Insects and Society. A course for non-majors that emphasizes the impact of insects on society. Influence of arthropods in beliefs, culture and fears and the view of insects in folklore and mythology from ancient times to present. Focus on the use of insects as model systems in biological research. Exposure to the use of insects in teaching, music, art, literature and the cinema.

2023 Introduction to the Science of Entomology. Lab 2. Basic structure, function and classification of insects and closely related animals. Coverage of insects in ecosystems and development of control programs that reduce reliance on chemical pesticides.

3003 Livestock Entomology. Lab 2. Economic importance, biology and control of pests affecting domestic animals.

3021 Postharvest Insect Pests. Lab 2. Prerequisite: 2023 (or concurrent enrollment) or 3003. The biology and management of insect pests of bulk-stored grains, flour, feed, dried fruits and nuts, and those of quarantine significance for export of fresh fruits and vegetables within food processing plants, warehouses, wholesale and retail distribution systems.

3043 Insect Physiology. Prerequisites: 2023; one course in organic chemistry, nine credit hours of biology. Functions of the organ systems of insects. Lecture-demonstrations of selected insect physiology techniques. Same course as 5043.

3331 Insect Pests of Agronomic Crops. Lab 2. Prerequisite: 2023 or concurrent enrollment. Sampling and decision-making processes for evaluation and control of insect pest populations in agronomic crops. Coverage of identification of pests and beneficials and damage symptoms resulting from insect feeding in crops.

3421 Horticultural Insects. Prerequisite: 2023 or concurrent enrollment. Identification, biology and control of pests attacking horticultural crops. Emphasis on pests injurious to vegetable, fruit, pecan, greenhouse plants, turf and ornamental trees and shrubs.

3461 Insects in Forest Ecosystems. Lab 2. Prerequisite: concurrent enrollment in 2023. Identification and seasonal life history of insect pests and beneficial insects on shade trees in urban settings, in commercial forests, and in forest products.

3644 Insect Morphology. Lab 4. Prerequisite: 2023. Insect development and comparative morphology. Same course as 5644.

4223* Ecological Methodology. Lab 2. Prerequisite: one course in either ecology or general biology. Use of insects and other invertebrates for describing and evaluating interactions of individuals and populations with their environments. Coverage of behavioral and physiological ecology and consequences to individuals; population and community ecology considered in dynamics of groups of organisms in ecosystems.

4523* Issues Related to Plant Production Systems. Lab 2. Prerequisites: senior standing; minimum of 12 hours in agronomy, entomology or horticulture. Ecological, economic and social issues related to plant production systems. Resource management for profitable and sustainable production while maintaining environmental quality.

4800 Undergraduate Traineeship. 1-5 credits, maximum 5. Prerequisite: consent of instructor. Participation in research or extension pest management programs of departmental faculty.

4854* Medical and Veterinary Entomology. Lab 4. Prerequisite: 3553. Biology and control of insects affecting public health.


5003 Insect Biochemistry. Prerequisite: consent of instructor. Biochemical processes in insects and closely related arthropods with emphasis on metabolic pathways unique to this group. Biochemical aspects of arthropod host interactions.

5020* Special Problems. 1-8 credits, maximum 8. Prerequisite: graduate standing. Selected studies in the area of entomology, acarology or araneology.

5043* Insect Physiology. Prerequisites: one course in organic chemistry and nine credit hours of biology. Functions of the organ systems of insects. Lecture-demonstrations of selected insect physiology techniques. Same course as 3043.

5330* Advanced Systematic Entomology. 1-5 credits, maximum 5. Prerequisite: 5464. Special problems in advanced systematic entomology.

5332* Principles of Proposal Writing and Review. Prerequisite: consent of instructor. Mechanics of proposal development and the peer review system. Effective use of scientific literature, and the development of hypotheses, objectives, and experimental design and methods through intensive writing and discussion.

5512* Biocological Control. Prerequisite: 4523. Principles and practices of insect control with inimical organisms.

5550* Advanced Agronomic Entomology. 1-5 credits, maximum 5. Prerequisite: 4523. Special problems in advanced agronomic entomology.

5612* Host Plant Resistance to Insects. Prerequisite: AGRON 3553. Insect population management by host plant resistance.


5660* Readings in Integrated Pest Management. 1-2 credits, maximum 2. Prerequisite: 4523 or equivalent. Reading and discussion of current publications relating to biological and economic theories that form the basis for integrated pest management (IPM) programs.

5710* Advanced Medical and Veterinary Entomology. 1-5 credits, maximum 5. Prerequisite: 4854. Special problems in methods of disease transmission, animal parasite control and the relationships existing between parasite and host.


5753* Insecticide Toxicology. Prerequisite: organic chemistry or 15 credit hours biology. Properties and mode of action of the major insecticide materials. Assessment of their impact on the environment.

5850* Epidemiology of Arthropod-borne Diseases. 1-4 credits, maximum 4. Lab to be arranged. Prerequisite: 4854 or equivalent. The relationships existing between the hosts, arthropod vectors and causal agents of disease and the principles of disease prevention or suppression by the intelligent use of biological principles.

5870* Seminar. 1 credit, maximum 5. Prerequisite: consent of instructor. Written and oral reports and discussion of recent developments in entomology.

6000* Doctoral Research and Dissertation. 1-10 credits, maximum 30. Prerequisite: M.S. in entomology or consent of major professor. Independent investigation under the direction and supervision of a major professor.

6100* Advanced Insect Physiology. 1-5 credits, maximum 5. Prerequisite: 4043. Special problems in advanced insect physiology.
Family Relations and Child Development (FRCD)

2003 Dynamics of Family Relationships. An ecological approach to interpersonal relationships through study of the processes in the family that influence the way members relate to each other throughout their lives. Practice in application of principles is included.

2100 Preprofessional Laboratory Experience. 1-4 credits, maximum 4. Lab 2-8. Realistic experiences in different career areas, acquainting students with the diversity of roles and responsibilities as applied to the variety of audiences served. Professional behavior and ethics.

2113 (S)Human Development Within the Family: A Lifespan Perspective. Human development within the family described from a lifespan perspective. The principles of development and dynamics of behavior and relationships.

2213 Human Sexuality and the Family. Sexual development emphasizing personal adjustment and interaction with family and culture.


3013 (S)Early Adulthood. Study of the unique characteristics of development during early adulthood. Theories of adult development with emphasis on application to program development and providing services for adults.

3023 Child and Parent in Social Context. Parenting philosophies and styles; programs for children, families, and caregivers; emphasis on effective ways for the home, school, workplace and community to work together to provide for optimum development of children of various cultures and ethnic groups.

3112 Parent-Child Relationship. For parents, teachers or others who expect to be responsible for young children. Increases understanding of the needs and feelings of both the developing child and the adult caregiver. A wide variety of philosophies and techniques explored out of which individuals can devise their own comfortable, effective parenting styles.

3143 (S)Marriage. Consideration of courtship and marriage with special emphasis on building a healthy, paired relationship; communication and decision making; and coping with such problems as money, sex, role taking, in-laws and children.

3213 (S)Social, Emotional and Language Development in Early Childhood. Study of appropriate experiences in social, emotional, and language development.


3253 Child Development and Guidance: School Age. Influence of family, schools, peers, and the community on the physical, cognitive, social and emotional development of children in the school years. Education as a profession, cultural pluralism in the schools, and school organization. Observation and application of principles of child development and guidance in experiences with school-age children.

3303 Development of Creative Expression, Play, and Motor Skills in Early Childhood. Prerequisite: one course in child development. Consideration of appropriate experiences in the areas of play, art, music and motor skills for children. Observation and participation with children groups.

3333 (S)Child Development and Guidance: Adolescence. Development of the adolescent physically, socially, intellectually and emotionally with emphasis on the search for identity, sexuality, vocational choice and interpersonal relations. Observation of adolescents.

3403 Literature and Literacy in Early Childhood. Consideration of appropriate experiences in the areas of literature and language arts.

3413 Family Economic Decision Making. Helping individuals make more effective choices as consumers. Relevant concepts, theories, and research from economics, family economics, marketing, and statistics. Information-imperfect markets, assessing consumer information, seeking redress, bargaining, inflation, decision-making models, the concept and measurement of quality and assessment of the performance of markets.

3433 Family Finance. Prerequisite: junior standing. Problems faced by consumers in the changing economy; impact of family financial decisions on a consumption-oriented society. Management of family resources including financial planning, credit, insurance, savings, investments, tax and estate planning.

3503 Cognitive Development in Early Childhood. Prerequisite: 2113 or equivalent. Study of major theories of cognitive development. Application to appropriate experiences in physical and natural sciences, mathematics and social studies.

3613 Professional Services for Children and Families. Study of current major issues and selected services for children and families.

3623 Fundamentals for the Helping Professional. Prerequisites: 3613, 3615. Development of fundamental skills and techniques used by those in various helping professions as viewed from the systems theory perspective. Observation and interviewing techniques, problem-solving and advocacy skills, and introduction to grant writing.

3753 (S)Family Development. Relationships over the life course within the American family. Variations in form and function of the family system related to cultural, economic, and social contexts.

3810 Practicum in FRCD. 1-9 credits, maximum 9. Prerequisites: 3213 and 3233, or 3613 and 3623. Observation and participation in programs for children, youth, adults and families. Supervision by FRCD faculty members or their designated representatives.
will have responsibility for utilizing volunteer participation, including multimedia and distance learning, with a variety of technological aids for presenting ideas to students.

4103 Managing Career Decisions. Applications of decision-making models for career and life planning. Self-assessment, career alternatives, career mobility, work/family issues and resource identification. Student seeking teacher certification will complete a module on methods of teaching career education.


4123* Observation and Assessment of Family Interaction. Examination of family interaction through observation and assessment techniques. Focus on whole family functioning and the functioning of multiple family relationships.

4133 Organizing and Administering Programs for Families and Individuals. Development, management, and evaluation of programs serving families and individuals.

4203 Strategies for Teaching. Learning theories and strategies for planning, teaching and evaluating formal and informal programs. Not applicable for teaching license.

4213 Media, Materials and Techniques in Presentations. Lab 2. Application of educational principles to specific subject matter. Experience with a variety of technological aids for presentations, including multimedia and distance learning, computers and a variety of teaching aids. Development of proficiency in use of various media.

4220 Field Experience Preparation for Kindergarten and Primary. 1-4 credits, maximum 4. Prerequisite: admission to Teacher Education. Decision-making, priority-setting, self-assessment, classroom organization and management, selection of appropriate content, and teaching strategies in public schools and state accredited programs.

4252 History and Philosophy of Early Childhood Education. Prerequisites: courses in child development and early childhood education; theoretical foundations and methods of early childhood curriculum models, including multicultural and nonexclusive approaches; and current major issues in early childhood education.

4333 Strategies for Working with Adults in Community Services. Theories of adult development as they affect learning activities of adults in family-related programs. Implications are analyzed in relation to planning and selecting programs, media, and teaching strategies.

4413* Management of Volunteer Programs. Prerequisite: junior, senior or graduate standing. For family and human service professionals who will have responsibility for utilizing volunteer personnel in achieving program goals. Overview of issues in volunteering, management and leadership strategies for maximizing volunteer effectiveness and strategies for evaluating volunteer service.

4420 Internship in Early Childhood Education. 1-7 credits, maximum 12. Lab 3-21. Prerequisites: 2100, 3213, full admission to Teacher Education with written consent of the coordinators of Early Childhood Education and certification officers. Teaching experience in both infant, kindergartens and grades 1-3. Graded on a pass-fail basis.

4423 Family Resource Management. Analysis of the time, human, environmental and financial resources of the family. Practical application of management principles in the development and utilization of family resources. Emphasis on professional competence.


4523 Critical Issues in Family Relations and Child Development. Prerequisite: senior standing. An examination of the place of family relations and child development in the context of broader themes. An exploration of the students' specializations and its implications for an educated life.

4533* (S)Adulthood: Middle Years. Study of the unique characteristics of life between young adulthood and the later years. Special emphasis on physical, intellectual, personal, family and career development in middle age.

4543* (S)Adulthood: Later Years. Analysis of the aging process. Interrelation between physical, psychological and social development in later years. Special emphasis on multigenerational family issues and relationships.

4553 Families in Crisis. Study of family responses to normative and unpredictable stress. Emphasis on using current literature on selected family stressors to identify issues and community resources that promote adaptation to family crises.

4610 Internship. 1-8 credits, maximum 8. Lab 4. Prerequisites: 2100, 2613, 3613, 3623; completion of application form requiring consent of adviser or consent of instructor. Supervised observation and participation in programs for individual, family, and community services.

4663 Theories and Issues in Child Development. Prerequisites: 2113; six additional hours in FRCD, or consent of instructor. Current research and issues related to child development; theories and philosophical bases underlying development.

4673 (S)Theories and Issues in Family Relationships. Prerequisite: 3753. Introduction to family theories. Current research and issues related to family dynamics, relationships, and crises within the context of the family system.

4743 Fundamentals of Research Methodology in Family Relations and Child Development. Prerequisite: STAT 2013 or equivalent. Understanding of research processes and development of skills needed to be consumers of scientific literature in FRCD. Practice in reading research articles and statistics, introduction to how computers are used in this research and demonstration of basic principles of assessment in children and families.

4750 Special Problems in FRCD. 1-6 credits, maximum 6. Prerequisite: consent of instructor. Various units of work related to specific issues in family relations and child development.

4793* (S)The Family: A World Perspective. Family structure and interaction that transcend specific cultures or nationalities; examination of specific cultural and international family forms, their social issues and relevant services to meet their needs.

4811 Seminar in Family Services. Pre-employment seminar. Individual competencies related to family services, career options, and the process of seeking employment.

4823* Family Life Education. Philosophy and principles of family life education. Planning, implementation, and evaluation of family life programs in community and education settings.

4850 Special Unit Courses in Family Relations, Child Development and Early Childhood Education. 1-6 credits, maximum 6. Various units taught by specialists in the field.

4900 Honors Creative Component. 1-3 credits, maximum 3. Prerequisite: College of Human Environmental Sciences Honors Program participation, senior standing. Guided creative component for students completing requirements for College Honors in College of Human Environmental Sciences. Thesis, creative project or report under the direction of a faculty member in the major area, with second faculty reader and oral examination.

5000* Master's Thesis. 1-6 credits, maximum 6. Research in FRCD for M.S. degree.

5110* Directed Study in FRCD. 1-9 credits, maximum 9. Prerequisites: 5223 or 5523 and consent of instructor. Directed individual study in human development and family sciences.

5112* Computer Applications in FRCD Research. Creating variable codebooks, coding data for input and inputting data for computer analysis using the SPSS-X package. No computer experience necessary.

5133* Research Methods in Family Relations and Child Development. Current problem areas and methodologies of research in human development and family sciences, followed by experiences in identifying researchable problems, planning a proposal, selecting appropriate procedures for carrying out studies and interpreting findings.

5140* Methods of Teaching Child Development and Guidance. 1-3 credits, maximum 3. Prerequisites: 2113 and 3123 or equivalents. Content-related materials, learning experiences and methods of teaching child development in classes for youth and adults in secondary schools and colleges.

5190* Teaching Practicum. 1-3 credits, maximum 3. Prerequisites: six hours of graduate course work and consent of instructor. Teaching human development and family sciences; content and techniques.

5213* Child Behavior and Development. Prerequisite: consent of instructor. Current issues in child development beyond infancy explored within the context of recent research. Contrast- ing theoretical and methodological approaches critically evaluated.
523* Theories of Child Behavior and Development. Prerequisite: 6 credit hours at graduate level in child development or related areas. Major theories and supportive research that contribute to the understanding of child behavior and development.

524* Infant Behavior and Development. Prerequisite: 5223 or consent of instructor. Survey of research and theory pertaining to infant development, including behavioral genetics, perception, cognition and learning, social and emotional development, and psychomotor development.

5290* Practicum. 1-6 credits, maximum 6. Prerequisite: consent of instructor. Supervised experience in various settings relevant to human development and family sciences.

533* Early Childhood Education: Curriculum. Implications of child development theory and research for planning educational programs and learning experiences appropriate for young children.

535* Advanced Concepts in Early Childhood Programming. Prerequisites: 5213, 5223 or consent of instructor. Exploration and critical review of the state of early childhood programming with emphasis on research, theory, and policy making that bear on current practice. Topics include anti-bias curriculum, family participation in early education, multi-cultural issues, and programs for infants and toddlers.

536* Early Childhood Theory, Practice and Evaluation. Prerequisites: 5213, 5223 or consent of instructor. Examination of the administration of programs for young children as well as policy evaluation and advocacy. Legal, social, and economic issues as they affect the welfare of individuals and families.


547* Developments and Innovations in Family Relations, Child Development and Early Childhood. 1-9 credits, maximum 9. Analysis of current developments and innovative practices in one or more of the specified areas. Emphasis upon evolving concepts with implications for programs serving societal needs in these areas.


554* Coping with Family Crises. Strategies for helping families deal with various family crises including illness, death and divorce. Focus on dealing with these from a family systems approach.

555* Marital and Premarital Enrichment Education. Analysis of educational models and processes that relate to enriching couple relationships. Approaches to facilitating premarital and marital enrichment, emphasizing program development, implementation and evaluation.

557* Adolescent in Family Context. Physical, social, emotional and intellectual development of adolescents within the context of family relationships. Exploration of research and theory as it relates to adolescent development and parent-adolescent relationships.

558* Human Sexuality. Multiple aspects of human sexuality including physiological and psychological development and response, sexual relationships, and sexual dysfunction.

561* Marriage and Family Therapy Pre-practicum. Preclinical experience for students in the marriage and family therapy (MFT) specialization, emphasizing counseling skills and structured observations.

561* Introduction to Marriage and Family Therapy. Prerequisite: graduate standing or consent of instructor. Historical context of family therapy. Overview of the major schools of family therapy and basic clinical skills necessary for the formation of a helping relationship.

562* Systems Theory and Applications to the Family. Examination of the cybernetic roots and terminology used with general systems theory providing an understanding, appreciation and integration of the role of "systems" approaches to family therapy and clinical practice.

564* Models and Strategies in Marriage and Family Therapy. Exposure to the dominant models used in marriage and family therapy. Emphasis on theoretically appropriate strategies of intervention applied to the treatment of couples and families from an ecological perspective.

565* Diagnostic Assessment in Marriage and Family Therapy. Prerequisites: 5623; admission to marriage and family therapy specialization or consent of instructor. Recognition of the most relevant dimensions of family, systems, the array of diagnostic tools available, and measure- ment theory to enhance the probability of meeting the therapeutic needs of troubled couples and families.

566* Professionalism and Ethics in Marriage and Family Therapy. Prerequisites: graduate standing and consent of instructor. Development of the professional attitude and identity of a marriage and family therapist. The AAMFT Code of Ethics, family law, ethnicity, and gender issues, as related to the practice and profession of marriage and family therapy.

569* Marriage and Family Therapy Practicum. 1-3 credits, maximum 18. Prerequisite: admission to marriage and family therapy specialization. Supervised clinical experience for students in the marriage and family therapy specialization.

574* Management of Family and Community Service Programs. Prerequisites: graduate standing and one year work experience. Planning, personnel development, resource development, management and evaluation of community service.


584* Family Policy Issues. Prerequisite: senior or graduate standing or consent of instructor. Implications of the effects of federal and state legislation on families and consumers. Policies of public social services, housing, education and health services, and in contracts to public and non-profit agencies.

593* Evaluation Design. Fundamental principles of evaluation, emphasis on instrumentation.

600* Doctoral Thesis. 1-12 credits, maximum 30. Prerequisite: consent of instructor. Research in human environmental sciences for the Ph.D. degree under supervision of a graduate faculty member.

6110* Directed Study in FRCD. 1-9 credits, maximum 9. Prerequisites: 5523 or 5527 and consent of instructor. Directed individual study under the supervision of a graduate faculty member.

613* Advanced Research Methods in Family Relations and Child Development. Prerequisites: one course in research methods and one in statistics. Research design and analysis of data appropriate to the areas of family relations and child development.

6190* Research Internship. 1-6 credits, maximum 6. Prerequisite: consent of instructor. Special research studies under the supervision of a graduate faculty member.

6223* Analysis and Application of Child Development Theory. Prerequisite: 5223. Critical analysis of selected child development theories using primary source material with demonstration of application to development, research and practice.

6243* Theory and Research in Early Cognitive Development. Prerequisites: 5213, 5223 or consent of instructor. Critical examination of the concepts and principles derived from cognitive development theory with special emphasis on research and methodological literature.

6250* Seminar in Child Development. 1-6 credits, maximum 6. Prerequisite: 5523 or equivalent. Selected topics in child development with special attention given to recent research literature and current theory.

6253* Theory and Research in Early Social Development. Prerequisites: 5213, 5223 or consent of instructor. Research and theory pertaining to social and emotional development, including attachment, social interaction, friendships and temperament.
6363* Theories and Research in Early Communication Development. Prerequisites: 5213, 5223 or consent of instructor. Recent theories and research in language communication development, including receptive and active language and the relationship of language to early social and cognitive development.

6373* Theory and Research in Developmental Disabilities. Prerequisites: 5213, 5223 or consent of instructor. Recent theories and research related to developmental disabilities, including both physical and mental handicapping conditions and their impact on human development.

6523* Analysis and Application of Family Theory. Prerequisite: 5523. Family theory process, including logic, theory construction, and relating conceptual orientations to current research areas.

6580* Seminar in Family Sciences. 1-6 credits, maximum 6. Prerequisite: 5513 or consent of instructor. Current research and theory in the family area; selected topics.

6613* Contemporary Issues in Marriage and Family Therapy. Prerequisite: admission to marriage and family therapy specialization. Critical issues facing students in the marriage and family therapy (MFT) specialization, while taking advantage of the unique expertise of clinical faculty. Professional seminar on dialogue with participants taking an active role in the learning process.

6843* Economic and Social Foundations of Family Economics. Prerequisites: graduate standing, consent of instructor. The lives, times and ideas of great economic and social thinkers and how their influence on the economic and social development of our society affects the economics of family living.

Finance (FIN)

2123 Personal Finance. A first course in the management of the individual’s financial affairs. Budgeting, use of credit, mortgage financing, investment and estate planning.

3113 Finance. Prerequisites: ACCTG 2203, ECON 2213, STAT 2113. Operational and strategic financial problems including allocation of funds, asset management, financial information systems, financial structure, policy determination and analysis of the financial environment.

3613 General Insurance. Introduction to the theory and general principles of insurance. A broad analysis of the elements and operation of property, casualty, health and life insurance.

3623 Property and Casualty Insurance. Prerequisite: 3613. Emphasis on loss and the insurance contract from fire, marine, property damage, automobile and other liability and loss adjustment. Rate formulation, social implications, government regulations and government regulation of the insurance industry.

3633 Life and Group Insurance. Prerequisite: 3613. Principles of insurance applied to life and human values. Group plans in industry, with coverage emphasizing the managerial point of view.

3713 Real Estate Investment and Finance. Prerequisite: 3113. An introductory course in real estate investment and finance. Financing real estate, financial leverage and financial planning; the institutional structure of mortgage lending, managing risks, investment strategies and decisions.


4213* International Financial Management. Prerequisite: 3113. Financial problems of multinational corporations. Designed to develop a sound conceptual understanding of the environmental factors that affect decisions of financial managers; to extend the current developments in the theory of financial management to incorporate variables peculiar to international operations; and to formulate financial strategies in different business systems and ideologies.

4223 Investments. Prerequisite: 3113. Various approaches to selecting and timing investment opportunities, e.g., common stocks, bonds, commodities and options. Modern concepts of portfolio theory.

4333* Financial Management. Prerequisite: 3113. Theories and practice applicable to the financial administration of a firm. A variety of teaching methods used in conjunction with readings and cases to illustrate financial problems and techniques of solution.

4443* Bank Decision Simulation and Analysis. Prerequisite: 4443. Student teams assume the roles of senior bank officers, making decisions regarding bank assets, funding, product pricing, financial leverage, profit enhancement, risk management, and staffing. Decisions implemented through computer simulation, incorporating the decisions into an environment where the decisions of competing management teams and the local economy determine bank profitability and shareholder value. Evaluation of students’ abilities to create shareholder value and effectively communicate planning and analysis through written and spoken reports.

4550* Selected Topics in Finance. 1-6 hours credit, maximum 6. Prerequisite: 3113. Advanced topics in finance. Topics are updated each semester.

4613* Risk Management. Prerequisite: 3113. Elements of corporate risk control and management.

4813 Portfolio Management. Prerequisite: 4223. Overview of portfolio management from the point of view of a trust officer, mutual fund manager, pension fund manager, or other manager of securities. Emphasizes the need of financial managers for an understanding of problems, trends, and theory of portfolio management.

5053* Theory and Practice of Financial Management. Prerequisite: ACCTG 5103. Concepts and theories applicable to the financial administration of a firm. Cases, problems and readings to illustrate various financial problems and techniques of solution.

5213* International Business Finance. Prerequisite: 5053. Theories and financial management practices unique to business firms which operate in, or are influenced by, an increasingly global economy.

5223* Investment Theory and Strategy. Prerequisite: 5053. Selected investment topics and advanced portfolio management techniques.

5243* Financial Markets. Prerequisite: 5053. An analysis of the structure of financial markets, the determination and behavior of interest rates, the functioning of and the flow of funds.

5550* Special Topics in Finance. 1-6 credits, maximum 6. Prerequisite: 5053. Theoretical and applied aspects of specialized financial areas. Evaluation of models, current trends and problems.

5613* Corporate Financial Planning. Prerequisite: 5053. Financial planning in a systems framework. An integration of existing financial theory and practice. Financial planning systems allowing the manager to acquire an overview of the various functions of the firm; to examine alternative courses of action with speed and thoroughness; to reduce the response time in reacting to change in the environment and to improve future decisions by learning from feedback of previous decisions.

5653* Theory of Finance. Prerequisite: 5053. Development of theoretical structure of financial decisions beginning with case of certainty and moving to uncertainty models. Fundamental decisions of investment, financing, and production within the context of economic theory of choice and capital market equilibrium.

6580* Seminar in Finance. 3-6 credits, maximum 12. Prerequisite: consent of instructor. Advanced research with emphasis on theoretical problems and solutions. Selected topics covered.

Fire Protection and Safety Technology (FIRET)

1213 Fire Safety Hazards Recognition. Lab 3. "The Fire Problem." Physical, chemical and electrical hazards and their relationship to loss of property and/or life. Safe storage, transporta- tion and handling practices to eliminate or control the risk of fire in the home, business and industry.

1373 Fire Suppression and Detection Systems. Lab 3. The design, installation, maintenance and utilization of portable fire-extinguishing appli- cations and fire alarm and detection systems. Fire detection and suppression applied in practical laboratory problems.


2500 Studies in Loss Control. 1-4 credits, maximum 6. Prerequisites: consent of instructor and advisor. Problems in applied fire protection technology, occupational safety, industrial hygiene or hazardous materials management of particular interest to the loss control specialist.
2153 Fire Protection Management. Applied human relations, technical knowledge and skills for achieving optimum effectiveness from a fire protection organization.

2243 Design and Analysis of Sprinkler Systems. Lab 3. Prerequisites: 1373, 2483. Detailed current standards for selection, design, installation, operation and maintenance of automatic fire suppression systems. Laboratory problems on applicable technological principles.

2344 Elements of Industrial Hygiene. Lab 3. Prerequisite: CHEM 1225. Toxics or irritating substances, physical and radiological ergonomic and other occupational stress factors causing employee illness or discomfort. Environmental pollution sources and controls.

2483 Fire Protection Hydraulics and Water Supply Analysis. Lab 3. Prerequisites: 1373 and MATH 1513. Fluid flow through hoses, pipes, pumps and fire protection appliances. Water supply and distribution analysis using hydraulic calculations. Testing techniques to detect anomalies in design or performance capabilities.

2560 Technical Problems and Projects. 1-4 credits, maximum 4. Special problems or projects assigned by advisers with the approval of the department head. A comprehensive written report or equivalent creative effort.

3013 Industrial Safety Organization. Survey course. Recognition, evaluation and control of occupational health and safety hazards. Accident prevention, accident analysis, training techniques, workers' compensation insurance, guarding and personal protective equipment.

3113 Advanced Extinguishing Systems Design and Analysis. Prerequisites: 2483, 2243. Automatic fixed fire-extinguishing systems and water supply systems. Emphasis upon computer assistance through use of existing design programs.

3143 Structural Designs for Fire and Life Safety. Lab 3. Prerequisites: 1213, 1573, 2243. Building construction standards and codes to assure maximum life and property safety from fires, explosions and natural disaster. Egress design specifications, occupancy and construction classifications and fire protection requirements for building construction and materials.

3233 Radiological Safety. Lab 2. Ionizing radiation problems; detection and measurement, shielding and exposure limiting, radiation health aspects, storage, handling and disposal.

3684 Industrial Loss Prevention. Lab 3. Prerequisites: 1213, 1373, 2483 and 3013; corequisite: ENGL 3323 or consent of instructor. Specific industrial processes, equipment, facilities and work practices for detecting and controlling potential hazards.

3713 Hydraulics Design of Automatic Sprinkler Systems. Prerequisites: 1373, 2483, MATH 1513. Hydraulic calculation technique for the design and analysis of automatic sprinkler fire extinguishing systems.

3723 Industrial Fire Pump Installations. Prerequisites: 2483, MATH 1513. Applications, design and analysis of industrial fire pump installations. Graphical analysis of fire pump contributions to existing fire protection water supply systems emphasized.

3733 Sprinkler System Design for High Piled and Rack Storage. Prerequisites: 2243, MATH 1513. Specific design techniques for sprinkler system protection of commodities stored in solid piles or racks over 12 feet in height.

4050 Special Problems in Loss Control. 1-4 credits, maximum 6. Prerequisite: consent of department head. Special technical problems in fire protection and safety.

4133 Industrial Hygiene Instrumentation. Lab 3. Prerequisites: 2344, CHEM 1225, PHYSIC 1114. Description, operation and application of quantitative instruments in general use in industrial hygiene.

4153 Issues in Local Government and Fire Services. Prerequisites: 2153, MGM 3013. Issues relating to the proper operation of a fire department and the fire department's role within the structure of local government.


4373 Fire Dynamics. Prerequisites: CHEM 1515 or 1225 and ENGS 2213 or MPT 3433. Fundamental thermodynamics of combustion, fire chemistry and fire behavior. The physical evidence left by fire for investigation. Use of computer models to study fire behavior.

4403 Hazardous Materials Incident Management. Lab 5. Prerequisites: 3013, CHEM 1225. An interdisciplinary approach to hazardous materials incident management. Legislative requirements. Emphasis on comprehensive safety and health program compliance relating to hazardous materials incidents or waste sites. Regulatory code activities, transport-related inspections, incident modeling, and use of environmental safety software for problem solving and documentation.

4993 Advanced Fire and Safety Problems. Prerequisites: prior or concurrent enrollment in all other required FIRE courses. Selected problems in the fire, occupational safety, and industrial security areas. Research or state-of-the-art technologies to prevent or correct such problems.

Forestry Languages and Literatures (FLL)

The Department of Foreign Languages and Literatures offers courses under the prefix FLL, and in the following languages each of which has its own prefix: Chinese, French, German, Greek, Japanese, Latin, Russian and Spanish. These languages are listed in alphabetical order.

1000 Special Studies in Foreign Languages and Literatures. 1-10 credits, maximum 10. Special studies in areas not regularly offered; basic level.

2010 (H)Masterworks of Western Culture: Ancient and Medieval. Ideas and values of Western culture as revealed through literary, artistic, historical, and philosophical contexts from Greek, Roman, and Medieval periods.

2203 (H)Masterworks of Western Culture: Modern. Ideas and values of Western culture as revealed through literary, artistic, historical, and philosophical contexts from the Renaissance to the Modern period.

2443 Languages of the World. A comprehensive survey of world languages. The essential structural and historical organization of languages. The process of languages as a basic human function. Same course as ENGL 2443.

3500 Specialized Study in a Modern Foreign Language. 1-20 credits, maximum 20. Lab 1-5. Prerequisite: consent of instructor. Instruction and/or tutorial work in a modern foreign language other than those offered in a major program.

3503 (H)Asian Humanities: China and Japan. The many-faceted cultures of China and Japan from the first expression in poetry and philosophy through popular stories, plays and novels of later times, with continuing attention to music and art.

4000 Specialized Studies in Foreign Languages and Literatures. 1-9 credits, maximum 9. Lab 1-9. Prerequisite: junior standing or consent of instructor. Individual guided study, tutorial or seminar on specially selected topics in a foreign language or literature.

4993 Senior Honors Thesis. Prerequisites: departmental, senior standing, Honors Program participation. A guided reading and research program ending with an honors thesis under the direction of a senior faculty member with second faculty reader, both of whom will be present at an oral defense of the thesis. Required for graduation with departmental honors in any foreign language major.

4993 Graduate Studies in Foreign Languages. 1-6 credits, maximum 20. Prerequisite: 15 upper-division hours in the language. Graduate studies in foreign languages.

Forestry (FOR)

1123 Elements of Forestry. Lab 3. Survey of forestry as an art, science and profession including forestry and natural resource management theory, forest resource distribution and ownership, historical development, administrative agencies, forest protection, wildlife interactions, forest recreation, and career opportunities; lab fieldwork in wood science, tree identification, land and tree measurements, and mapping. One required three-day field trip.

1211 History and Issues of Forest Policy. Introduction to forest resources policy development in the United States and the effects of policy on the administration and management of forest resources. Discussion of policy implications of some current resource management issues.

2002 Timber Harvest Planning. Theory and strategies of planning and management of timber harvesting operations, including methodology, techniques, equipment, environmental quality and safety elements.
2314 Dendrology. Lab 4. Identification, taxonomy and distribution of forest trees and shrubs of the United States; their environmental requirements and utilization.

3001 Multiple Use and Values of Forest Resources. Lab 3. One-week segment of an eight-week summer field session. Use, values and management of forests and associated natural resources including wildlife, watershed, recreation, range, wilderness, minerals and timber. Visits to natural resource agency lands and projects.

3003 Forest Mensuration II. Lab 8. Prerequisite: 2003. Three-week segment of an eight-week summer field session. Field study emphasis on use and care of measurement equipment, the statistical and physical design of forest sampling methods, and special topics in individual tree and stand-level mensuration.


3013 Silvics and Field Silviculture. Lab 8. Prerequisites: 2134; BIOL 1403. Three-week segment of an eight-week summer field session. Field study of forest ecological relationships; examination and measurement of site productivity and stand dynamics; natural role and behavior of fire in forest ecosystems; use of fire as a management tool and control of wildfire; concepts of forest watershed management; examination of silvicultural practices in major forest regions of North America.

3213 (N)Forest Ecology. Lab 3. Prerequisites: BIOL 1303 and 1403 or consent of instructor. Study of the forest ecosystem, its structure and function, physical environment, biotic component and change over time and its management implications. Two weekend field trips required.

3226 Silviculture. Lab 3. Prerequisite: 3213. Principles and techniques of natural and artificial regeneration, intermediate cultural treatments, and silvicultural systems applicable in various forest cover types. Two-day field trip may be required.


3643 (N)Forest Environmental Science. Overview and analysis of forests, their related environments, their associated natural resources, and their tangible and intangible values, emphasizing basic principles of scientific forest management, the use of forest resources by society, natural resource administration and policy, and current issues in forestry. No credit for forestry majors.

3663 Forest Biometrics. Lab 2. Prerequisites: 3003; MATH 2103. The application of statistical methods to forestry problems including stand volume estimation, growth measurement, and volume table construction. Introduction to the use and significance of forest yield tables in forest management. Applications of microcomputing to analysis of forestry data.

3863 Aerial Photography and Information Systems. Lab 3. Prerequisite: MATH 1613. Principles and techniques of aerial photogrammetry, remote sensing, aerial photo interpretation, and geographic information systems. Emphasis on applications to management of natural resources utilizing photogrammetric instrumentation and geographic information system software.

3993 Forest Economics and Finance. Prerequisites: 3223 or concurrent enrollment, 3663; AGEC 1114; MATH 2103. Economic factors and analytical methods influencing decisions in forest resource management; factors affecting the production of wood products; arithmetic of interest and investment criteria; economics of nonmarket goods.

4113* Forest Products. Lab 2. Prerequisite: 3553. Diversity, uses and distribution of forest products. Manufacture and processing of solid wood, wood-derivative and paper products.

4223* Timber Management. Lab 2. Prerequisites: 3223, 3993. Regulation of forest growing stock to meet management objectives. Land and timber appraisals. Organization of the forest enterprise to meet financial objectives of management. Four-day field trip may be required.

4333* Forest Resource Management: Planning and Decision Making. Lab 2. Prerequisites: 3223, 4223, any computer science course, senior standing or consent of instructor. Integrated problem solving, to apply biological, quantitative, economic, political, and administrative principles in solving forest resource management problems.

4443 Forest Administration and Policy. Prerequisite: 3213. Development, forest policy and legislation; personnel matters, organization, supervision and financing of federal, state and private forest enterprises.

4500* Forest Problems. 1-3 credits, maximum 3. Prerequisites: upper-division standing, GPA of 2.50 or better and consent of instructor. Selected problems in forestry.

4553* Forest Recreation. An analysis of planning, management, administration and use of forests and related wildlands for recreation, including an overview of public agency and private sector recreation resources, programs, and policy; social foundations of recreation; measurement and evaluation of recreation resource setting activities, experiences, and use-impact; resource operations and interpretive services; and wilderness management. One required three-day field trip.

4563* Forest Ecophysiology. Prerequisite: BIOL 1403. The growth and response of trees and forests to environmental, cultural and genetic factors. Application of physiological principles in predicting the effects of cultural practices on tree growth.

4601* Contemporary Issues in Forestry and Natural Resources. Prerequisite: senior standing. Examination and discussion of current issues related to the values, use, and management of forests, natural resources, and the natural environment.


4773* Forest Genetics and Tree Improvement. Prerequisite: 3213, BIOL 3034, or consent of instructor. A review of mechanisms and principles of inheritance, study of natural variation in forest populations, variation patterns, types and uses of variation, and application of this knowledge to forest tree improvement methods and programs as part of forest and nursery management systems.

4811 Forest Hydrology Laboratory. Lab 2. Prerequisite: 4813, previous or concurrent. Techniques to evaluate the hydrologic processes and characteristics of forest watersheds; precipitation, runoff, infiltration, erosion processes. Water quality assessment in wildland settings.

4813* (N)Forest Hydrology and Watershed Management. Lab 2. Prerequisite: senior standing. Hydrologic processes and characteristics of forest watersheds; effects of forest practices on water quantity and quality, management techniques for improving and protecting water resources, measurement techniques for obtaining hydrologic data. One required field trip.

5000* Research and Thesis. 1-6 credits, maximum 6. Open to students working for a Master of Science degree in forest resources.

5003* Productivity of Forest Stands. Lab 2. Prerequisites: 3223, AGRON 2124, STAT 5013 or equivalent. Integrated study of the ecological, and genetic factors controlling the productivity of forest stands. Analysis of natural, economic and social factors influencing silvicultural treatment of forest stands. Tree and stand response to silvicultural manipulation.

5010* Graduate Seminar. 1 credit, maximum 2. Presentation of current and new concepts in forest land management and research techniques for their investigation. Required for the Master of Science degree.

5030* Advanced Forestry Problems. 1-3 credits, maximum 9. Individual projects in advanced forestry subject-matter appropriate to students with capability at the master's level.

5033 Quantitative Forest Management and Biometrics. Prerequisites: 3663 or equivalent; STAT 5013 concurrently or equivalent. Quantitative description of forest populations and modeling of the dynamics of forest growth, quantitative timber management including applications of linear programming and related techniques for management of forest populations.

5043* Forestry Research Methods. Methods used in forestry research; choice of biological materials and species: experimental design in forestry, analysis of forest data and interpretation of results for integrated forest.
French (FRNC)

1115 Elementary French I. Lab 1 1/2. Main elements of grammar and pronunciation, with work on the four basic skills of listening comprehension, speaking, reading and writing.

1225 Elementary French II. Lab 1 1/2. Prerequisite: 1115 or equivalent. Continuation of 1115.


2112 Intermediate Reading and Conversation I. Lab 1. Prerequisite: 1225 or equivalent competence. (May have been gained in high school.) Reading and discussion of simpler French texts, mostly cultural. May be taken concurrently with other 2000-level French courses.

2113 Intermediate French I. Lab 1. Prerequisite: 1225 or equivalent competence. (May have been gained in high school.) Review and further presentation of grammar and pronunciation; consolidation of basic skills, with additional emphasis on writing. May be taken concurrently with other 2000-level French courses.

2232 Intermediate Reading and Conversation II. Lab 1. Prerequisite: 2112 or equivalent competence. (May have been gained in high school.) Review and discussion of more advanced French texts, mostly literary. May be taken concurrently with other 2000-level French courses.

2233 Intermediate French II. Lab 1. Prerequisite: 2113 or equivalent competence. (May have been gained in high school.) Continuation of 2113. May be taken concurrently with other 2000-level French courses.

3073 (I)French Conversation. Prerequisite: 20 hours of French or equivalent. Colloquial speech, with discussion of French newspapers and magazines. Practice in brief public address in French.

3203 Advanced Written Expression. Lab 1. Prerequisite: 20 hours of French or equivalent. Practice in composition and stylistics, designed to bring students up to a high level of proficiency in writing. May be taken before or after 3213.

3213 Advanced Grammar. Lab 1. Prerequisite: 20 hours of French or equivalent. May be taken before or after 3203.

3343 Business French. Prerequisite: 20 credit hours of French or equivalent. Applied French for students in commercial and technical fields. Overview and strategies of business and economic climate in France.

4010 Senior Design Project. 2-4 credits, maximum 4. Prerequisite: senior standing in general engineering. Capstone design project through independent application of engineering principles and concepts from the disciplines covered in earlier course work.

5030 Engineering Practice. 1-12 credits, maximum 12. Professionally supervised engineering problem involving authentic projects for which the student assumes a degree of professional responsibility. Activities must be approved in advance by the student’s adviser and may consist of engineering experience on-campus or off-campus or both. Periodic reports both oral and written required as specified by the adviser.

5110 Seminar. 1-6 credits, maximum 6. Prerequisite: approval of major professor. Independent or guided study in a topic area selected to enhance a student’s program.

General Technology (GENT)

1153 Engineering Graphics. Lab 6. Sketching, manual drafting and CAD generation of engineering drawings to ANSI standards. Interpretation of typical industrial drawings. Students with two years high school or one year practical ANSI drafting/CAD may substitute an advanced course in mechanical engineering technology with consent of their advisors.

1223 Manufacturing Processes. Lab 3. Basic methods and processes of fabrication including metrology, conventional machining, casting, hot and cold forming, and include machining and metrology.

2050 Advanced Technological Problems. 1-4 credits, maximum 6. Prerequisites: consent of instructor and adviser. Problems in applied engineering science that are of particular interest to the engineering technician.

2323 Statics. Prerequisites: MATH 1613 and PHYSC 1114. Forces acting on bodies at rest; forces, moments of force, distributed forces, reactions, free-body diagrams, friction, internal forces and moments of inertia. Applications.

2650 Technical Projects. 1-4 credits, maximum 4. Prerequisite: completion of three semesters’ work in a technical institute curriculum. Special projects assigned by advisers with the approval of the director. A comprehensive written report must be prepared and an oral examination may also be required.

3113 Principles of Supervision. Prerequisite: junior standing. A study of the fundamental principles of organizing, planning, staffing, controlling and directing as applied to first-line supervisory roles in industry.
Applied Analysis for Technology. Prerequisite: MATH 2133 or equivalent. Applications of elements of matrix algebra, ordinary differential equations, and infinite series to problems in engineering technology.

Strength of Materials. Prerequisites: GENT 2323 and MATH 2123. Stress and strain and their relation to loads. Axial, torsional and bending loads, beam deflection, columns and combined stresses. Applications emphasized.

Basic Thermodynamics. Prerequisite: MATH 2123. Basic scientific principles of energy and the behavior of substances as related to engines and systems. Gas laws, vapors and engine cycles.


Introduction to Cultural Geography. Prerequisite: BIOL 3014 and one course in genetics or consent of instructor. Applications of atmospheric knowledge to human endeavors such as agriculture, water management, and architecture. Use of real-time atmospheric data to solve problems.

Applied Climatology. Prerequisite: 3023, 3033 or consent of instructor. Applications of atmospheric knowledge to human endeavors such as agriculture, water management, and architecture. Use of real-time atmospheric data to solve problems.

Economic Geography. Processes significant to the spatial structure of economic systems. Production, consumption and exchange activities examined in regard to location, distribution, arial differentiation and spatial interaction patterns. Attention given to processes of change as well as to steady states.

Cultural Geography. Geographical impact of human cultures. Emphasis on the concepts of social space, density, crowding, territoriality, diffusion, migration, environmental perception and cultural landscape.

Spatial Analysis. Prerequisite: STAT 2114. The utility and goals of geographic inquiry in the solution of problems including concepts of spatial structures, distributive processes, networks, interactions and areal associations.

Geographic interpretation of physical, economic, historical and scenic features.

Geography of the United States and Canada. A geographic analysis of the United States and Canada with emphasis on regional variations of social, economic and physical phenomena.

Geography of Europe. Location and analysis of natural, economic and cultural features of Europe.

Geography of Russia and its Neighbors. A regional analysis encompassing cultural, economic and physical features.

Geography of South America. Areal distribution and analysis of physical, cultural and economic features of South America.

Geography of Asia. Systematic interpretation of significant spatial patterns of man and natural environment. (Exclusive of the USSR.)

Geography of Africa. General patterns and impact of population, cultural heritage, and natural resources in Africa. Historic and contemporary relationships between Africa and Western civilization. Divergent perspectives (debate) on development, government and conflict in Africa.

Geography of the Middle East and South Asia. A regional analysis of the Arab, Persian, and Turkic lands, including the bio-physical environment, agriculture, resource use, migration, settlement, social patterns, urbanization, economic development, and human impact on the environment.

Political Geography. Political structures, relationships and geopolitical implications of location, boundaries, culture and the natural environment of nations and states. Global patterns of political behavior, political history, international law and geostrategy.
The cultural significance of music and how it varies from place to place as well as how it helps shape the character of a place.

Field Techniques and Geodata Collection. Prerequisite: STAT 2013. Modern concepts and techniques for geographical analysis and research including data acquisition and manipulation from field and secondary sources. Field trips.

Remote Sensing. Lab 2. Prerequisite: junior standing. Use of several types of sensors and imagery in solving problems. LANDSAT imagery use. Uses and limitations of data extraction techniques, manual and computer-assisted. Applications to a variety of specific problems.

Geographic Information Systems: Resource Management. Lab 2. Prerequisite: 2343 or 4333 or consent of instructor. Theory and principles of geographic information systems (GIS) applied to resource management problems using both raster and vector data structures. GIS and remote sensing integration.

Geographic Information Systems: Socioeconomic Applications. Lab 2. Prerequisite: 2343 or 4233 or consent of instructor. Theory and principles of geographic information systems (GIS) applied to socioeconomic problems including location-allocation, market area determination, network analysis, and analysis of demographic characteristics.

History and Philosophy of Geography. Historical research questions and techniques, the structure of contemporary geography and its relations to other fields of study, and future prospects of geography.

Senior Project. 1-3 credits, maximum 3. Prerequisites: senior standing and consent of instructor. Individually designed projects involving laboratory work, field work, library research, or a combination of these. Lab 3. Prerequisite: 1014 or 4333.

Geographic Regions. 1-6 credits, maximum 6. Prerequisite: consent of instructor. Specialized study of specific local and foreign regions.

Topics in Geography. 1-6 credits, maximum 6. Prerequisite: consent of instructor. Specialized physical, social and methodological topics in geography.

Applications of Geographic Analysis. Prerequisites: 3523, 3533. For geography majors or minors only. Applications of concepts and techniques relating to the students' specializations. Designed to reinforce and synthesize knowledge gained from previous course work.

Readings in Geography. 1-3 credits, maximum 6. Prerequisite: consent of instructor. Directed readings on selected topics, regions or methods in geography.
1364. The geologic interpretation of a variety of well logs, emphasized, as well as quantitative methods. Some exercises involve concurrent interpretation of well logs and core samples, or well logs and bit cuttings.


533. Sequence Stratigraphy. Lab. 2. Prerequisites: 5253, 5383, 5363. Principles of sequence stratigraphy including carbonate and siliciclastic dominated intracratonic basins. Integration of surface and subsurface data in projects. Field trips required.

543. Engineering Geophysics. Lab. 3. Prerequisites: 1114 or 3024; PHYSC 1214 or equivalent. Geologic aspects of problems associated with environmental engineering, ground-water pollution and regional and urban planning. Problem assessment and field methods. Two required field projects include geophysical surveys using resistivity and seismic reflection methods. Field trip required.

545. Advanced Hydrogeology. Lab. 3. Prerequisites: 4453, COMSC 2113 or equivalent, MATH 2145 and 2155 or equivalent. Advanced quantitive techniques used to address ground-water management and pollution. Advanced field and laboratory techniques as well as management and chemical transport models applied to actual field problems and case studies. Field trips required.

550. Advanced Environmental Geology. Prerequisite: 3503 or consent of instructor. Utilization of geologic principles to resolve environmental issues in land use, land management and development. Methods of acquiring, compiling, and applying geologic information for site assessment and environmental impact. Application of these methods to an interdisciplinary project. Field trips required.

552. Organic Geochemistry. Lab. 3. Prerequisite: introductory chemistry. Introduction to some environmental aspects of organic geochemistry. Soils and sediments as pollutant receptors, sources of pollutants and selected aspects of environmental health.


560. Basin Analysis. Lab. 1. Prerequisites: 3546, 5203, 5223, 5253, 5363. Team-taught course. Interpretations of the evolution of selected sedimentary basins and other parameters in facies analysis, petrography, diagenesis, and structural evolution. Field trips required.
German (GRMN)

1115 Elementary German I. Lab 1 1/2. Main elements of grammar and pronunciation, with work on the four basic skills of listening comprehension, speaking, reading and writing.

1225 Elementary German II. Lab 1 1/2. Prerequisite: 1115 or equivalent. Continuation of 1115.

2112 Intermediate Conversation and Composition I. Lab 1. Prerequisite: 1225 or equivalent competence. (May have been gained in high school.) Colloquial speech patterns and grammar. May be taken concurrently with other 2000-level German courses.

2113 (I) First Readings in German. Prerequisite: 1225 or equivalent competence. (May have been gained in high school.) Selections from German newspapers and other contemporary material. May be taken concurrently with other 2000-level German courses.

2222 Intermediate Conversation and Composition II. Lab 1. Prerequisite: 2112 or equivalent competence. (May have been gained in high school.) Continuation of 2112, with further work in composition, conversation and grammar. May be taken concurrently with other 2000-level German courses.

2223 Introduction to German Literature. Prerequisite: 1225 or equivalent competence. (May have been gained in high school.) Reading and analysis of prose, drama and poetry; literary appreciation. May be taken concurrently with other 2000-level German courses.

3013 German for Reading Requirements I. Reading in the humanities and the sciences. Translation from German to English.

3023 German for Reading Requirements II. Prerequisite: 3013 or equivalent. Intermediate and advanced reading in the humanities and sciences. Translation from German to English.

3343 Business German. Lab 1. Prerequisite: 20 credit hours of German or equivalent. Introduction to business practices and economic environment in Germany. Study of specialized vocabulary.

3463 Advanced Diction and Phonetics. Lab 1. Prerequisite: 15 credit hours of German or equivalent. Required course for teacher certification. German speech sounds and intonation patterns. Practice to improve the student’s pronunciation.

3803 (I) Advanced Conversation. Lab 1. Prerequisite: 20 credit hours of German or equivalent. Colloquial speech forms and sentence structure. Practice in brief public address in German.

3813 (H) Advanced Grammar and Composition. Lab 1. Prerequisite: 20 credit hours of German or equivalent. Practice in original composition in German. Problematic points of German grammar and stylics.

Graduate (GRAD)

5880 Graduate Traveling Scholar. 1-4 credits, maximum 8. Prerequisite: consent of instructor. Individual library, laboratory and/or field projects on facets of geology not covered by existing courses. Field trips may be required.

5890 Orientation to Internship Abroad. Prerequisite: 20 hours of German or equivalent. Preparation for residential internship in a German-speaking country. Culture, civilization, and contemporary conditions, and communication for students accepted for international co-operative education program.

5900 Graduate Research and Teaching Practicum. 1-6 credits, maximum 12. Prerequisite: graduate standing. Graduate-level instructional program in research and teaching techniques and procedures. Graded on pass-fail basis.

6010 Research or Intern Practicum. 1-9 credits, maximum 12. Prerequisite: graduate standing. Graduate-level internship program for public administration, service or research. Blends the theoretical and absolute phase of the academic with practical on-the-job experience.

Greek (GREEK)

1113 Elementary Classical Greek I. Grammar and vocabulary of ancient Greek.

1223 Elementary Classical Greek II. Prerequisite: 1113 or equivalent. A continuation of 1113. Grammar and readings of classical Greek authors.

2113 Intermediate Classical Greek III. Prerequisite: 2112 or equivalent. A continuation of 2123. Grammar and readings of classical Greek authors.

2213 Intermediate Readings. Prerequisite: 2113 or equivalent. An introduction to a variety of classical authors to increase reading facility and grammatical comprehension.

3330 Advanced Readings. 1-6 credits, maximum 9. Prerequisite: 2213. Prose authors, epic poetry, drama, Koine Greek and religious texts.

Health (HLTH)

2213 Foundations in Health Education and Wellness. Analysis of major concepts, e.g., degenerative disease, human exercise capacity and health behavior.

2220 Laboratory and Clinical Experiences. Health. 1-3 credits. Prerequisite: health majors and minors. Directed observation and supervised laboratory and clinical experiences in appropriate teacher education and wellness program areas. Graded on a pass-fail basis.


2603 Total Wellness. Knowledge, attitudes and practices related to self-direction of health behavior for total well-being.

2653 Applied Anatomy. Action and location of individual muscles and muscle groups. Anatomy as applied to a living person. Common anatomical injuries and diseases will be presented with each joint structure.

2665 Care and Prevention of Athletic Injuries. Prerequisite: 2653. Symptoms of common athletic injuries, their immediate treatment and care.

3613 Community and Consumer Health. Structure and function of community agencies and programs related to health and parameters essential for being an informed consumer.

3623 School Health Programs. Prerequisite: 2603. The identity and relationships of school health instruction, services and environments.

3653 Advanced Care and Prevention of Athletic Injuries. Lab 2. Prerequisite: 2665. Advanced techniques applied to athletic injuries.

3713 Principles of Epidemiology. Prerequisites: 2213, 2603. Survey of epidemiological principles as they relate to the planning of both community and consumer-focused health promotion and disease prevention programs.
Health, Physical Education and Leisure (HPEL)


3763 Health and Physical Education for Elementary Age Children. Prerequisite: HLTH 2603. Methods of teaching health and physical education to elementary age children. Two eight-week sessions: one session for health and nutrition instruction, and one session for physical education instruction.

4010 Directed Study. 1-3 credits, maximum 6. Prerequisite: written approval by department head. Supervised readings, research or independent study of trends and issues related to the area of health, physical education or leisure services.


5010* Seminar. 1-2 credits, maximum 4. Selected topics not covered in other courses. Presentation and critique of research proposals and results.

5020 Health, Physical Education and Leisure Workshop. 1-6 credits, maximum 6. Selected areas of health, physical education and leisure.


5493* Recreation for the Emotionally Disturbed and Mentally Retarded. Prerequisite: LEIS 3483 or consent of instructor. Services for older adults, with emphasis on the delivery system and leisure interventions.

5523* Current Readings in Health. Contemporary research, literature, projections and views as applied to total health and well-being.

5553* Psychomotor Development and Assessment. Analysis and assessment of development and psychomotor development. Theoretical knowledge and practical experience in understanding and assessing psychomotor development and function.

5603* Interpretive Services in Recreation. Organization and administration of visitor centers and interpretive naturalist programs, philosophic approaches, and methods for interpreting the natural and cultural history of public parks and recreation areas.

5413 Organization and Administration of Recreational and Leisure. Social and philosophical foundations of recreation and leisure with emphasis on the contributions of recreation and its effect on humans throughout history.

5463 Issues in Therapeutic Recreation. Prerequisite: LEIS 2433 or professional experience in therapeutic recreation. Current issues in therapeutic recreation with emphasis on accreditation, certification, licensure, quality assurance and ethics.

5473* Leisure and Aging. Prerequisite: LEIS 2433 or consent of instructor. Overview of the leisure needs and services for older adults, with emphasis on the delivery system and leisure interventions.

5483* Therapeutic Recreation for the Physically Disabled. Prerequisite: LEIS 3483 or consent of instructor. Role of therapeutic recreation in the treatment and rehabilitation of individuals with physical disabilities with emphasis upon terminology, prognosis, etiology of specific disabilities program development and assessment.

5493* Recreation for the Emotionally Disturbed and Mentally Retarded. Prerequisite: LEIS 3483 or consent of instructor. Services for the emotionally disturbed and mentally retarded with emphasis upon prognosis, treatment and methodologies of recreation programs.

5403* Directed Study. 1-3 credits, maximum 6. Prerequisite: HLTH 2603, junior standing or consent of instructor. Supervised experience in either the school or community related settings in order to qualify for appropriate teaching and/or professional certifications. Graded on a pass-fail basis.

4503* Applied Health Behavior. Prerequisite: senior standing or consent of instructor. Health assessment and intervention strategies with focus on diet, weight management, stress, substance abuse, consumer health and other current health issues.

4533 Psychosocial Issues in Health Promotion. Prerequisites: 2213, 2603. Survey of psychosocial issues as they relate to the practice of health promotion.

4643* Methods in School and Community Health Education. Prerequisites: 3623; full admission to Teacher Education. Conceptual approach to health education through a variety of teaching methodologies.

4702 Pre-internship Seminar. Prerequisite: junior standing. Capstone course for the health promotion program. Preparation for the health internshp experience.

4773 Principles of Exercise Testing and Prescription. Prerequisite: PE 3114. Study of principles of exercise testing including submaximal and maximal tests, exercise and basic electrocardiography, and guidelines for recommending exercise as related to health promotion and exercise science.

4783* Health and Aging. Prerequisite: 2603. An in-depth study of physiological aspects, special health needs, chronic illnesses, delivery systems and services for the aging.

4902 Athletic Therapy Modalities. Lab 1. Prerequisite: 2663. Commonly used therapeutic devices used for training rooms.

4922 Athletic Rehabilitation. Lab 1. Prerequisite: 2663. Scientific methods in conditioning athletes and rehabilitation of injured athletes. Practical rehabilitation will be under the direct supervision of the OSU medical faculty.

4933 Administration and Organization of Athletic Training Programs. Prerequisites: 3653, 4902, 4922. The administration and organization of athletic training programs including planning and implementation, certification procedures, code of professional practice, safety standards, and resource management.

4983* Strategies in Teaching Human Sexuality. Prerequisite: 2603 or consent of instructor. Development of techniques, strategies, and methodologies for teaching sex education in schools and/or community settings.
5723* Curriculum Development in Health, Physical Education and Leisure Services. Identification and analysis of curriculum theories with emphasis on traditional and innovative approaches to curriculum design for programs in HPEL.

5733* Motor Learning. Research in psychology and physical education relevant to the understanding of the nature and basis of motor skill learning.

5733* Administration of Health, Physical Education, Leisure and Sports Programs in Higher Education. Essential elements of administration and management including organizational structure and management styles, considerations and functions.

5773* Physical Education for the Physically Handicapped. Prevention, detection and correction of remediable physical defects.

5793* Mechanical Analysis of Physical Education Activities. Prerequisites: 5843 and PE 3663. Application of physical laws to physical education activities.

5823* Advanced Applied Anatomy. Prerequisite: HLTH 2653. Structure and movement of the human body with emphasis on the relationship of physical activity to musculoskeletal and neurological factors.

5833* Methods in Physical Education. Prerequisites: PE 3753 and 3773. Differentiation between teaching methods in physical education; advantages of the application of the individual methods to particular situations in teaching physical education.

5843* Quantitative Biomechanics and Kinesiology. Prerequisite: 5823. Analytical approach to the study of human motion as applied to kinesiological description and kinematic and kinetic evaluation.

5853 Stress Testing and Exercise Prescription I. Lab 2. Prerequisite: PE 3114 or equivalent. Theory and practice in resting and exercise EKG, stress test protocols and exercise prescription.

5863* Stress Testing and Exercise Prescription II. Prerequisite: 5853. Theoretical aspects of evaluating functional capacity through stress testing with the development of exercise prescription for special populations with physiological limitations imposed by age, disease, heredity and environment.

5873* Human Bioenergetics. Prerequisite: PE 3114 or equivalent. Human energy production, utilization and storage in response to exercise.

5883* Program Development for Adapted Physical Education. Strategies for designing and implementing adapted physical education programs in public schools and higher education with emphasis on grant writing, public relations, interdisciplinary strategies, and advocacy.

6000* Doctoral Thesis. 1-10 credits, maximum 10. Independent research required of candidates for the Ed.D. in applied educational studies. Credit awarded upon completion of the thesis.

6010* Independent Study in Health, Physical Education and Leisure Services. 1-6 credits, maximum 6. Prerequisite: consent of instructor. Supervised readings, research or independent study of trends and issues related to the areas of health, physical education and leisure studies.

6020* Research Colloquium. 1-3 credits, maximum 6. Exploration and presentation of selected topics and research in health, physical education and leisure.

6053* Advanced Research in HPEL. Prerequisites: 5053 or equivalent. ABSED 5953 or equivalent. Indepth study of selected survey and experimental research in HPEL. Questionnaire development, survey methodology and analysis of data.

6060* Statistical Computing and Proposal Writing. 1-3 credits, maximum 3. Prerequisite: 5053. Instruction in the use of SPSS and BMDP software using the University mainframe. Preparation of research proposals for students in health, physical education and leisure.

History (HIST)

1010 Studies in American History. 1-2 credits, maximum 2. Special study in American history to allow transfer students to fulfill general education requirements as established by Regents policy.

1103 Survey of American History. Meaning, vitality, and uniqueness of United States history since 1492 through a thematic examination of the nation's past. Satisfies, with POLSC 1113, the State Regents requirement of six credit hours of American history and American government before graduation. No credit for students with prior credit in HIST 1483 or 1498.

1483 American History to 1865. From European background through the Civil War. Satisfies, with POLSC 1113, State Regents requirement of six credit hours of American history and American government before graduation. No credit for students with credit in HIST 1103.

1485 American History Since 1865. May be taken independently of HIST 1483. Development of the United States including the growth of industry and its impact on society and foreign affairs. Satisfies, with POLSC 1113, State Regents requirement of six credit hours of American history and American government before graduation. No credit for students with credit in HIST 1103.

1613 (H) Western Civilization to 1500. Lab 1. History of western civilization from ancient world to Reformation. Laboratory discussion sessions on interpretation of primary sources in translation.

1623 (H) Western Civilization After 1500. Lab 1. History of western civilization from Reformation to present. Laboratory discussion sessions on interpretation of primary sources in translation.

1713 (H) Survey of Eastern Civilization. History of three eastern civilizations (East Asia, South Asia and West Asia) from pre-history to the 18th century. Special attention to their origins, development, and contributions to the evolution of world civilization.

2323 Oklahoma History. Early exploration and establishment of Indian Territory; the rise and demise of the Five Indian Nations; and the organization and development of the 41st state to the present. Required of all candidates for teacher's licensure/certification in social studies.

3003 (I,S) Soviet Union: History, Society and Culture. A comprehensive view of the Soviet Union, stressing these issues in the political, economic, technological, geographical and cultural spheres which are most relevant to the current situation. Accessible to beginning undergraduates. Same course as POLSC 3053 and RUSS 3003.

3013 (H) Ancient Near East. The Ancient world from the beginnings of recorded history through the Egyptian, Mesopotamian, Hebrew and Persian civilizations, in addition to the minor civilizations of the area.

3023 (H) Ancient Greece. The Greek world from the Bronze Age through Alexander the Great with special emphasis on politics, culture and institutions of Classical Greece.

3033 (H) Ancient Rome. Political, social, economic and cultural history of the Roman Republic and Empire.

3053 (I,S) Introduction to Central Asian Studies. A comprehensive view of newly-emerged Central Asian states examining the history, politics, economics, geography, and culture of Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan as reflected in their thoughts, religion, literature, and architecture, in the past, and the strategic importance of their natural wealth for the present and future. Same course as POLSC 3053 and RUSS 3053.

3153 (H) Russia to 1861. Political, institutional, societal and economic development of Russia from the Kievan period to the Great Reforms.

3163 (H) Russia Since 1861. Modernizations of Russia in the 19th and 20th centuries. Great reforms and their effects and the 1917 revolutions and their consequences.

3173 (H) European History, 1000-1800. Formation of the eastern European nations and the influence of Rome, Byzantium, the Ottoman Empire, Russia, Austria and Prussia on them.

3183 (H) Eastern Europe Since 1800. Formation and impact of nationalism, industrialization, and power politics on the peoples of eastern Europe.

3203 (H) Early Middle Ages, 325-1000. Economic, social, cultural and religious developments in Byzantium, Islam, and the Germanic West, which succeeded imperial Rome.

3233 (H) Medieval Europe, 1000-1350. High and Late Middle Ages in the West with emphasis on political, social, economic and intellectual development.

3243 (H) Renaissance and Reformation, 1350-1618. Social, cultural, intellectual, political, economic and religious developments which led to the flowering of modern western civilization.
Thesis. 1-6 credits, maximum 6.

(S)American Foreign Relations 1917. American experience in foreign relations from colonial times to World War I.

(S)American Foreign Relations Since 1917. America's emergence as the decisive factor in the world balance of power.

(S)American Military History. Civil-military relations, the military implications of American foreign policy, and the impact of technological advances on warfare since colonial times.

4463
(H)American Social and Intellectual History to 1865. American society in nonpolitical aspects: sections, classes, national culture and social structure, immigration, education, religion, reform, world influences; ends with Civil War.

4483
(H)American Social and Intellectual History Since 1865. Continuation of 4463; may be taken independently. Emphasis on nonpolitical aspects of American society and thought and on world influences.

4503
(S)American Urban History. Impact of urbanization upon American communities from 1865 to the present. Evolving political and social institutions, social change, technological innovations and planning theories.

4513
(S)American Economic History. Economic development and economic forces in American history; emphasis upon industrialization and its impact upon our economic society since the Civil War. Same course as ECON 3823.

4523
(S)American Environmental History. Examination of the changing ways society (from Native American to post-industrial) has defined, interpreted, valued, and used nature.

4533
(S)Blacks in America. Achievements of blacks in America and their participation in the development of the United States.

4553
(S)Women in America. Women in pioneer America, society, politics, family, work and modern society.

4573
(H)Women in Western Civilization. Women in the development of Western Civilization from the earliest times to the present.

4980*
Topics in History. 1-3 credits, maximum 9. For students interested in pursuing either a research or a reading project. Open to honors students in history and to others by permission of the department head.

4993
Senior Honors Thesis. Prerequisites: departmental invitation, senior standing, Honors Program participation. A guided reading and research program ending with an honors thesis under the direction of a faculty member, with second faculty reader and oral examination. Required for graduation with departmental honors in history.

5000*
Thesis. 1-6 credits, maximum 6.

5023
Historical Methods. Methods of historical research and the writing of history.

5030*
Applied History Internship. 3-6 credits, maximum 6. Prerequisite: consent of graduate committee. Supervised practical experience in applied history.

5120
Reading Seminar in American History. 3 credits, maximum 15. Historiographical and bibliographical study of special areas of American history.

5140
Reading Seminar in European and World History. 3 credits, maximum 15. Historiographical and bibliographical study of special areas of European and World History.

5220
Research Seminar in American History. 3 credits, maximum 15. Research in selected problems in American history.

5240
Research Seminar in European and World History. 3 credits, maximum 15. Research in selected problems in European and World history.

6000*
Doctoral Dissertation. 1-19 credits, maximum 30. Prerequisite: admission to candidacy. Advanced research in history.

6023* Historicography. Major writers of history, historical schools and patterns of development in historical interpretation from the earliest times to present.

6120*
Special Studies in History. 1-3 credits, maximum 36. The meaning and operation of the historical processes and develop capabilities for clarity of statement, investigation, and creative, critical attitude. Areas studied vary from semester to semester.

5000 Advanced Honors Topics. 1-3 credits, maximum 6. Prerequisites: Honors Program participation, junior standing. Topical study in various disciplines taught by faculty from the undergraduate colleges for freshman and sophomore students in the University Honors Program.

3013
(H)Holocaust Studies Seminar. Prerequisites: junior standing. An interdisciplinary study of one of the problems of modern history-the Holocaust. Addresses questions of good and evil, divinity and humanity, and truth and responsibility that arise from this event. For the Honors student.

4993* Honors Creative Component. Prerequisites: Honors Program participation, senior standing. A guided creative component for students completing the requirements for college or departmental honors awards leading to an honors thesis, project or report under the direction of a faculty member from one of the undergraduate colleges, with a second faculty reader and oral examination.

Horticulture (HORT)

1003 Home Horticulture. Offered by correspondence only. An introduction to horticultural practices for the home gardener. Planning and care of home gardens, home orchards and vegetable gardens; selection, use and care of indoor plants. Non-majors only. Credit will not substitute for required courses.
Principles of Horticultural Science. Lab 2. Basic physical and physiological processes responsible for plant dormancy, growth, flowering, fruiting, and senescence with respect to the science and art of production, cultivation, utilization, and/or storage of horticultural plants. Current research associated with various horticultural commodity groups.

Internship in Horticulture. 1-6 credits, maximum 6. Prerequisites: 24 credit hours and consent of adviser. Supervised work experience with approved public and private employers in horticulture and related fields. Credit will not substitute for required courses. Graded on a pass-fail basis.

Indoor Plants and Interior Plantscaping. Lab 2. Identification, cultural requirements and use of ornamental foliage and flowering plants for indoor gardens.

Herbaceous Ornamental Plants. Lab 2. Identification, cultural requirements and landscape value of ornamental flowering herbaceous plants. Discussions of design and installation of herbaceous beds and borders.

Landscape Plant Materials I. Lab 2. Prerequisite: BIOL 1114 or 1403. Identification, adaptation, tolerance and use of deciduous trees, shrubs, vines and ground covers in the landscape.

Landscape Plant Materials II. Lab 2. Prerequisites: 2513. Identification, adaptation, tolerance and use of evergreen trees, shrubs, vines and ground covers in the landscape.

Basic Floral Design. Lab 2. Fundamentals of floral arrangement and design for the home and the retail shop; basic skills useful to flower shop employment and operation.

Business and Practice of Arboriculture. Lab 2. Prerequisites: 3312 and 3322 or FOR 2134, and AGRON 2124. Theory and practice of selecting, planting and maintaining trees, shrubs and vines. Basics of the landscape management business, including estimates for labor, equipment and plant materials; bidding; costs and record keeping; and employee safety.


Greenhouse Management. Lab 3. Prerequisites: 1013, 2112, BIOL 1403 and MATH 1213. Commercial greenhouse operation with emphasis on horticultural plant production aspects; environment, growing media, fertilizers and application methods, watering, pest and disease control, chemical growth regulators, production costs.

Turf Management. Prerequisites: 1013, AGRON 2124 and 2 hours plant science. Selection, establishment and maintenance of grass species and other plant materials for special use areas.

Fruit and Nut Production. Prerequisite: BIOL 1403. Commercial production of fruits and nuts, with emphasis on pecan, apple, peach, strawberry, blackberry and blueberry. A two-day field trip is required.

Commercial Vegetable Production. Prerequisites: 1013, AGRON 2124 and BIOL 1403. Commercial production and marketing of vegetable crops.

Nursery Production. Lab 2. Prerequisites: 3312 and 3322, AGRON 2124, BOT 3463, PLP 3344 and any course in entomology. The propagation, production, management and marketing of commercial nursery stock.

Advanced Floral Design and Marketing. Lab 2. Prerequisite: 2562. Preparation, arrangement, care and marketing of floral products in the retail shop, advanced designing, pricing, wholesale purchasing and retail selling.


Turfgrass Science. Lab 3. Prerequisite: 3153. Investigation of environmental stresses imposed on turfgrass and the interrelationship between stress and the cultural practices of turfgrass.

Landscape Contracting and Planning. Lab 6. Prerequisite: 3312 or 3322 or consent of instructor. Concepts of landscape contracting and planning. Preparation of specifications, estimates and bids. Emphasis on residential landscapes and use of plant materials. No credit for students in the landscape architecture (BLA) program.

Horticultural Problems. 1-6 credits, maximum 6. Prerequisite: consent of instructor. Problems related to pomology, olericulture, nursery production, landscape design, or the culture, sales and arrangement of flowers.

Research and Thesis. 2-6 credits, maximum 6. Research on thesis problems required of master's degree candidates.

Advanced Horticultural Problems. 1-2 credits, maximum 20. Selected research problems in horticulture, floriculture, landscape design; nursery production, olericulture, and pomology.

Horticulture Science. Prerequisites: BOT 3463, BOT 3460 or equivalent or senior standing. The basics of applied physiological responses of plant growth as related to horticultural plants. Includes hormonal, genetic and environmental influences on horticultural plant growth and production.

Temperature Stress Physiology. Prerequisite: BIOCH 3653, BOT 3463 or consent of instructor. Effects of heat, chilling and freezing stress on plants. Responses to temperature extremes at the molecular to whole plant levels, with emphasis on mechanisms of injury and resistance.

Experimental Horticulture. Methods of conducting research with horticultural crops including organization and plans, field plot techniques and analysis of data.


Flowering and Fruiting in Horticultural Crops. Prerequisite: BOT 3463. Environmental, chemical and cultural factors affecting the flowering and fruiting of horticultural crops.

Postharvest Physiology. Prerequisites: BOT 3463 and 3460. Physiological causes for postharvest changes in horticultural crops (ripening and senescence) and the basis for certain postharvest treatments (precooling at harvest, controlled atmosphere storage, refrigeration, and packaging techniques). Commodity-specific postharvest phenomena.


Hotel and Restaurant Administration (HRAD)

Introduction to the Hospitality Industry. Career opportunities and the scope, development and history of the hospitality industry. The lodging and food service segments of the industry. Ethical issues for the industry.

Introduction to Professional Food Preparation. Lab 3. Functions of the nutrients in the human life process. Nutrient relationships based on food preparation systems. Techniques and theories of food preparation including use and selection -of equipment, sanitation for quality, controls and guest accommodations.

Service Management in Hospitality Operations. Lab 4. Prerequisite: 1114 or NSCI 2114. Analysis and development of service management skills, including leadership behavior, motivation, communication, training, staffing and professional service staff behavior.

Science of Food Preparation. Lab 3. Prerequisites: 1114, CHEM 1014 or 1215. Application of scientific principles to food preparation. Same course as NSCI 3133.

Management in Hospitality and Food Service Systems. Prerequisite: a course in economics. Function and methods of management as related to the hospitality and food service industries. Same course as NSCI 3213.


Food Service Internship. 1-6 credits, maximum 6. Prerequisites: 3213, consent of instructor. Supervised experience in an approved work situation related to a future career in the hospitality industry.
4573* Institution Organization and Management. Lab 5. Prerequisites: 3333, 4365 or NSCI 3333, 4365. Organization of personnel and resources in a food service institution and the techniques required by the manager. Lab consists of work experiences in Residence Halls Food Services. Same course as NSCI 4573.

4723* Survey of Beversages in the Hospitality Industry. Lab 2. Prerequisite: must be 5 years of age. History, classifications, production techniques and quality factors of beverages such as coffee, tea, soft drinks and non-alcoholic beverages. Emphasis on responsible alchol beverage service and management techniques.

4850* Special Unit Course in Hotel and Restaurant Administration. I-6 credits, maximum 6. Prerequisite: consent of instructor. Special unit of study related to specific problems in the hospitality industry.

4863* Multi-unit Food Service Management. Lab 3. Prerequisites: 3333, 4365, 3313. Study of policy and procedure influencing the human side of hospitality management. Management decisions of multi-unit franchising, finance, menu strategy and marketing.

4900 Honors Creative Component. 1-3 credits, maximum 3. Prerequisite: College of Human Environmental Sciences Honors Program participation, senior standing. Guiding creative component for students completing requirements for College Honors in College of Human Environmental Sciences. Thesis, creative project or report under the direction of a faculty member in the major area, with second faculty reader and oral examination.

4963* Conference and Meeting Planning. Prerequisite: senior or graduate standing. Planning and implementing conferences, teleconferences, conventions, special events, seminars and symposia, Designing, promoting, managing and evaluating educational events, contract management.

5000* Master’s Thesis. I-6 credits, maximum 6. Prerequisite: graduate standing and consent of advisor. Individual research in hospitality administration fulfilling the requirements for the M.S. degree.

5030* Master’s Creative Component and Independent Study. I-3 credits, maximum 3. Prerequisite: graduate standing and consent of instructor. Individual research and study having relevance to the hospitality field and a positive impact on the hospitality industry.

5213* Hospitality Technology Applications. Conceptual analysis of the different systems used in the hospitality industry: food, beverage, catering, banquet, marketing, accounting, housekeeping, sales, property management, front office, and human resources. Investigation of technology applications, ethical implications of technology and system development and practices.

5223* Hospitality Procurement Administration. Principles related to the procurement of food and nonfood products in the hospitality industry. Administrative functions, cost controls, inventory, specifications, price, quantity and quality issues applied to foods.

5413* Leadership in a Diverse Society. Comparing and critiquing leadership and diversity research, theories and practices in multiple aspects of society using an historical perspective. Utilization of case studies, focus groups, and expert stories from government, education, volunteerism, and the workplace to facilitate the development of models for future professional practice that integrate leadership and diversity principles.

5513* Hospitality Customer Development Strategies. Examination of the role of the customer in planning of hospitality organizations. The concepts and strategies of hospitality customer development.

5523* Critical Issues in Hospitality Administration. Prerequisite: graduate standing. Major issues confronting the hospitality and tourism industry. Solutions, decision-making skills, and interpretation of impact on the environment, functional operations, and organizations within the industry. Synthesis of information.

5813* Research Methods in Hospitality Administration. Use of scientific methods and current research methodologies as applied to problems in hospitality administration. Development of knowledge in identifying researchable problems, proposal planning, experimental design, statistical use and interpretation, and research reporting.

5850* Special Topics in the Hospitality Industry. I-3 credits, maximum 9. Special topics related to the hospitality industry. A problem-solving technique to design the research model and investigative procedures. Presentations to faculty and students and industry professionals at specialized workshops with research, instructional and industry project components.

5870* Problems in the Hospitality Industry. I-3 credits, maximum 9. Special recurring problems in the hospitality industry. Broad perspective of these issues and their application to the industry. Critical thinking skills to solve operational dilemmas.

Human Environmental Sciences (HES)

1001 Seminar in Human Environmental Sciences. Mission of the College as a basis for value exploration and problem solving. Investigation of the integrative nature of the profession and general education. Required of all students in the College of Human Environmental Sciences.

1111 Exploration in Human Environmental Sciences. Exploration of majors and careers in the field of human environmental sciences. Designed to introduce students to campus resources and enhance students’ study skills. Graded on a pass-fail basis.

2001 Professionalism and Ethics. Ethical issues and strategies for developing professionalism in content areas of the profession. Required of all students in the College of Human Environmental Sciences.

3001 Contemporary Issues Within the Global Community. Awareness of global interdependence as it affects individuals and families. Exploration of the impact of public policy on these issues. Required of all students in the College of Human Environmental Sciences.
Contemporary Issues in Human Environmental Sciences. Exploration of the mission of the College of Human Environmental Sciences and subject matter interrelationships; ethical issues and professionalism in the field; effect of global interdependence and public policy on individuals, families and professions. Required of all students in the College of Human Environmental Sciences.

Study Abroad. 12-18 credits, maximum 36. Prerequisites: consent of the Office of International Programs and associate dean of the College. Participation in a formal study abroad program spending a semester or year in full-time enrollment at a university outside the U.S.

Honors Seminar in Human Environmental Sciences. Prerequisites: junior standing and admission to the Honors Program. In-depth interdisciplinary seminar focused on a current national or international issue having an impact on quality of life. Exploration of the issue utilizing various strategies and national resources. Dialogue and debate from multiple perspectives with emphasis on verbal and written expression.

Research Seminar. 1-3 credits, maximum 3. Prerequisite: graduate course in research methods or consent of instructor. Research in human environmental sciences with emphasis on problems involving a multidisciplinary approach. Methodological analysis of research. Development and evaluation of research focused on current problems.

Graduate Seminar in Human Environmental Sciences. 1-3 credits, maximum 3. Prerequisite: consent of instructor. Analysis of philosophy, critical issues, current developments and interrelationships among elements in human environmental sciences.

Industrial Engineering and Management (INDEN)

Introduction to Industrial and Systems Engineering. Lab 2. Prerequisites: ENGR 1412; MATH 2145. Industrial engineering concepts and techniques in production control, quality control, layout, methods engineering, material handling, mathematical programming, and engineering economy. Laboratory sessions provide exposure to industrial engineering experiences with these topics and with computer software used in industrial engineering analyses.

Industrial Processes I. Lab 3. Prerequisites: ENGR 1322 and ENGSC 3313. Manufacturing processes used to transform raw materials including metals and non-metals into finished goods. Near-shape processing and basic metal cutting theory, process selection, and planning. Field trips to manufacturing plants.

Industrial Processes II. Lab 3. Prerequisite: ENGR 3313. Manufacturing processes in joining, finishing, metrology, nontraditional machining, tool design, electronics manufacturing assembly and numerical control. Field trips to manufacturing plants.

Graduate Seminar in Human Environmental Sciences. 1-3 credits, maximum 3. Prerequisite: consent of instructor. Analysis of philosophy, critical issues, current developments and interrelationships among elements in human environmental sciences.

6180 Research Seminar. 1-3 credits, maximum 3. Prerequisite: graduate course in research methods or consent of instructor. Research in human environmental sciences with emphasis on problems involving a multidisciplinary approach. Methodological analysis of research. Development and evaluation of research focused on current problems.

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Graduate Seminar in Human Environmental Sciences. 1-3 credits, maximum 3. Prerequisite: consent of instructor. Analysis of philosophy, critical issues, current developments and interrelationships among elements in human environmental sciences.
4913 Senior Design Projects. Lab 6. Prerequisite: limited to students in the final semester of their professional program. Student teams work on professional-level engineering projects selected from a wide range of participating organizations. Projects are equivalent to those normally experienced by beginning professionals, and require both oral and written reports. (Open only to students in industrial engineering and management.)

4923* Energy and Water Management. Prerequisites: 3503, ENGLC 2213, 2613. Design, implementation and management of energy and water management programs. Energy and water conservation, choice of energy sources, safety and security of fuel storage, contingency planning and use of standby fuels, and choice of rate schedules. Improvement of profits through options in energy and water utilization. Outside speakers when appropriate.

4931 Industrial Engineering and Management Seminar. Prerequisite: senior standing. Designed to orient seniors to their professional work environment. Topics include placement procedures, resume construction, interviewing skills, professional dress, graduate school, professional societies and registration, personal management of time and money, and job-related experience. Taught by senior faculty; utilizes outside speakers.

5000* Research and Thesis. 1-6 credits, maximum 6. Prerequisite: approval of major adviser. Research and thesis for master's students.

5003* Statistics and Research Methods. Prerequisites: STAT 4033. Statistical and research methods used in various areas of industrial engineering including problem definition, managing the research process statistical methods and analysis, survey versus experimental research techniques.

5010* Industrial Engineering Projects. 1-2 credits, maximum 6. Prerequisites: consent of school head and approval of major adviser. Special graduate projects and independent study in industrial engineering.

5013* Linear Programming. Prerequisites: 4014, or 5003, or MATH 3013; FORTRAN. Simplex algorithm to solve deterministic linear optimization models considering maximization and minimization objectives. Degeneracy, alternative optimal solutions and no feasible solutions. Revised simplex procedures. Duality theory, economic interpretations, dual simplex and complementary pivoting, Sensitivity analysis and parametric programming. Special cases of linear optimization problems and underlying mathematical foundations. Large-scale models including computational considerations. Same course as COMSC 5013.

5030* Engineering Practice. 1-9 credits, maximum 12. Prerequisite: approval of adviser. Professional supervised experience in a real-life problem involving authentic projects for which the student assumes a degree of professional responsibility. Activities must be approved in advance by the student’s adviser. May consist of full or part-time engineering experience, on campus or in industry, or both, either individually or as a responsible group member. Periodic reports both oral and written required as specified by the adviser.

5032* Sequential Decision Processes and Dynamic Programming. Prerequisites: 4014, 5003. The determination of policy that optimally allocates resources to the various stages of a finite-stage system. Deterministic and stochastic systems including serial systems, diverging branch systems, converging branch systems and loop systems.

5103* Advanced Industrial Quality Control. Prerequisites: 3503, ENGLC 4181, STA 4653. Quality philosophy and application. Theory and application of traditional and nontraditional control charting techniques. Special emphasis on unbalanced data. Calculations applicable to quality assurance and error-free inspection. Oriented toward economically-based statistical monitoring of processes, including optimization of decision variables such as sample size, frequency, and control limit spread.

5113* Total Quality Management. Prerequisite: graduate standing. Major categories of criteria for the Malcolm Baldrige National Quality Award, including leadership, information and analysis, strategic quality planning, human resource utilization, quality assurance, and customer satisfaction. Key concepts and tools; customer requirements determination, customer satisfaction measurement, cost of quality, quality planning, supplier relations, process improvement strategy, causes of variation, process stability and control, process capability, the use of SPC tools, and measures of performance. Emphasis on those activities that outstanding companies do well.

5133* Stochastic Processes. Prerequisites: MATH 2233, MATH 3013, STAT 4113. Definition of stochastic processes, probability measure, mean and covariance function, the set of sample functions. Renewal processes, counting processes, Markov chains, birth and death processes, stationary processes and their spectral analyses. Same course as STAT 5133 and MATH 5133.

5203* Advanced Facility Location and Layout and Material Handling Systems. Prerequisites: 3503, 4014, 4203. A continuation and expansion of topics covered in 4203 with an emphasis upon modern developments in predicting and evaluating the effectiveness of production and/or service systems. Advanced analytical and computer techniques.

5303* Computer Integrated Manufacturing. Prerequisite: 4323. Computer-aided design (CAD) and computer-aided manufacturing (CAM). Design, development, implementation and operation of modern manufacturing systems. Prototype systems design, implementation and testing as well as applicable systems engineering concepts.

5313* Robotics Application Issues. Lab 3. Prerequisite: graduate standing in engineering or concurrent instructor. Role of robotics in modern manufacturing systems. Design and selection of appropriate end effectors and sensors to produce a reliable cost effective robotic application. Comparison of commercial and custom designed end effectors and a study of industrial applications. Field trips to industry and work in the IEM&M laboratory.

5350* Industrial Engineering Problems. 1-6 credits, maximum 6. Prerequisite: approval of major adviser. A detailed investigation into one area of industrial engineering with a required written report.


5603* Project Management. Prerequisite: 4413 or equivalent. A systems approach to planning, organizing, scheduling and controlling projects. The behavioral and quantitative aspects of project management. Importance of working with personnel as well as technology. Project management software utilized.

5613* Integrated Manufacturing Control Systems. Prerequisites: 4613. Manufacturing planning and control philosophies and methods for production. Materials requirements planning, including information integrity, capacity planning, shop floor control, purchasing, master scheduling, production planning, and demand management. Also just-in-time as used in both Japan and the U.S., including total quality control, just-in-time, total productive maintenance.

5633* Advanced Production Control. Prerequisites: 4014, 4613, corequisite: 5003. Advanced concepts and quantitative techniques used in production planning and control, including demand forecasting using regression, time series analysis, and Box-Jenkins models, mathematical programming approaches, to aggregate planning and disaggregation, static and dynamic scheduling of machines and cells, and independent demand inventory management. Deterministic and stochastic models and their relationship to Just-In-Time and Zero Inventory policies.


5703* Discrete Systems Simulation. Prerequisites: 4033 and FORTRAN. Discrete-event systems via computer simulation models. Model building and the design and analysis of simulation experiments for complex systems. Application to a variety of problem areas. Use of SLAM simulation language.

5713* Statistical Topics in Simulation Modeling. Prerequisites: 5703 or STAT 4033. Simulation modeling of discrete-event systems, input probability distributions, random variable generation, and analysis of simulation output. Methods applied to any type of simulation, either performed by a high level language (e.g., FORTRAN, Pascal) or by a simulation package (e.g., GPSS, SLAM).
Prerequisites:

5733*

5733* tive and qualitative aspects of multiple-criteria Analysis.

Prerequisite: 4014. Quantitative measurement systems. Designing organizational structures. Understanding the productivity improvement process model. Productivity issues, concepts, theories and practice in job and organization theory.

Productivity Measurement and Improvement.

Prerequisites: 3813 and 4413 concurrently. Productivity issues, concepts, theories and insights focusing on job and organizational design are explained, illustrated, and discussed. Understanding the productivity improvement process. Development of productivity measurement systems. Designing organizational processes which improve productivity.

5913' Decision Making Models for Multi-objective Analysis.

Prerequisite: 4014. Quantitative and qualitative aspects of multiple-criteria decision making. Dynamics of the decision process are examined and the multi-objective nature of most managerial decision problems is illustrated. General concepts and solution methodologies of the multi-objective problem. Multi-objective linear programming, goal programming, and compromise programming. Attribute importance, risk measurement, and utility measurement.

5923' Advanced Energy and Water Management.

Prerequisite: 4923. Continuation of material covered in 4923 with an emphasis on modern management techniques. Cogeneration, energy management control systems, private purchases of gas, energy accounting. Significant case study or term paper required.

5943' Hazardous Material and Waste.

Prerequisites: 2503 or equivalent, CHEM 1515. Management of hazardous materials and waste by the generator to reduce operating costs and protect employees. Emphasis on hazard communication program, reducing volume and toxicity, and management activities.

6000* Research and Thesis.

1-15 credits, maximum 30. Prerequisites: approval of major advisor and advisory committee. Independent research for Ph.D. dissertation requirement under direction of a member of the Graduate Faculty.

6023* Nonlinear and Integer Optimization.

Prerequisites: 4014 or 5013; FORTRAN or PASCAL. Theoretical and practical aspects of non-linear and integer optimization. Development and application of nonlinear optimization techniques for unconstrained and constrained problems; sequential search, gradient, penalty and barrier, and projection methods. Development and application of integer and mixed integer techniques for unconstrained and constrained problems; implicit enumeration, branch and bound, and cutting methods. Same course as COMSC 6023.

6110* Special Problems in Industrial Engineering.

1-6 credits, maximum 12. Prerequisites: consent of school Head and approval of major adviser. Special problems in industrial engineering and management under supervision of a member of the Graduate Faculty.

6113* Reliability and Maintainability.

Prerequisites: 5003, STAT 4033, FORTRAN. Probabilistic failure models of components and systems. Detailed study of reliability measures, and static and dynamic reliability models. Classical and Bayesian reliability testing for point and interval estimation of exponential and Weibull failure rates. Reliability optimization through allocation and redundancy. Fundamentals of maintainability.


6423* Theory of Systems Organization II.

Prerequisite: 5413 or consent of instructor. Theory and practice of internal and external engineering consulting. Investigation of the engineering interface, effective engineering consultations in relationship to existing organizational cultures and practices, and the engineering practitioner’s impact on organizational improvement.

6513* Analysis of Decision Processes.

Prerequisites: 5003, STAT 4113 or 4203, FORTRAN. Bayesian decision theory with application to optimal decision making in industrial engineering and allied fields. Extensive and normal form analysis. Sufficient statistics, noninformative stopping and conjugate prior distributions. Additive utility, opportunity loss (regret) and value of information. Terminal analysis, preposterior analysis and optimal sampling. Applications using Bernoulli, Poisson and normal processes.

6713* Advanced Systems Modeling.

Prerequisites: 4014, 5003, 4713 or 5703; FORTRAN 77, Pascal or C. Methodologies for the modeling, analysis, and optimization of large, complex systems. Modeling and performance analysis using Petri nets, object-oriented modeling, optimization using simulation, and continuous systems simulation.

Japanese (JAPAN)

1115 Elementary Japanese.

Pronunciation, conversation, grammar and reading.

2115 Intermediate Japanese I.

Prerequisite: 1115 or equivalent. Reading, the writing system, culture, grammar, conversation.

2123 Intermediate Japanese II.

Prerequisite: 2115 or equivalent proficiency. Oral and written practice of Modern Japanese. A continuation of 2115.

2223 Intermediate Japanese III.

Prerequisite: 2123 or equivalent proficiency. A continuation of 2123.

3112 Advanced Japanese Conversation I.

Designed to increase facility and naturalness of delivery in dialogue. Development of general oral and aural proficiency.

3112 Advanced Japanese Conversation II.

Designed to increase facility and naturalness of delivery in dialogue. Development of general oral and aural proficiency.

3133 (I)Readings in Japanese I.

Development of the student’s competence in reading a wide variety of materials by contemporary Japanese writers. Designed to be taken concurrently with 3123.

3223 (I)Introduction to Business Japanese.

Prerequisites: 2223 or equivalent; concurrent enrollment in 3133. Demonstrates the application of vocabularies and writing of correspondence. Japanese business customs and practices.

3333 (I)Readings in Japanese II.

Prerequisite: 3133. A continuation of 3133.

Journalism and Broadcasting (JB)

1143 (S)Media and Society.

An overview of the characteristics of newspapers, magazines, photojournalism, radio, television, film, advertising, public relations and interactive media, emphasizing the media’s impact and role in American society.

1393 Mass Media Style and Structure.

Lab 2. Prerequisites: English ACT score of 25 or better or completion of ENGL 1113 or 1013 with grade of “C” or better. Demonstrates the application of keyboarding proficiency or completion of COMSC 1002. Elementary writing and editing techniques in print, broadcasting and other media.

2103 Principles of Advertising.

Prerequisite: sophomore standing. Elements and purposes of advertising; media functions, economic aspects, budgets, appropriations, rate structures and terminology.

2183 Principles of Public Relations.

An introduction to the history, development and current practice of public relations as a process in building relationships between organizations and publics.

2393 Reporting.

Lab 3. Prerequisite: 1393. Reporting and writing through enterprise techniques for news coverage.

2413 News Editing I.

Lab 3. Prerequisite: 2393. Copy editing, design and headline writing for newspapers and magazines.

2873 Fundamentals of Audio Production.

3013 Advertising Media and Markets. Prerequisite: 2013 or consent of instructor. Analysis and evaluation of mass media for advertising; media and market research; media plans, budgets and sales presentations; advertising law and ethics.

3163 Mass Communication Law. Statutes and case decisions in print and broadcast law, including government regulation of broadcasting by the FCC and media relations with other regulatory agencies.

3173 History of Mass Communication. Prerequisite: junior standing. Growth and development of mass communication systems in America, with emphasis upon the economic, social and political interaction of the media.

3283 Public Relations Case Studies. Prerequisite: 2183 or consent of instructor. Case-study analysis of public relations techniques, policies and programs in specific areas of public relations practice.

3293 Visual Communication. Use of photographs, charts, graphs and other visual representations in the mass media; the language of pictures; theories of nonverbal communication visual aids in education and other information systems.

3383 Public Relations Management and Strategies. The practice and techniques of public relations as a management function in business, industry, agriculture, government, education and other fields. For both majors and non-majors.

3393 Computer-assisted Journalism. Lab 6. Prerequisite: 2393. Access by news media and communication specialists to electronic sources of information primarily through the Internet. A skills course in understanding and applying ways to obtain and share information through computer access.

3400 Journalism, Advertising and Public Relations Laboratory. 1-3 credits, maximum 5. Prerequisites: junior standing and completion of 1393, 2393, or 2413 or consent of instructor. Laboratory and/or internship practice for qualified students who wish creative communications experience beyond that available in the classroom.

3413 Public Affairs Reporting. Lab 5. Prerequisite: 2393, POLSIC 3613. Coverage of social problems, people and events in fields of government, business, science, sports and entertainment.

3423 News Editing II. Lab 6. Prerequisite: 2413. Advanced copy editing; ethics and legal considerations from an editor's viewpoint; design techniques for newspapers and magazines including picture editing, introduction to type, makeup and design practices, and special pages.

3553 Radio and Television News Writing. Lab 3. Prerequisite: 2393. Broadcast news writing and reporting techniques with emphasis on radio coverage. Familiarization with news values, news services, broadcast equipment. Lab work in news reporting and writing.

3603 Advertising Copy and Layout. Lab 3. Prerequisite: 2013. Advertising copy and layout; modern merchandising methods; application emphasizing local and regional problems.

3753 Graphic Communication. Lab 3. Creative and practical aspects of typography, layout and design, and production of printed communication.

3823 Photography I. Lab 3. Taking and processing photographs: cameras, lenses, films, printing, and developing; essentials of good pictorial composition. For students who want an elementary understanding of photography, or to prepare for advanced work in photography or photojournalism.

3900 Radio-Television Laboratory. 1-2 credits, maximum 5. Lab 6. Prerequisites: junior standing and completion of 1393 and 3553, or consent of instructor. Preparation and participation in all phases of radio-television and cable through active internship program.

3913 Television Production. Lab 3. Prerequisite: 1393. Television production techniques, including camera, audio, lighting, staging, producing, graphics and on-camera performance.

4033 Communication Technology. Overview of satellite delivery of print media, radio, television and cable program services, data services, computer technology; public relations and advertising uses of the new technologies.

4063 Supervision of High School Publications. Lab 2. Prerequisite: 1393. Supervision and managing high school publications; intended to meet the requirements for the state teacher's license in language arts.

4153 Journalistic Management. Prerequisite: senior standing or consent of instructor. Business and editorial management of newspapers, magazines, and industrial, business and farm publications.

4223 Broadcast Sales. Prerequisites: 1393, 2013. Sales development, pricing, promotion and other aspects of broadcast sales and sales management.

4243 Programs and Audiences. Audience analysis, proper construction of programs for highest appeal and use of appeals to attract the desired audience. Program types, rating systems, program selection and audience attention. Design and discussion of programs to reach specific audiences.

4263 Broadcast Management. Prerequisite: senior standing or consent of instructor. Functions, structure and organization of the broadcasting industry; special problems in broadcast station management, including personnel, sales, programming and government regulations.

4360 Special Problems in Journalism and Broadcasting. 1-3 credits, maximum 6. Prerequisites: junior standing, a minimum of 3.00 GPA, and consent of instructor. Independent study and project development to fill the student's major or minor specialization.

4413 Advanced Reporting and Writing. Lab 5. Prerequisite: 2413. Enhancement of writing style and reporting techniques; evaluation of sources and pollinng practices, and investigative coverage of newsmakers and events.

4433 Feature Writing for Newspapers and Magazines. Prerequisite: 15 semester hours of English or journalism, including 4413 for journalism majors. Newspaper feature and special articles for general circulation magazines, business and trade journals; sources, materials, markets and other factors pertinent to non-fiction writing.


4493 Public Relations Media. Lab 6. Prerequisites: 2183, 2393. An advanced application course in planning, researching, writing, editing and designing of materials used in public relations communications.

4553 Advanced Radio-Television News Reporting. Lab 3. Prerequisites: 3553 and 3913. Advanced broadcast news writing with emphasis on techniques of feature and in-depth reporting for radio, television and cable television.

4573 Broadcast Documentary. Lab 3. Prerequisites: 3553, 3913. Student-written and produced broadcast and cablecast mini-documentaries; analysis of selected programs.

4603 Integrated Marketing Communications. Lab 2. Prerequisite: 3603. Creative strategy and execution of advertising for mass media. Problems in idea creation for advertisers; emphasis on both the written and the visual components of advertising policies.

4623 Advertising Campaigns. Prerequisite: 3603. Preparation and presentation of advertising-promotion merchandising campaigns for national and local firms; work in teams with agencies and clients.

4653 Television and Radio Advertising. Lab 3. Prerequisite: 3603. Functions and characteristics of broadcast advertising; copywriting, scripting, story boards, marketing plan; film and videotape commercial production.

4843 Public Relations Programs. Prerequisite: 3283. Research, preparation and presentation of public relations campaigns. Integration of public relations principles and methods; work in teams in organizational and agency situations.

4953 Advanced Television Practices. Lab 3. Prerequisite: 3913. Advanced professional television production. Student-produced and -directed television programs, including "specials," for distribution on cable or other professional media.

4993 Senior Honors Thesis. Prerequisites: departmental invitation, senior standing. Honors Program participation. A guided reading and research program ending with an honors thesis under the direction of a senior faculty member, with second faculty reader and oral examination. Required for graduation with departmental honors in journalism and broadcasting.
Landscape Architecture (LA)

1013 Introduction to Landscape Architecture and Landscape Contracting. An overview of the field of landscape architecture and landscape contracting with emphasis on the role of the landscape architect/landscape contractor and the need for design and management of outdoor space and structures and the environment.

1122 Computer-aided Design. Lab 4. Prerequisite: 1013. Introduction to computer operating systems, word processing and spreadsheet analysis. Principles of electronic drafting, utilizing AutoCAD and Landcadd to generate 2D and 3D drawings.

2213 Landscape Architectural Graphics I. Lab 6. Prerequisite: 3 hours credit in freehand drawing or drafting. Drafting and illustration techniques for developing and presenting landscape concepts and designs in black and white media. Computer graphics applications including illustration, typesetting, scanning and visualization techniques.

2223 Landscape Architectural Graphics II. Lab 6. Prerequisite: 2213. The application of multimedia color presentation and delineation techniques to more complex plans, drawings and programs.

3010 Internship in Landscape Architecture and Landscape Contracting. 1-6 credits, maximum 6. Prerequisites: 45 credit hours, consent of internship chairperson. Supervised work experience with approved public and private employers in landscape architecture, landscape contracting or related fields. May not be substituted for other required courses.

3112 Landscape Architecture Seminar I. Prerequisite: 3324. Professional analysis of various aspects of the landscape architecture profession and designed works with guest speakers and in-state or regional field trips to completed works. Required of fourth year students.

3314 Landscape Architectural Design I. Lab 8. Prerequisites: 1013, 1122 and 2223. Introduction to the principles of design, problem solving, site analysis, and the correlation of aesthetic concerns with functional solutions in small-scale landscape architecture design problems and computer-aided design applications.

3324 Landscape Architectural Design II. Lab 8. Prerequisite: 3314. The design of small to medium scale areas with an emphasis on design process, site analysis and computer-aided design applications.

3673 (H)History and Theory of Landscape Architecture. History and historic styles and approaches to landscape architectural design. Past and present landscape design theory.


3894 Landscape Architectural Construction II. Lab 6. Prerequisite: 3884. Advanced grading, horizontal and vertical roadway alignment, site layout and staking plans, construction documents, cost estimating, overview of soils construction materials and specifications, site utilities, computer applications and calculations.


4112 Landscape Architecture Seminar II. Prerequisite: 4111. Professional analysis of landscape architecture and related fields, career exploration and job placement. Out-of-state field trips to completed landscape architecture projects. Required of fifth year students.

4414* Landscape Architectural Design III. Lab 6. Prerequisites: 3324, 3884. Medium scale site development projects with an emphasis on landforms, structures and computer-aided design applications.

4424* Landscape Architectural Design IV. Lab 8. Prerequisite: 4414. Medium-scale complex landscape architectural design projects with emphasis on arrangement and design of landscape elements as they relate to functional and aesthetic qualities. Integration of landscape construction detailing, drawings as part of design presentation, and computer-aided design applications.

4433* Landscape Analysis and Use. Lab 3. Prerequisite: 3313. The inventory and analysis of natural and man-made landscape resources and their application to land use.

4514* Landscape Architectural Design V. Lab 8. Prerequisites: 4424, 4984. The design of large-scale sites with an emphasis on mixed use developments and computer-aided design applications.

4524* Landscape Architectural Design VI. Lab 10. Prerequisite: 4514. A capstone course with a large scale development project in urban design, recreation or resource planning with computer-aided design applications, summarizing previous planning, design and construction course work.

4534 Landscape Architecture Vertical Design Studio. Lab 8. Prerequisite: 2223. Individual studio projects geared to design, course level. Offered only during the summer session. Can be substituted for landscape architecture design courses II through IV.

4573* Recreation Planning. Lab 6. Prerequisite: consent of instructor. Theory and methods for small and large scale area planning with emphasis on natural and cultural resources.

4583* Landscape Environmental Planning. Lab 6. Prerequisite: 3324. Materials and methods of construction, static, retaining wall design, wood structures, landscape lighting, cost estimation, construction documents, methods of detailing, water features, irrigation design, computer applications and calculations.

4600 Landscape Architecture Assembly. 1-2 credits. Maximum 4. Presentations by faculty members and guest speakers dealing with various aspects of landscape architecture or related fields.


4990* Landscape Architecture Special Problems. 1-6 credits, maximum 12. Prerequisite: consent of appropriate faculty member. Landscape architectural related problems.

5110* Advanced Special Problems. 1-12 credits, maximum 20. Prerequisite: consent of appropriate faculty member. Specific landscape architectural problems.

Latin (LATIN)

1113 Elementary Latin I. The rudiments of beginning Latin: grammar, vocabulary and elementary readings.

1223 Elementary Latin II. Prerequisite: 1113 or equivalent proficiency. Continuation of 1113. Grammar, vocabulary and readings.

2113 Elementary Latin III. Prerequisite: 1223 or equivalent. A continuation of 1223. Grammar and readings of Latin authors.

2213 Intermediate Readings. Prerequisite: 2113 or equivalent proficiency. Prose selections in Latin from a variety of authors.

3330 Advanced Readings in Latin. 1-6 credits, maximum 9. Prerequisite: 2213. Prose authors, poetry, and medieval Latin.

Legal Studies in Business (LSB)

1113 Law in Society. Forms and types of law and their evolution, including antitrust, ecology, consumerism and civil rights. Political, social and economic forces affecting legal developments. Legal needs of society and the probable future direction of the law.

3010 Special Topics in Legal Studies in Business. 1-3 credits, maximum 6. Prerequisites: 3213, prior consent of instructor. Analysis of a contemporary topic in business law. Changing social issues and trends in legal studies in business.
Legal and Regulatory Environment of Business. Prerequisite: junior standing. General concepts regarding the nature of the legal system, ethical issues in business decision making, dispute resolution processes, basic constitutional limitations on the power of government to regulate business activity, the nature of government regulation, fundamental principles of tort and contract law.

Law of Commercial Transactions and Debtor-Creditor Relationships. Prerequisite: 3213. Concentrated study of law relating to certain commercial transactions and debtor/creditor relationships. Includes law of sales, negotiable instruments, secured transactions, suretyship and bankruptcy.

State and Federal Regulation of the Employment Relationship. Prerequisite: 3213 or equivalent. Legal foundations of employment in the United States. Contemporary topics relating to the employment environment such as state legislative and judicial limitations on employment at will doctrine, federal legislation relating to employment at will, and affirmative action, fair labor standards, safety in the workplace and state workers compensation laws.

Law of Business Organizations. Prerequisite: 3213. General principles of law relating to the formation, operation and termination of various forms of business organizations. Includes a study of the law of agency, partnerships and corporations.

Law of Real Property. Prerequisite: 3213 or equivalent. Nature of real property and of the legal transactions relating thereto. Topics may include deeds and conveyancing, landlord-tenant relationships, mortgages, easements, oil and gas interests, types of estates, joint ownership, and legal descriptions.

Law of Business Transactions. Prerequisite: 3213 or equivalent. Legal aspects of operating a business entity engaged in international commerce. Topics may include foreign business organizations, U.S. taxation of foreign investors, common clauses in transnational contracts, problems of technology transfer on the international market, anti-trust aspects of international business, and jurisdictional problems in resolving disputes.

Legal Environment of Business. Prerequisite: graduate standing. Legal environment within which business must operate. Nature and source of law, the operation of the judicial system, the operation of administrative agencies, selected Constitutional provisions frequently involved in litigation of business problems, and selected substantive legal areas having a direct relationship with business operation and decision making.

Leisure (LEIS)

Beginning Swimming. Lab 2. Theory and practice of swimming strokes; techniques and basic water safety skills.

Beginning Golf. Lab 2. Theory and practice of basic skills, rules, terminology and etiquette.
4213 Water Safety Instructorship. Lab 1. Prerequisite: American Red Cross Emergency Water Safety or Lifeguard Training Certificate. Methods of teaching swimming and aquatic safety with practical application of knowledge, principles and analysis of skills. May obtain American Red Cross Water Safety Instructor Certification (WSI).

4453* Outdoor Education. Development of a holistic approach to teaching and learning in the outdoors. Learning in, about, and for, the out-of-doors as a process for acquiring skills with which to enjoy outdoor pursuits.

4463* Areas and Facilities in Recreation. Prerequisites: 3463, PE 3773. Planning, design and development of areas and facilities in recreation and physical education.

4473* Outdoor Recreation. Theory and practical application of outdoor recreation concepts with emphasis on philosophies, principles, policies, economics, trends and problems.

4480 Internship in Leisure. 6-12 credits, maximum 12. Prerequisites: last semester senior standing with cumulative GPA of 2.50 or consent of instructor. Supervised field work experience in leisure services management or therapeutic recreation. Graded on a pass-fail basis.

4493 Administration of Leisure Services. Decision making, problem solving, personnel policies, legal issues, fiscal policies and budget procedures related to the delivery of leisure services.

4513* Facilitation Techniques in Leisure Counseling. Prerequisite: 3433. Philosophy, history, trends, models, legal aspects and basic methods of leisure counseling and leisure education.

4523* Program Design in Therapeutic Recreation. Prerequisite: 3483. Systematic approach to the development, design and evaluation of therapeutic recreation programs.

4563* Industrial and Commercial Recreation Management. Prerequisite: 3463. Industrial and commercial recreation management: budgeting, facilities, programming and operational procedures.

4573* Leadership in Experiential Education. An investigation of leadership styles and management models with an application to adventure based education.

4580* Technical Management in the Wilderness. 1-6 credits, maximum 6. Developing technical competencies in back country navigation, emergency medical care and evaluation, winter Nordic mountaineering, technical rock climbing, hazard analysis and expedition planning.

Library Science (LIBSC)

1011 The Use of Libraries and Learning Resources Centers. Orientation to the use of libraries and learning resources centers, including the special book and nonbook features of the OSU library, basic materials and services.

3050 The School Library and Learning Resources Center in the Curriculum. 2-5 credits, maximum 3. Lab 1-3. Designed for teachers. Importance and effective utilization of the centralized school library media center in the teaching-learning process, evaluative selection tools of print and nonprint media, and reading and evaluation tools. Initial course is 2 credit hours. In addition, storytelling and field experience credits are available for 1-3 credit hours.

4113* Reference Materials. Selection, evaluation and use of basic reference materials most commonly used in all types of libraries; the organization of reference service; interpretation of reference questions.

4313* Young Adult Literature. Survey of print and non-print materials, including multicultural and multi-ethnic materials, for young adults from middle school through high school. History, criticism, selection and evaluation of young adult literature and exploration of its relation to the needs and interests of young people. Same course as CIED 4313.

4414* Introduction to Cataloging and Classification. Basic principles of cataloging, with practice based on functional application of current codes and manuals recognized by the profession.

Management (MGMT)

3013 Fundamentals of Management. Management principles and techniques of analysis. Decision making as applied to management systems, organizations, interpersonal relationships and production. Does not apply to a College of Business Administration major.

3123 Managing Behavior and Organizations. Prerequisites: STAT 2023 or equivalent; junior standing. Managing behavior and organizations with an emphasis on performance. Process differences and performance expectations at the individual, team and organizational levels. Understanding of the components and dynamics of managerial and organizational behavior with the emphasis on management applications.

3133 Management Performance Development. Prerequisite: 3123. The study of personal, interpersonal and group factors relating to managerial performance. An integration of the theory and practice of management.


4123* Labor Management Relations. Prerequisite: 3013. Labor relations and collective bargaining. Negotiation and administration of labor agreements and employee relations in nonunion organizations. Modes of impasse resolution.


4213* Managing Diversity in the Workplace. Diversity in the workplace as a business issue that affects performance. Companies’ adaptability and agility is contingent on the population they serve or represent. The development of a cohesive work team made up of individuals who differ in gender, age, race and national origin.

4313* Organization Theory and Development. Prerequisite: 3313. The design of formal organizations with an emphasis on topics related to organizational and managerial effectiveness. Focus on what is known about managerial and organizational effectiveness and how this knowledge may be applied.

4413 Change Management. Prerequisite: 4313 or equivalent. Managing organizational change and redesign. The study of organizational change processes and the enhancement of performance through change management. Study of the body of knowledge and applications in this branch of organizational science.

4533* Leadership Dynamics. Prerequisite: MGMT 3123 or equivalent. Leadership applications in business management. Contemporary business challenges require managerial leadership of the highest order. Students will be exposed to the latest developments in leadership theory and research. A cornerstone of the course will be the emerging construct of transformational leadership. The course emphasizes readings, class discussions, experiential exercises, and group projects to facilitate learning.

4613 International Management. Prerequisite: 3013. Survey of the organization, planning and management of international operations of business firms. Exploration of major cultural, economic and political systems, and their effects on the management function.

4713* Conflict Resolution in Industry. Prerequisite: 3013. An integrated and interdisciplinary approach to the issues of industrial conflict and conflict resolution. An analytical development stressing both theory and empirical research. Models of conflict; conflict between the individual, the group and the organization; economic conflict and industrial conflict.

4813* Advanced Human Resource Management. Prerequisite: 3313. Management of human resources at the organization level including employee relations law and human resource planning.

5113* Management and Organization Theory. Prerequisite: admission to MBA program or consent of MBA director. Contemporary theories of organization. Structure and dynamics of organizational goals and environments.

5123* Organizational Design and Research. Prerequisite: admission to MBA program or consent of MBA director. An analysis of research which integrates theory and design of organizations. Reviews empirical research findings and stresses methods of organizational analysis: design and modification of organizations.

5213* Seminar in Organizational Behavior. Prerequisite: admission to MBA program or consent of MBA director. Current research on group behavior in organizations. Group processes and structural factors affecting the interaction process and intra- and intergroup performance characteristics. Laboratory simulation and team research projects used to pursue advanced topics.
Management Science and Information Systems (MSIS)

2103 Business Computer Concepts and Applications. Prerequisite: 30 credit hours and MATH 1513. Computer concepts, terminology, and software applications. Overview of hardware and software components, file structures, management information systems, futuristic trends, database management systems, systems analysis and design, and data communications. Introduction to database, spreadsheet, and word processing software application packages and application programming.

2203 Computer Programming for Business. Prerequisite: 2103 or COMS 2113 or equivalent. Computer programs for business applications using the COBOL language. File structures, file updating techniques, sorting, reporting, magnetic tape and disk file handling.

3103 Management Information Systems. Prerequisite: 2103 or equivalent. Information technology (IT) management and the development and use of management information systems in today's businesses. Use of global IT tools including on-line communication tools, software for data use and integration, and user interface and presentation tools.

3203 Advanced Computer Programming for Business. Prerequisite: 2203. Advanced program development with an emphasis on the development of computer programs for business application. File processing including magnetic tape sequential files, disk-indexed sequential files, and virtual storage applications are an integral part of the course. Subjects and techniques such as TSO, segmentation, debugging tools and procedures, and pertinent JCL are also studied and applied.

3223* Production and Operations Management. Prerequisite: MGMT 3013. Production and operations management utilizing a management science approach. Management decision-making techniques and their application to problems in production and operations management. Examples of applicable techniques include linear programming and decision analysis.

3233 Management Science Methods. Prerequisite: 3223. Deterministic operations research techniques applied to the resource allocation and operational problems encountered in accounting, marketing, finance, economics, and management. Linear programming and network models.

3243 Managerial Decision Theory. Prerequisite: 3223. Decision processes under risk and uncertainty. The use of models in business decision making with outcomes governed by probability distributions. Bayesian decision analysis, utility measurements, game theory, Markov chains, queuing, simulation probabilistic forecasting and inventory, network models, and dynamic programming.

3303 Business Systems Analysis. Prerequisites: 2103, 2203, ACC 2103. Systems analysis as a profession and role of the systems analyst in the analysis, design, and implementation of computer-based business information systems. Current system documentation through use of classical and structured tools and techniques for describing flows, data flows, data structures, file designs, input and output designs, and program specifications. Information gathering and reporting activities and transition into system analysis and design.

3363 Advanced Management Information Systems Programming. Prerequisite: 2203 or equivalent. Programming tools with applications in industry. Advanced programming procedures, processes and algorithms.

4013* Data Base Management. Prerequisite: 2103 or equivalent. Theoretical aspects and management applications of database systems, file organization, and data models, with emphasis on hierarchical network and relational structures. Discussion of storage devices, data base administration, and the analysis, design and implementation of data base management systems.

4113* Systems Design and Development. Prerequisites: 3303, 4013. Business information systems design and development with coverage of essential systems analysis techniques. Theory and application of prototyping. Computer-aided software engineering (CASE) and fourth-generation language tools used to develop a functioning business information system. Project management and additional analysis, design and development topics.

4263 Applied Artificial Intelligence. Prerequisite: 2103 or equivalent. Managerial applications of artificial intelligence. Topics include an overview and survey of the major topics in artificial intelligence, such as neural networks, natural language processing, robotics, and vision; expert system concepts and strategies; evaluating tools and techniques; knowledge engineering methodology; building expert systems; project management for expert systems.

4363* Advanced Topics in Systems Development. Prerequisite: 4113. Advanced topics in management information systems development methodologies. Additional topics such as design of database and web-based information systems, development and administration of groupware systems, and advanced object-oriented system development methodologies.

4373* Advanced Topics in Management Information Systems. Prerequisite: 2103 or equivalent. Advanced topics such as advanced network management, electronic commerce, international management information systems, and legal and regulatory issues in telecommunication.

4443* Computer-based Simulation Systems. Prerequisites: 3223 completion of lower-division mathematics requirements and a course in a structured programming language such as FORTRAN, PL/1, or PASCAL. Discrete computer systems simulation using languages such as GPSS, GASP, or SLAM. Cases include queuing, layout planning and evaluation, and financial modeling.
Data Communication Systems. Prerequisite: 3303. Management orientation to the design, implementation, and control of data communications. Transmission, service, and equipment characteristics, network design principles, data communication software and federal regulatory policy affecting data communication.

Quantitative Methods in Business. Prerequisite: admission to MBA program or consent of MBA director; demonstrated calculus proficiency. Application of quantitative techniques to business problems. Linear programming, transportation and assignment models, goal programming, integer programming, and networks.

Production Operations Management. Prerequisite: admission to MBA program or consent of MBA director. Production systems, expert systems, artificial intelligence and managerial issues involved in the design, implementation, and control of data communications. Transmission, service, and equipment characteristics, network design principles, data communication software and federal regulatory policy affecting data communication.

Network design principles, data communication software and federal regulatory policy affecting data communication.

Advanced Decision Theory for Management Information Systems. Prerequisites: admission to MBA program or consent of MBA director. Qualitative and quantitative analysis of data. Advanced topics in management information systems for doctoral students.

Marketing (MKTG)

Marketing. Prerequisite: ECON 2023. Marketing strategy and decision-making. Consumer behavior, marketing institutions, competition and the law.

Consumer and Market Behavior. Prerequisite: 3213. Qualitative and quantitative analysis of the behavior of consumers; a marketing consideration of the contributions of economics and the behavioral disciplines to consumer behavior.

Promotional Strategy. Prerequisite: 3213. Promotional policies and techniques and their application to selling problems of the firm.

Professional Selling. Prerequisites: 3213, 3323. 3433. Skills to understanding the professional personal selling process. Strong emphasis on the communications function of personal selling. Lecture sessions combined with experiential exercises and role playing.

Sales Management. Prerequisite: 3213. Sales planning and organization of the sales department, developing territories, motivating salespersons and control over sales operations.

Retailing Management. Prerequisite: 3213. Applied marketing knowledge, with attention given to those concepts and methods which provide the necessary foundation for a retailing manager.

Marketing Decision Analysis. Prerequisite: 3213. Decision making in a variety of marketing applications to include model building, analysis of courses of action, and development of online information systems. Applications with microcomputers to focus on decision areas such as sales forecasting, media selection, sales force allocation and site location.

Business Logistics and Channel Management. Prerequisites: 3213 and MGMT 3223. An economic and operational analysis of the physical flow of goods and materials. A system interpretation of marketing channels.

Marketing Research. Prerequisites: 3213 and STAT 3013. Basic research concepts and methods. Qualitative and quantitative tools of the market researcher.

Problems in Marketing. Prerequisite: 3213. Problems in marketing. Specific topics vary from year to year.

Social Issues in the Marketing Environment. Prerequisite: 3213. Social and legislative considerations as they relate to the marketplace.

International Marketing. Prerequisite: 3213. The conceptual framework for marketing input and output from foreign countries. The development of action-oriented strategies with emphasis on the uncontrollable factors that affect marketing decisions in an international setting.

Managerial Strategies in Marketing. Prerequisite: 90 credit hours including 9 credit hours of marketing. Analysis of the marketing decision process; market opportunity analysis, strategy development, planning and integration with corporate strategy.

Services Marketing. Prerequisite: 3213. Conceptual and managerial tools for students who intend to be involved with the marketing of services. Characteristics of services, listening to customers, managing customer expectations, conceiving and creating service breakthroughs, service quality, positioning of services, managing demand and supply, creating a strategic service vision and designing a customer-focused organization to create and retain customers.

Marketing Management. Prerequisite: admission to MBA program. Consideration at an advanced level of the major elements of marketing from the point of view of the marketing executive. Emphasis on problem solving and decision making; using an interdisciplinary approach. Development of an integrated, comprehensive marketing strategy.

Services Marketing. Prerequisite: 5133. Services and services marketing with emphasis on services research and services management.

Promotional strategies and policy techniques and their application to marketing.

Marketing Research Methodology. Prerequisite: 5133. Research methodology applied to marketing problems. Measurement, survey research, experimentation, and statistical analysis of data.

International Marketing Strategy. Prerequisite: 5133. An analysis of marketing in the global environment. Environmental effects on international marketing management and corporate strategy decisions.

Seminar in Consumer Behavior. Prerequisite: 5133 or consent of instructor. Psychological, sociological, and anthropological theories related to consumer decision processes. Special emphasis on current empirical research in consumer behavior.

Seminar in Promotional Strategy. Prerequisite: 5133. Promotional problems encountered by a firm and approaches to their solution.

Seminar in Channels of Distribution. Prerequisite: 5133. Development structure and implementation of distributed service channels involving customer service, physical distribution decisions, and operating policies.
Mass Communications (MC)

5000* Thesis. 1-6 credits, maximum 6. For mass communication graduate students who are candidates for the master’s degree.


5113* Methods of Research in Mass Communication. Principles and techniques of research: research planning, design and measurement in mass communication.

5223* Mass Communication Research Analysis and Interpretation. Prerequisite: 5113. Single- and multi-variate analysis, interpretation and reporting of mass communication research data. Use of computers in research analysis.

5333* Process and Effects of Mass Communication. Mediating factors that affect interaction of ingredients in the communications process, and how these factors can affect the fidelity of information conveyed.

5653* Introduction to Graduate Study. Prerequisite: graduate standing or consent of instructor. Orientation to skills necessary for successful completion of graduate work. Training in library and archival research, academic writing and preparation of research reports, familiarization with theoretical concepts and issues associated with mass communication. Required of all mass communication M.S. candidates, and prerequisite to M.S. candidates enrolling in mass communication seminars.

5663* Public. Educational and Instructional Television. Uses of non-commercial television in public, educational and instructional applications. Analysis of program types and content.

5673* Seminar in International Mass Communications. Prerequisite: graduate standing or consent of instructor. Examination of the nature and flow of news and information within and among nations, states, and societies from a theoretical vantage point grounded in region-specific realities. The political, economic, social, cultural and historical forces determining media practice in a global environment.

5732* Responsibility in Mass Communication. Interaction between mass media and society, with emphasis upon the communicator’s ethics and responsibilities.

5770* Seminar in Communications Media. 1-3 credits, maximum 9. Prerequisite: graduate standing or consent of instructor. International communication, media history, legal research, new technology, women and the media, television and children, industrial television, and communication research.

5883* Advanced Media Management. Prerequisite: JB 4723 or consent of instructor. Trade area surveys; building and plant engineering; management of human, physical and financial assets; labor-management relations; estimating and cost controls.

5913* General Semantics in Mass Communication. Prerequisite: graduate standing or consent of instructor. Language as it affects thought and action, with special emphasis on writings of Johnson, Korzybski, Hayakawa, Chase and Lee in relation to communication media.

Master of Business Administration (MBA)

5010* Independent Study. 3-6 credits, maximum 6. Prerequisite: admission to MBA program or consent of MBA director. Investigation of advanced research topics or directed study under the supervision of a faculty member. Consent of MBA Graduate Studies Committee required.


5021* Personal Computer Tools: An Overview for Managers. Prerequisite: admission to MBA program. Introduction for managers to fundamental microcomputer tools and concepts. Work support group systems such as spreadsheets, word processing and electronic mail.

5031* Quantitative Tools: An Overview for Managers. Prerequisite: admission to MBA program. Introduction for managers to quantitative tools used in business decision making.

5100* Advanced Media Management. Prerequisite: JB 4723 or consent of instructor. Trade area surveys; building and plant engineering; management of human, physical and financial assets; labor-management relations; estimating and cost controls.

5132* Seminar in Communications Media. 1-3 credits, maximum 3. Lab 4. Advanced message preparation in candidate’s field of concentration.

5113* Methods of Research in Mass Communication. Principles and techniques of research: research planning, design and measurement in mass communication.

5223* Mass Communication Research Analysis and Interpretation. Prerequisite: 5113. Single- and multi-variate analysis, interpretation and reporting of mass communication research data. Use of computers in research analysis.

5333* Process and Effects of Mass Communication. Mediating factors that affect interaction of ingredients in the communications process, and how these factors can affect the fidelity of information conveyed.

5653* Introduction to Graduate Study. Prerequisite: graduate standing or consent of instructor. Orientation to skills necessary for successful completion of graduate work. Training in library and archival research, academic writing and preparation of research reports, familiarization with theoretical concepts and issues associated with mass communication. Required of all mass communication M.S. candidates, and prerequisite to M.S. candidates enrolling in mass communication seminars.

5663* Public. Educational and Instructional Television. Uses of non-commercial television in public, educational and instructional applications. Analysis of program types and content.

5673* Seminar in International Mass Communications. Prerequisite: graduate standing or consent of instructor. Examination of the nature and flow of news and information within and among nations, states, and societies from a theoretical vantage point grounded in region-specific realities. The political, economic, social, cultural and historical forces determining media practice in a global environment.

5732* Responsibility in Mass Communication. Interaction between mass media and society, with emphasis upon the communicator’s ethics and responsibilities.

5770* Seminar in Communications Media. 1-3 credits, maximum 9. Prerequisite: graduate standing or consent of instructor. International communication, media history, legal research, new technology, women and the media, television and children, industrial television, and communication research.

5883* Advanced Media Management. Prerequisite: JB 4723 or consent of instructor. Trade area surveys; building and plant engineering; management of human, physical and financial assets; labor-management relations; estimating and cost controls.

5913* General Semantics in Mass Communication. Prerequisite: graduate standing or consent of instructor. Language as it affects thought and action, with special emphasis on writings of Johnson, Korzybski, Hayakawa, Chase and Lee in relation to communication media.

5100* Independent Study. 3-6 credits, maximum 6. Prerequisite: admission to MBA program or consent of MBA director. Investigation of advanced research topics or directed study under the supervision of a faculty member. Consent of MBA Graduate Studies Committee required.

5000* Thesis. 1-6 credits, maximum 6. For mass communication graduate students who are candidates for the master’s degree.


5113* Methods of Research in Mass Communication. Principles and techniques of research: research planning, design and measurement in mass communication.

5223* Mass Communication Research Analysis and Interpretation. Prerequisite: 5113. Single- and multi-variate analysis, interpretation and reporting of mass communication research data. Use of computers in research analysis.

5333* Process and Effects of Mass Communication. Mediating factors that affect interaction of ingredients in the communications process, and how these factors can affect the fidelity of information conveyed.
274 Master of Business Administration

5221* Public Environment of Business. Prerequisite: admission to MBA program or consent of MBA director. Survey of the external forces that influence and shape the organizational environment. Strategies for forecasting, responding to, and influencing these forces.

5233* Global Competitive Environment. Prerequisite: admission to the MBA program or consent of the director. Development of a global business strategy for the organization. Issues of highly diversified markets and business environments, global competition, financial markets, and complex organizational relationships.

5240* Managerial Communication Skills. 1-2 credits, maximum 2. Prerequisite: admission to MBA program or consent of MBA director. Identification and analysis of interactive corporate communications: oral, written and interpersonal. Application of communication theories to business situations with the goal of behavior and skill development.

5251* Strategic Concepts. Prerequisite: admission to MBA program or consent of MBA director. Examination of corporate strategy formulation and implementation processes on strategic concepts used for analysis and development of corporate strategy. Interplay between strategy and the organization.

5261* Legal Issues in Business. Prerequisite: admission to MBA program or consent of MBA director. Analysis of the basic concepts of public and private law related to business decisions. Overview of the laws affecting private business relationships including employment law, agency laws, and various forms of business organizations.

5303* Strategy and Business Planning. Prerequisite: admission to the MBA program or consent of the director. Examination of issues faced by the general manager in creating and managing a single business firm. Exploration of how different business functions fit together to create a competitive business.

5310 Integrative Decision Making II: Crossing Organizational Boundaries. 2-6 credits, maximum 6. Prerequisites: consent of MBA director and completion of minimum of 24 MBA credit hours. Identification and analysis of environmental forces affecting an organization’s ability to compete and survive. Interaction among all corporate functional units. Development of a comprehensive, integrated plan of action for the firm.

5313* Business Systems Integration. Prerequisite: admission to the MBA program or consent of the director. The structure and processes by which businesses apply and integrate functional expertise to meet business opportunities. Utilization of people, operations, management, technology, and information systems to preserve and continue viable organizations.

5400* Business Practicum. 1-3 credits, maximum 3. Prerequisite: consent of MBA director and completion of 18 MBA credit hours. Application of knowledge and skills developed in MBA functional courses in an organizational environment. Integration of functional concepts, allowing students to experience the adaptation of concepts to fit organizational reality, and assisting students in understanding ways in which their academic training can help organizations.

5500* Interdisciplinary Inquiry in Business Administration. 1-3 credits, maximum 9. Prerequisite: consent of MBA director. Investigation of various business problems using an interdisciplinary approach. Courses team taught to ensure problems viewed from varying functional perspectives.

5990* MBA Applied Business Report. 3-6 credits, maximum 6. Prerequisite: admission to MBA program or consent of MBA director. Independent investigation of a business problem under the direction of a supervising professor.

Mathematics (MATH)

0123 Intermediate Algebra. Prerequisite: one year of high school algebra or equivalent. Review of fundamental operations of algebra, rational expressions, exponents and radicals, linear and quadratic equations, inequalities, introduction to analytic geometry. Does not count for college credit. Graded on a satisfactory-unsatisfactory basis.

1483 (A)Mathematical Functions and Their Uses. Prerequisite: 0123 or placement into 1513. Analysis of functions from their graphs. Linear, exponential, logarithmic, periodic functions and rates of change. Special emphasis on applications to the natural sciences, agriculture, business and the social sciences.

1493 (A)Applications of Modern Mathematics. Prerequisite: 0123 or placement into 1513. Introduction to contemporary applications of discrete mathematics. Topics from management science, statistics, coding and information theory, social choice and decision making, geometry and growth.

1513 (A)College Algebra. Prerequisite: two years of high school algebra or 0123. Quadratic equations, functions and graphs, inequalities, systems of equations, exponential and logarithmic functions, theory of equations, sequences, permutations and combinations. No credit for those with prior credit in 1715 or any mathematics course for which 1513 is a prerequisite.

1613 (A)Trigonometry. Prerequisite: 1513 or equivalent, or concurrent enrollment. Trigonometric functions, logarithms, solution of triangles and applications to physical sciences. No credit for those with prior credit in 1715 or any course for which 1613 is a prerequisite.

1715 (A)College Algebra and Trigonometry. Prerequisites: one unit of high school plane geometry, and 0123 or high school equivalent. An integrated course in college algebra and trigonometry. Combined credit for 1513, 1613, and 1715 limited to six hours. No credit for those with prior credit in any course for which 1613 is a prerequisite. Satisfies the six hour general education Analytical and Quantitative Thought area requirement.

2103 (A)Elementary Calculus. Prerequisite: 1513. An introduction to differential and integral calculus. For students of business and social sciences.

2123 A)Calculus for Technology Programs I. Prerequisites: 1715 or 1513 and 1613. First semester of a terminal sequence in calculus for students in the School of Technology. Functions and graphs, differentiation and integration with applications.

2133 (A)Calculus for Technology Programs II. Prerequisite: 2123. Second semester of a terminal sequence in calculus for students in the School of Technology. Calculus of trigonometric, exponential and logarithmic functions and applications to physical problems.

2145 (A)Calculus I. Prerequisites: 1715, or 1513 and 1613. An introduction to derivatives, integrals and their applications, including introductory analytic geometry. Satisfies the six hour general education Analytical and Quantitative Thought area requirement.

2155 (A)Calculus II. Prerequisite: 2145. A continuation of 2145 including multivariate calculus, series and applications. Satisfies the six hour general education Analytical and Quantitative Thought area requirement.


2653 Discrete Mathematics I. Prerequisite: 1513 or 1715. Logic, set theory proof techniques, probability and combinatorics, relations and functions, matrix algebra, graphs, Boolean algebra and lattices. Same course as COMSC 2653.

2910 Special Studies. 1-3 credits, maximum 6. Prerequisite: consent of instructor. Special subjects in mathematics.

2951 Introduction to Problem Solving. Prerequisite: 2145. An introduction to techniques of problem solving with problems drawn from throughout mathematics.

3013* Linear Algebra. Prerequisite: 2145. Algebra and geometry of finite-dimensional linear spaces, linear transformations, algebra of matrices, eigenvalues and eigenvectors.

3263* Linear Algebra and Differential Equations. Prerequisite: 2155. An integrated treatment of linear algebra and differential equations. No credit for those with credit in 2233 or 3013.

3403* (A)Geometric Structures. Prerequisite: 1483, 1493 or 1513. Fundamentals of plane geometry, geometric motion (translation, rotations, reflections), polyhedra, applications to measurements.

3603* (A)Mathematical Structures. Prerequisite: 1483, 1493 or 1513. Foundations of numbers (set theory, numeration, and the real number system), numbertheory, algebraic systems, functions and applications, and probability.

3613* Introduction to Modern Algebra. Prerequisite: 3013. Introduction to set theory and logic; elementary properties of rings, integral domains, fields and groups.

3653 (A)Discrete Mathematics II. Prerequisite: 2653 or 3613. A continuation of 2653. Algebraic structures, coding theory, finite state machines, machine decomposition, computability, formal language theory. Same course as COMSC 3653.
4013 Consolidated Mathematics. Prerequisites: 2155 and 3013. Differential and integral calculus of functions of several variables, vector analysis, Stokes' Theorem, Green's Theorem, and applications.

4023 Introduction to Modern Analysis. Prerequisites: 2155, recommended 3613. An introduction to the theorems and proofs of one-variable calculus. Properties of the real numbers, sequences and series of constants and functions, limits, continuity, differentiation and integration.

4033 (A)History of Mathematics. Prerequisite: 2145. Early development of mathematics as a science, contributions of Greek mathematics, mathematical advancements of the 17th and 18th centuries, and the mathematics of the 19th and 20th centuries. The emphasis in the course will be on replicating the setting and techniques of the times to understand the nature of a discovery and its relationship to contemporary thought.

4143 Advanced Calculus I. Prerequisites: 3013 and 4023. A rigorous treatment of calculus of one and several variables. Elementary topology of Euclidean spaces, continuity and uniform continuity, differentiation and integration.

4153 Advanced Calculus II. Prerequisite: 4143. Continuation of 4143. A rigorous treatment of sequences and series of functions, uniform convergence, differentiation and integration of vector-valued functions, and differential forms.


4283 Complex Variables. Prerequisite: 4013. Analytic functions, power series, residues and poles, conformal mapping, and applications.

4403 Geometry. Prerequisite: 3013, recommended 3613. An axiomatic development of Euclidean and non-Euclidean geometries.

4513 Numerical Mathematics: Analysis. Prerequisites: 2233, 3013, knowledge of FORTRAN or consent of instructor. Machine computing, algorithms, and analysis of errors applied to interpolation and approximation of functions, solving equations and systems of equations, discrete variable methods for integrals and differential equations. Same course as COMSC 4513.

4663 Combinatorial Mathematics. Prerequisite: 3013. Counting techniques, generating functions, difference equations and recurrence relations, introduction to graph and network theory.

4713 Number Theory. Prerequisite: 3613. Divisibility of integers, congruences, quadratic residues, distribution of primes, continued fractions and the theory of ideals.

4900 Undergraduate Research. 1-4 credits, maximum 4. Prerequisite: consent of instructor. Directed readings and research in mathematics.

4910 Special Studies. 1-3 credits, maximum 9. Prerequisite: consent of instructor. Special subjects in mathematics.

4950 Problem Solving Seminar. 1 credit, maximum 3. Prerequisites: 2233, 3013. The general process of problem solving. Selected problem-solving techniques. Applications to challenging problems from all areas of mathematics.

4993 Senior Honors Thesis. Prerequisites: senior standing and Honors Program participation. A guided reading and research program ending with an honors thesis under the direction of a faculty member and including a public presentation. Required for graduation with departmental honors in mathematics.

5000 Research and Thesis. 1-6 credits, maximum 6. Prerequisite: consent of advisory committee. Directed reading and research culminating in the master's report or master's thesis.

5010 Seminar in Mathematics. 1-3 credits, maximum 12. Prerequisite: consent of instructor. Topics in mathematics.

5013 Modern Algebra II. Prerequisite: 4613. Continuation of 4613. An introduction to the theory of rings, linear transformations and fields.

5023 Advanced Linear Algebra. Prerequisite: 3013. A rigorous treatment of vector spaces, linear transformations, determinants, orthogonal and unitary transformations, canonical forms, bilinear and hermitian forms, and dual spaces.

5113 Intermediate Probability Theory. Prerequisites: 4613; 5013 or 5023. Existence and comparison and singularities.


5213 Fourier Analysis. Prerequisite: 4013 or 4023. Orthogonal series expansions, Fourier series and integrals and boundary value problems. Applications.

5233 Partial Differential Equations. Prerequisite: 4013 or 4233. Classification of second order equations, characteristics, general theory of first order equations, Dirichlet problem for Laplace's equation and Green's functions, eigenvalue problems, and variational methods.

5243 Ordinary Differential Equations I. Prerequisite: 4143; 5013 or 5023. Existence and uniqueness of solutions, linear systems and their asymptotic behavior, oscillation and comparison and singularities.

5253 Ordinary Differential Equations II. Prerequisite: 5243. Stability and asymptotic behavior of systems of nonlinear differential equations, Liapunov Theory, perturbation and the Poincare-Bendixon theory for planar autonomous systems, bifurcation, basins and attractors, chaotic behavior, and invariant tori.

5283 Complex Analysis I. Prerequisite: 4143. Basic topology of the plane, functions of a complex variable, analytic functions, transformations, infinite series, integration and conformal mapping.

5293 Complex Analysis II. Prerequisite: 5283. Riemann Mapping Theorem, meromorphic functions, analytic continuation, Dirichlet problem, and entire functions.

5303 General Topology. Prerequisite: 4143 or consent of instructor. Basic properties of topological spaces and continuous functions, including connectedness, compactness, and separation and countability axioms. Metric, product, and quotient spaces, Urysohn lemma, and Tietze extension theorem.

5313 Geometric Topology. Prerequisites: 4613, 5003. Manifolds, complexes, the fundamental group, covering spaces, combinatorial group theory, the Seifert-Van Kampen theorem, and related topics.

5413 Differential Geometry. Prerequisite: 4013 or 4143. Differentiable manifolds, vector fields, differential forms, connections, Riemannian metrics, geodesics, completeness, curvature, and related topics.

5523 The Calculus of Variations and Optimal Control. Prerequisite: 4023 or 4143. Extrema of integrals depending on unknown functions. Euler conditions, Hamilton-Jacobi equations, Weierstrass E-function, Pontryagin maximum principle, bang-bang controls, feedback, stochastics problems and Kalman-Bucy filter.
5543* Numerical Analysis for Differential Equations. Prerequisites: 4513 or COMSC 4513, and 4233. Advanced machine computing, algorithms, analysis of truncation and rounding errors, convergence and stability applied to discrete variables, finite elements, and spectral methods in ordinary and partial differential equations. Same course as COMSC 5543.

5553* Numerical Analysis for Linear Algebra. Prerequisites: 3013, and 4513 or COMSC 4513. Advanced machine computing, algorithms, analysis of rounding errors, condition, convergence, and stability applied to direct and iterative solution of linear systems of equations, linear least squares problems, and algebraic eigenvalue problems, including LU and QR factorization, conjugate gradients, QR algorithm, and Lanczos method. Same course as COMSC 5553.


5613* Algebra I. Prerequisite: 4613. A rigorous treatment of classical results in group theory and ring theory.

5623* Algebra II. Prerequisite: 5613. A rigorous treatment of classical results in module theory and field theory.

5653* Automata and Finite State Machines. Prerequisites: 3613 or COMSC 5313 or COMSC 5113 and COMSC 5213. Finite state model, state diagrams and flow tables, equivalent states and equivalent machines. Formal grammars, context-free languages and their relation to automata. Turing machines, and recursive function. Same course as COMSC 5653.

5663* Computability and Decidability. Effectiveness, primitive recursive, general recursive, recursive functions, equivalence of computability, definitions-, decidability, recursive algorithms. Same course as COMSC 5663.


6010* Advanced Seminar in Mathematics. 1-3 credits, maximum 12. Prerequisites: consent of instructor and student’s advisory committee. Directed reading on advanced topics in mathematics.


6143* Functional Analysis I. Prerequisites: 4613 or 5023, 5153, 5303. Theory of topological vector spaces including metrizability, consequences of completeness, Banach spaces, weak topologies, and convexity.

6153* Functional Analysis II. Prerequisite: 6143 or consent of instructor. Introduction to and basic results in several subfields of analysis which employ functional analytic methods. Topics from bounded and unbounded operator theory, Banach algebras, distributions, Fourier analysis, and representation theory.

6213* Harmonic Analysis. Prerequisites: 5153, 5283. Classical results giving connections among the size of a harmonic or analytic function on a complex domain, the existence and smoothness of its boundary values, and behavior of the Fourier series; selected extensions, related topics and applications.


6283* Several Complex Variables. Prerequisite: 5283. Elements of function theory of several complex variables, including extension phenomena, domains of holomorphy, notions of convexity, holomorphic maps, and complex analytic varieties.

6290* Topics in Analysis. 1-3 credits, maximum 9. Prerequisite: consent of instructor. Advanced topics in analysis.

6323* Algebraic Topology I. Prerequisite: 5313. Chain complexes, homology and cohomology groups, the Eilenberg-Steenrod axioms, Mayer-Vietoris sequences, universal coefficient theorems, the Eilenberg-Zilber theorem and Künneth formulas, cup and cap products, and duality in manifolds.

6333* Algebraic Topology II. Prerequisite: 6323. Homotopy groups, the Hurewicz and Whitehead theorems, Eilenberg-MacLane spaces, obstruction theory, fibrations, spectral sequences, and related topics.

6390* Topics in Topology. 1-3 credits, maximum 9. Prerequisite: consent of instructor. Advanced topics in topology.

6433* Algebraic Geometry. Prerequisite: 5623. Affine and projective varieties, dimension, algebraic curves, divisors, and Riemann-Roch theorem for curves.

6453* Complex Geometry. Prerequisite: 5283. Complex manifolds, analytic sheaves, differential forms, Dolbeault cohomology, Hodge theory, line bundles, divisors, Kodaira embedding, and vanishing.

6490* Topics in Geometry. 1-3 credits, maximum 9. Prerequisite: consent of instructor. Advanced topics in geometry.

6513* Theoretical Numerical Analysis. Prerequisites: 5153, 5543 or COMSC 5543, and 5553 or COMSC 5553. An advanced theoretical treatment based on function spaces and operator theory of algorithms for machine computing and analysis of errors.

6590* Topics in Applied Mathematics. 1-3 credits, maximum 9. Prerequisite: consent of instructor. Advanced topics in applied mathematics.

6613* Commutative Algebra. Prerequisite: 5623. Commutative rings, exactness properties of modules, tensor products, integral dependence, chain conditions, completions, filtrations, local rings, dimension theory, and flatness.

6623* Homological Algebra. Prerequisite: 5623. Closed and projective classes, resolution and derived functors, adjoint theorem, construction of projective classes in the categories of groups, rings and modules; categories, Abelian categories.

6690* Topics in Algebra. 1-3 credits, maximum 9. Prerequisite: consent of instructor. Advanced topics in algebra.

6713* Analytic Number Theory. Prerequisite: 4283 or 5283. Arithmetic functions, Zeta and L functions, distribution of primes and introduction to modular forms.

6723* Algebraic Number Theory. Prerequisite: 5013 or 5623. Number fields, ideal theory, units, decomposition of primes, quadratic and cyclotomic fields, introduction to local fields.

6790* Topics in Number Theory. 1-3 credits, maximum 9. Prerequisite: consent of instructor. Advanced topics in number theory.

6813* Lie Groups and Representations. Prerequisite: 4153, 4613, 5303. Differentiable manifolds, vector fields, Lie groups, exponential map, homogeneous spaces, representations of compact Lie groups, and maximal tori.


6890* Topics in Representation Theory. 1-3 credits, maximum 9. Prerequisite: consent of instructor. Advanced topics in representation theory.

Mechanical and Aerospace Engineering (MAE)

3033 Engineering Design. Lab 2. Prerequisite: ENGR 1322; corequisite: INDEN 3503. Design methodology and practice. Design process, with emphasis on the broad range of technical, economic, and societal factors considered in design decision making. Designing and building a machine to participate in a design competition.
3043 Mechanics of Machinery. Prerequisites: ENGC 2122, MATH 2233; co-requisite 3403. The kinematics and kinetics of rigid bodies subjected to planar and spatial motion; vector and matrix methods. Euler’s equations to examine gyroscopic motion. The design of gears and gear trains; Analytical design of cam profiles. Multi-degree of freedom machine systems through the application of the Lagrange equation.

3113 Measurements and Instrumentation. Lab 3. Corequisites: 3403, 3723. Application of basic electronic laboratory measurement equipment. Selection and testing of transducers for measurement of displacement, time frequency, velocity, pressure, force, temperature, flow-rate, and vibration, for machine design applications. Considerations of accuracy, uncertainty and repeatability. Design projects involving the use of analog and digital integrated circuits and construction of prototype sensors. Practice in the use of signal processing including digital filtering and applications of Fast Fourier Transform theory. Practice in the use of computer-based data acquisition systems. Preparation of formal reports, including the presentation of plots, figures and tables.

3123 Manufacturing Processes. Prerequisites: ENGC 2142 and ENGC 3313 or equivalent. An introduction to manufacturing processes including the fundamental processes of casting, forging, extrusion, drawing and metal cutting. Quantitative relationships to identify important parameters which influence a given process.

3223 Thermodynamics II. Prerequisite: ENGC 2213. A continuation of ENGC 2213. Irreversibility and availability, power cycles, refrigeration cycle, mixtures and solutions, chemical reactions, phase and chemical equilibrium, and introduction to compressible flow.


3293 Compressible Fluid Flow. Prerequisites: ENGC 2213, 3233, MATH 2233. Gas flows in one and two dimensions. Basic thermodynamic and dynamic equations. Nozzle and duct flows, choking, plane and oblique shock waves, Prandtl-Meyer expansions, rocket propulsion, fractional high-velocity flows and heat addition effects. Two-dimensional ideal fluid flow, stream function, velocity potential, linearized flows and method of characteristics.


3723 Dynamic and MATH 2233. Physical and mathematical modeling of electrical and mechanical dynamic systems. Transient response of first- and second-order systems. Laplace transform technique for solving differential equations; transfer functions, frequency response and resonance.

4010 Mechanical Engineering Projects. 1-6 credits, maximum 6. Lab variable. Prerequisite: consent of instructor. Special projects and independent study in mechanical engineering.

4053* Automatic Control Systems. Prerequisite: 3113. Properties of feedback control systems, mathematical models of basic components, state-variable models of feedback systems, design specifications of control systems, time-domain analysis, stability, stability robustness, trajectory analysis, frequency domain techniques, root-locus, design of single-input-single-output systems and compensation techniques for engineering systems.


4243 Gas Power Systems. Prerequisites: 3223 and ENGC 3233. Power and propulsion engines utilizing a gas as the working fluid. Thermodynamic and dynamic equations of one-dimensional compressible flow, including shock waves. Design and analysis of overall aircraft engine systems and individual components of the aircraft engine, as well as engine component matching, using design software packages. Centrifugal and axial flow turbines and compressors.

4263* Vapor Power Systems. Prerequisites: 3223, 3233. Vapor power cycles, combustion processes applied to power production, power plants, and auxiliary systems associated with power plants. Overall design of power plants as well as component design. Power system economics and loan analysis. Extensive use of software design and analysis packages.

4273 Experimental Fluid Dynamics. Lab 3. Pre-requisites: 3113 and ENGC 3233. Experimental study of basic and applied fluid dynamics systems with comparisons to analytical predications. Fluid dynamics instrumentation, digital data acquisition and processing, design of facilities and experiments, technical report writing and design project with experimental verification.


4323 Design for Manufacturing. Lab 3. Prerequisite: 3123. Integration of concepts of product design with manufacturing principles, including behavior and properties of material, stress analysis, heat transfer and lubrication. Processing techniques and economics. Emphasis on analysis requirements and applications of processing parameters and design variables, in CAD/CAM.

4333 Mechanical Metallurgy. Lab 2. Prerequisite: ENGC 3313. Mechanical deformation processes and strengthening mechanisms in engineering materials. Material failure modes including creep, fatigue, stress corrosion, ductile and brittle fractures.

4344 Design Projects. Lab 4. Prerequisites: 3033, 3113, 3323. Students work in small teams on a semester-long design project sponsored by a company, agency, or individual. Team members work with mentors from sponsors and with faculty members in fields related to their topics. Presentations on safety, patent law, product liability, report writing, oral presentations, scheduled and ideally, oral presentations, progress reports, and a professional log book documenting personal activity and contributions.

4353* Mechanical Design II. Prerequisites: 3033, 3123 or 4333, 3323. Design of power transmission systems, including belts, chains and gears. Selection and application of hydraulic and pneumatic components in machine design applications. Selection of electric motors, actuators, encoders, and related electromechanical components. Design practice in the form of short projects integrating segments of the course.

4363* Experimental Methods in Design. Lab 6. Prerequisites: 3113 and 3323. Laboratory techniques for the experimental analysis of vibration, stress, force and motion. Projects involve the use of strain gages, brittle lacquer techniques, reflection and transmission polariscopes, load cells and accelerometers.
4374* Aerospace Systems Design. Lab 4. Prerequisites: senior standing and consent of instructor. Multidisciplinary conceptual and early preliminary design of aerospace systems. Prediction of all systems characteristics. Students work in small teams on a semester-long design project sponsored by a company, agency, or individual. Team members 3 work with mentors from sponsors and with faculty members in fields related to their topics.

4401 Seminar. Prerequisite: senior standing. Group discussions on professional aspects of engineering including ethics and legal concerns. Preparation of written and oral reports on selected and assigned topics.

4513* Aerodynamics I. Prerequisite: MATH 3323. Design and analysis of flight structures. Topics from two and three-dimensional elasticity. Behavior of composite materials. Stress and deformation analysis of thin-skinned stiffened structures. Introduction to the finite element method and its applicability in the design process.

4703* Design of Indoor Environmental Systems. Prerequisites: MATH 3323, 3323. Design of heating, ventilating and air conditioning systems. Calculation of heating and cooling loads.

4733* Dynamic Systems Design. Prerequisites: 3223, 3223. Theory and design of dynamic engineering systems, formulation of design specifications, characterization and selection of components for dynamic engineering systems including sensors and actuator elements, considerations of passive, active, open-loop and closed-loop solutions. Use of microprocessors and microcontrollers as part of dynamic engineering systems, design practice with open-ended design projects integrating the various components of the course.

5000* Thesis. 1-6 credits, maximum 6. A student studying for a master's degree who elects to write a thesis must enroll in this course.

5010 Mechanical Engineering Projects. 1-12 credits. maximum 12. Project in research or design selected by the student, or assigned by the instructor. A student who wishes to complete a master's degree under Plan III must enroll in this course.

5030* Engineering Practice. 1-12 credits, maximum 12. Prerequisites: senior or graduate standing and consent of instructor. Solution of real-life engineering problems and development problems in actual or simulated industrial environment. Activities include application of design and testing procedures, economic evaluation and periodic oral and written reporting on one or more assigned problems. Activities must be approved in advance by the adviser.

5043* Advanced Dynamics. Prerequisites: 3043, MATH 3013. Advanced treatment of analytical methods for rigid body motion with emphasis on multi-dimensional motion. Newtonian formulations, LaGrange's equations, Euler's equations, the Poinscot construction, Hamilton's equations. Canonical transformations, spin stabilization, the rotation matrix, and Kane's formulation. Applications to engineering problems.

5073* Advanced Mechanical Vibrations. Prerequisite: 4063 or consent of instructor. Analysis of nonlinear vibrations, classical analysis of continuous systems and numerical methods.
5533* Analysis of Structural Systems. Prerequisite: 5323. Computer-oriented matrix methods in the analysis of linear structural systems; energy principles; matrix equations for static and dynamic analyses of elastic systems; stability.


5553* Fatigue and Fracture Mechanics. Prerequisite: 4333 or consent of instructor. Fracture processes in engineering materials including design considerations, failure avoidance and predictability. Fatigue processes and high-strength, toughness-limited materials. Same course as CIVEN 5533.


5583* Corrosion Engineering. Lab 2. Prerequisite: ENGSC 3313. Modern theory of corrosion and its applications in preventing or controlling corrosion damage economically and safely in service.

5633* Applied Thermodynamics. First and Second Law analysis. Prediction of properties of non-ideal fluids, including mixtures. Engineering applications to power system design, solar systems, HVAC systems, waste heat recovery and underground petroleum reservoirs.

5723* Nonlinear Systems Analysis I. Prerequisite: 4053 or ECEN 4413. Failure of superposition; phase plane and phase space techniques; method of perturbations; asymptotic, orbital and structural stability; subharmonic generation; generalized approaches to nonlinear systems analysis.


5773* Fuzzy Systems Theory and Application. Prerequisite: 5723 or ECEN 5723. Fuzzy set theory: basic definitions, operations with fuzzy sets and fuzzy relations; extension principle; fuzzy functions; possibility theory; fuzzy systems; fuzzy models and system identification; approximate reasoning; fuzzy control and stability of fuzzy systems; fuzzy neural networks. Same course as ECE 5773.

5803* Advanced Thermodynamics I. Prerequisite: 3223. A rigorous examination of the fundamental principles of engineering thermodynamics; the First Law, the pure substance, flow processes, Second Law availability, properties of substances, thermochemistry, mixtures and equilibrium.

5823* Radiation Heat Transfer. The mechanism of the transfer of energy by thermal radiation; radiant properties of materials, energy transfer prediction methods and solar energy topics.

5843* Conduction Heat Transfer. Prerequisite: 3223. Advanced heat transfer analysis and design, with primary emphasis on conduction.

5853* Computational Heat Transfer. Prerequisite: 3223, graduate standing, knowledge of FORTRAN, ORC or equivalent. Principles of numerical analysis for the resolution of two-dimensional heat transfer, fluid flow and related processes in problems of practical interest. A general-purpose computer program used to demonstrate the capabilities of the numerical method through a wide variety of engineering problems.

5873* Advanced Indoor Environmental System. Prerequisite: 4703. Heating, cooling, and ventilating systems. System component design, building thermal simulation and energy calculation procedures.

5913* Ideal-fluid Aerodynamics. Prerequisites: 3253 and knowledge of FORTRAN, or consent of instructor. Principles of inviscid, incompressible flow. Small disturbance theory for flow about airfoils and wings. Two and three dimensional panel methods. Introduction to unsteady and compressibility effects.

5923* Guidance and Control of Aerospace Vehicles. Prerequisite: 4053 or ECEN 4413 or equivalent. Navigation, guidance and attitude control of aircraft, launch vehicles and spacecraft. Inertial navigation; mechanization and error analysis. Stability augmentation systems.

5933* Aeroelasticity. Prerequisites: 4063, 4283. Interaction between aerodynamic, inertial and elastic forces. Influence coefficients of modern wings. Calculations of the normal modes and frequencies of flexible airplane and missile structures. Deformations of structures under dynamic loads by rigorous and approximate methods of analysis.

6000* Research and Thesis. 1-15 credits, maximum 30. Prerequisites: consent of the head or the graduate committee of the School and approval by the student's advisory committee. Independent research under the direct supervision of a member of the graduate faculty. For students pursuing study beyond the level of the M.S. degree.

6010* Advanced Study. 1-12 credits. Prerequisite: approval of the graduate committee of the School. Study and investigation under the supervision of a member of the faculty along lines of interest well advanced of and supported by the 5000-series courses.


6123* Non-traditional Machining. Prerequisite: consent of instructor. Rationale for non-traditional machining; various non-traditional machining processes including electro-discharge machining, electro-chemical machining, plasma arc, microwave, and laser assisted processing, waterjet (abrasive) cutting, ultrasonic machining, chemical machining, thermal assisted processing, and electron beam machining.

6133* Surface Mechanics. Prerequisite: consent of instructor. Models and solutions basic to surface studies. Equations of continuum mechanics, thermal field solutions at sliding interfaces, elasticity, plasticity. Applications of solution techniques to surface, surface layer and interface phenomena.

6233* Turbulent Fluid Dynamics. Prerequisite: 5233. Isotropic turbulence, turbulent wakes and jets, bound turbulent shear flows, transition, hydrodynamic stability and integral calculation methods for turbulent boundary layers.

6263* Computational Fluid Dynamics. Prerequisite: 5233. Steam function-vorticity and pressure-velocity simulations of incompressible and compressible flows. Temperature and concentration solutions. Applications to various external and internal flow problems.

6483* Automatic Control II. Prerequisite: 5473 or ECEN 5413. Methods of formulation and solution of engineering system control problems based on optimal dynamic behavior, advanced techniques for model identification, computational solution of dynamic optimization problems. Applications include mechanical, electrical, fluid and thermal systems.

6563* Advanced Solid Mechanics. General nonlinear problems of elasticity including thermal, dynamic and anisotropy effects; stress wave propagation; consideration of plasticity.

6823* Advanced Radiative Transfer. Prerequisite: 5823. Radiative energy transfer within participating media and among real surfaces. Anisotropic scattering, emission, refractive index effects and wave-leak analysis. Current solution techniques-approximate and exact. Relationship of electric fields to radiative transfer. Combined radiation with conduction and/or convection. A project concerned with a unique radiative transfer problem.

6843* Convection Heat Transfer. Prerequisite: 5233 or equivalent. Advanced convective heat transfer in laminar and turbulent flows over external surfaces and inside channels. Heat transfer at high velocities, free convection boundary layers, and mass transfer.

Mechanical Engineering Technology (MET)

1103 Power Technology Orientation. Lab 2. Introduction to mechanical power, analytical techniques and data presentation used in the evaluation of prime movers.


2103 Industrial Materials. Lab 3. Prerequisite: CHEM 1314/A. A survey of the properties, characteristics and applications of metals, polymers, ceramics and other industrial materials. Terminology, concepts and principles involved in material selection, specification and processing. Laboratory activities include data collection and report generation, determination of material properties, and evaluation of material characteristics.
2213 Machine Drafting. Lab 6. Prerequisites: 1223, GENT 1153. Detail and assembly drawings of machines and products using drafting machines and computer-aided drafting techniques.


3003 Dynamics. Prerequisites: GENT 2323 and MATH 2123. Plane motion of particles and rigid bodies. Force-acceleration, work-energy, and impulse-momentum principles. Graphical analysis, mechanisms and vibrations.

3113 Basic Instrumentation. Lab 2. Prerequisites: GENT 2323, MATH 2123. Data analysis. Theory, operational characteristics and application of transducers for measurement of strain, force, velocity, acceleration, displacement, time, frequency, temperature, pressure, fluid flow.

3313 Applied Fluid Mechanics. Prerequisites: 2313, MATH 2123, and PHYSC 1214. Fluid mechanical principles applied to fluid power systems and general fluid systems. Fluid system analysis using Bernoulli and general energy equations, laminar and turbulent flows, flow and pressure measurement, flow forces, lift and drag.


3343 Physical Metallurgy. Lab 3. Prerequisite: 1223 and CHEM 1314. Analysis and evaluation of the properties of metals commonly used in product design. Property change caused by hot and cold work, and by heat treatment. Laboratory activities including metallurgical specimen preparation, inspection and testing; and standard tests of tensile properties, hardness, toughness.

3413 Fundamentals of Pneumatic Fluid Power. Lab 2. Prerequisites: 2313, ECT 1003, MATH 1513. Basic pneumatics concepts, gas laws, component design and application, system design considerations. Air logic.

3503 Gas Turbines for Non-majors. Lab 2. Prerequisite: MATH 1513 or MATH 1715. Non-analytical, descriptive treatment of the operation of gas turbine engines including accessories and systems. Lab requires student participation in engines disassembly, inspection and reassembly. Field trips to engine overhaul and repair facilities.

3573 Advanced Production Processes. Lab 3. Prerequisites: 1223, 2103, GENT 1153, MATH 1513. Advanced manufacturing and production processes including polymers and plastics, powder metallurgy, foundry, welding and metal forming. Design for assembly (DFA) and design for manufacture (DFM).

4003 Machine Design I. Prerequisites: 3323, COMSC 2113, and MATH 2133. Applications of statics and strength to the design of machine components. Problems of choosing materials, impact and fatigue loading.


4123 Senior Design Projects. Lab 6. Prerequisites: MATH 2133 and junior standing. Design problems in designing principles of drafting, analysis, and manufacturing. Design projects are typically supplied by industry.

4203 Machine Design II. Lab 6. Prerequisites: 3323, COMSC 2113, and MATH 2133. Design of machine components such as gears, bearings, fasteners, springs, and weldments.

4213 Kinematics and Mechanisms. Prerequisites: 1223, 3003, COMSC 2113, MATH 2133. Analysis and design of mechanisms such as the 4-bar linkage, slidercrank, cam and gear. Graphical and computer techniques.

4303 Computer Integrated Manufacturing. Prerequisite: MATH 2133. Introduction to programming techniques and manufacturing applications of computer numerical control (CNC) and robotics. Machine capabilities and tooling requirements with programs being prepared manually and with COMPACT II computer assistance.

4313 Fluid Power Controls. Lab 2. Prerequisites: 3313, ECT 3103. Principles of electronics as applied to fluid power controls. Trends in modern fluid power systems. Solenoid systems, proportional control, servosystems, programmable controllers, and robotics. Lab includes design, fabrication and operation of practical systems.


4463 Thermal Fluids Laboratory. Lab 3. Prerequisites: GENT 3433, GENT 4433. Laboratory and industrial observation and analysis of thermal science applications including heat transfer, heat engines, and heat pumps.

4883 Tool Design. Lab 3. Prerequisite: 2213, 3343. Basic design and development of special tools for processing or manufacturing engineering materials. Design and specification and inspection tools using appropriate techniques of engineering graphics and analysis.

5413 Introduction to Engineering in Agriculture. Prerequisite: MATH 1513 or concurrent enrollment. Application of the physical and engineering sciences to agricultural problems. Energy; energy conversion; thermal, electrical, mechanical and fluid systems; equipment calibration; environmental control of agriculture buildings and irrigation system requirements.

5313 Surveying. Lab 3. Prerequisite: MATH 1613. A study of the equipment and practices used in surveying for small areas. Common practices of plane surveying: differential, profile, and topographic leveling; field notes, accuracy and precision, error and error control, and land measurement.


3211 Engines and Power. Lab 4. Prerequisites: 1413, MATH 1513. Performance and diagnostics of internal combustion engines for mobile applications.

3223 Metals and Welding. Lab 3. Prerequisite: 1413. Essential knowledge and theory necessary for understanding the principles of hot and cold metals and welding. Laboratory provides opportunity to apply and develop associated skills.

3311 Surveying. Lab 4. Prerequisites: 1413, MATH 1513. Use of surveying equipment and common applications in agriculture.

3321 Erosion Control Practices. Lab 4. Prerequisites: MATH 1513 and concurrent enrollment in MECAG 3511. Analysis, planning and management of soil and water resources.

4101 Agricultural Electrification. Lab 4. Prerequisite: 1413, MATH 1513. A study of electrical theory and electrical applications in agricultural environments.

4123 Principles of Food Engineering. Prerequisite: MATH 1513. For non-engineers. Application of the engineering approach to solving heat and mass transfer problems in food processing. An introduction to the basic concepts of the conservation laws, fluid flow, heat transfer, refrigeration, freezing, psychrometrics, and energy conservation.

4200* Topics in Mechanized Agriculture. 1-4 credits, maximum 4. Investigations in specialized areas of mechanized agriculture.

4203* Irrigation Principles. Prerequisite: MATH 1513. Sources, measurement and efficient use of irrigation water. Selection of pumping plants and power units. Layout and management of surface and sprinkler systems.

4211 Machinery Calibration. Lab 4. Prerequisites: 1413, MATH 1513. Analysis of the metering function, calibration, and management of agricultural planting, fertilizing, and pesticide application equipment.

4212 Safety and Health in Agribusiness. Lab 2. Prerequisite: junior standing or above. Study of the causes and prevention of accidents in agribusiness. Investigations including the acute and chronic risks of machinery, animals, gases, confined spaces, outdoor and hazardous materials.

4220* Advanced Methods in Agricultural Mechanics. 1-6 credits, maximum 6. Prerequisite: 4222. Development of computer numerical control programs for vocational agriculture and technical schools. Application of agricultural mechanics methods, practices and skills to advanced projects.
Medical Technology (MTCL)

4117 Clinical Microbiology. Lab 12. Prerequisites: concurrent internship in affiliated hospital, and all degree requirements for B.S. in medical technology except 30 hours MTCL. The theory and laboratory study of pathogenic bacteria, viruses, rickettsiae, fungi, and parasites. Includes isolation, identification, antimicrobial susceptibility testing, and medical significance.

4215 Clinical Chemistry I. Lab 9. Prerequisites: concurrent internship in affiliated hospital, and all degree requirements for B.S. in medical technology except 30 hours MTCL. The theory and laboratory methodology of analytical biochemistry, clinical microbiology, routine and special procedures, and medical significance.

4236 Clinical Hematology. Lab 12. Prerequisites: concurrent internship in affiliated hospital, and all degree requirements for B.S. in medical technology except 30 hours MTCL. Systematized study of diseases, cell maturation and function, principles of hemostasis; methodology used in routine and special hematology studies; and correlation of hematological findings with physiological conditions.

4246 Clinical Immunology. Lab 12. Prerequisites: concurrent internship in affiliated hospital, and all degree requirements for B.S. in medical technology except 30 hours MTCL. Immunologic responses and procedures used in serologic determinations; immunohematology, fundamentals of antigen-antibody reactions, blood groups and types, compatibility testing, blood components, and the lab methods used as they relate to the medical significance of immunology and infectious diseases.

4325 Clinical Chemistry II. Lab 9. Prerequisites: concurrent internship in affiliated hospital, and all degree requirements for B.S. in medical technology except 30 hours MTCL. The theory and laboratory methodology of analytical biochemistry, instrumentation, lab mathematics, routine and special procedures and medical significance.

4351 Topics in Medical Technology. Prerequisites: concurrent internship in affiliated hospital, and all degree requirements for B.S. in medical technology except 30 hours MTCL. Principles and practices of the medical laboratory including basic management, quality assurance, education methodology, computer applications, laboratory safety, and special projects in selected areas.

Microbiology (MICRO)

1513 (L,N) Inquiry-Based Biology. Lab 3. Prerequisites: PHYS 1313, CHEM 1413, and GEOL 1614 recommended. Directed inquiry and hands on study of biological principles. Recommended for elementary education majors as model course to learn and teach science.

2124 Introduction to Microbiology. Lab 4. Prerequisites: one semester of chemistry; and BIOL 1604, and 1403 or 1604. General principles of microbiology.

3143 Medical Mycology. Lab 4. Prerequisite: 2124. Examination of fungi as animal pathogens; laboratory techniques used in the identification of human and animal pathogens, and differentiation from common contaminants.

3153 Medical Parasitology. Lab 2. Prerequisite: introductory biology. Human and parasitological problems including endemic, exotic and zoonotic organisms. Life cycles, diagnosis and control procedures. Principles applicable to all areas of zoology, medicine, veterinary medicine and medical technology.

3154* Food Microbiology. Lab 4. Prerequisites: 2124 and organic chemistry. Relationship of microorganisms to food manufacture and preservation, to food spoilage and microbial food poisoning and to various aspects of primary food production. Same course as ANS 3154.


3254* Immunology. Lab 3. Prerequisite: 2124. Vor-tebrate host's ability to defend itself against foreign invasion. Chemistry and biology of the acquired immune response. Same course as CLMOL 3254.

4000 Honors in Microbiology. 1-4 credits, maximum 4. Prerequisite: consent of department honors committee. Supervised study and research in microbiology.

4001 Professional Transitions in Microbiology and Molecular Biology. Prerequisites: declared microbiology or cell and molecular biology major with minimum 70 hours earned and consent of instructor. Understanding major areas and employment activities in microbiology, cell biology, and molecular biology fields. Examining scientific and professional literature, and making the transition from undergraduate education to postgraduate education or employment. Same course as CLMOL 4001.

4113 Microbiology of Soil. Lab 6. Prerequisite: 2124. Microorganisms of the soil and their relationship to soil fertility.

4123* Virology. Prerequisites: BIOL 3014 or one course in biochemistry. Corequisite: 3224. Virus-host interactions including structure-function of animal, plant and bacterial viruses. Discussion of the molecular biology of virus infection and development. Same course as CLMOL 4123.
Microbiology

Graded on a pass-fail basis. Completion of course MILSC 2122 qualifies a Basic Training. No military obligation incurred. A six-week summer camp similar to Army basic ROTC and who pass physical examina-
tion. Only to students who have not completed all of Camp Challenge.

Introduction to Leadership. Optional weekend exercise. Concur-
ting in MILSC 1000 recommended. Operation leading, communication skills, and leadership. Fundamentals of lead-
s in basic drill, physical fitness, rappelling, leadership Corps (ROTC).

Introduction to Reserve Officers' Train-
ing individual small unit tactics.

Organization, land navigation, individual first aid, indi-
vidual training in small unit tactics. Computer tactical

Military Science (MILSC)

1000 Leadership Laboratory. 1 credit, maximum 2. Lab 2. Prerequisites: concurrent enrollment in 1112 and 1212. Learning and practicing basic skills such as rappelling, drill and cer-
emony, land navigation, individual first aid, indi-
vidual training in small unit tactics.

1112 Introduction to Reserve Officers' Training Corps (ROTC) Team study and activities in basic drill, physical lead-
L Laboratory. 1 credit, maximum 2. Lab 2. Prerequisites: concurrent enrollment in 1112 and 1232. Learning and practicing basic skills such as rappelling, drill and cer-
emony, land navigation, individual first aid, indi-
vidual training in small unit tactics.

2122 Camp Challenge. Lab 4. Prerequisites: Open only to students who have not completed all of basic ROTC and who pass physical examina-
tion. A six-week summer camp similar to Army Basic Training. No military obligation incurred. Completion of course MILSC 2122 qualifies a student for entry into the Advanced Course. Graded on a pass-fail basis.

2130 Military Physical Conditioning. 1 credit, maximum 2. Lab 3. Prerequisite: must be enrolled in MILSC theory classes. Participation in and learning to plan and lead a physical fitness program. Development of an individual fitness program and the role of exercise and fitness in person's life.

2233 Self and Team Development. Lab 2. Ethics-based leadership skills that develop indi-
vidual abilities and contribute to the building of effective teams. Skills in oral presentation, writ-
ing, planning, coordinating groups, land navi-
gation and basic military tactics.

2313 Individual and Team Military Tactics. Lab 2. Prerequisite: 2233. Individual and team aspects of military tactics in small unit opera-
tions. Safety assessment, movement techni-
quies, planning for team safety and security and methods of pre-execution checks. Train-
ing techniques for continued leadership devel-
opment.

3113 Leading Small Organizations I. Lab 2. Prerequisites: completion of lower-division MILSC or equivalent, and approval of professor of military science. Practical opportunities to lead small groups in situations of increasing com-
plexity receiving personal assessments and en-
couragement. Use of small unit defensive tact-
cies and opportunities to plan and conduct training for lower-division students both to de-
velop such skills and as vehicles for practicing leading.

3223 Leading Small Organizations II. Lab 2. Prerequisite: 3113. Analysis of tasks; prepara-
tion of written or oral guidance for team mem-
biers to accomplish tasks. Delegating tasks and supervising. Planning and adapting to the un-
expected in organizations under stress. Exam-
ination of lessons from leadership case studies. Examination of importance of ethical decision making in setting a positive climate that enhances team performance.

4014 Reserve Officers' Training Corps (ROTC) Advanced Camp. Lab 8. Prerequisites: 3113 and 3223. A six-week camp conducted at an Army post. Individual leadership and basic skills performance. Graded on a pass-fail basis.

4123 Leadership Challenge and Goal-Setting. Lab 2. Prerequisites: 3113 and 3223. Planning, conducting and evaluating activities of the ROTC cadet organization. Articulating goals, putting plans into action to attain them. Assessing organizational cohesion and developing strat-
egies to improve it. Developing confidence in skills to lead people and manage resources.

4223 Military Ethics, Justice and Professional-
ism. Lab 2. Prerequisites: 3113 and 3223. Continuation of the methodology from MILSC 4123. Identification and resolution of ethical dilemmas. Refining counseling and motivating techniques. Examination of aspects of tradition and law as related to leading as an officer in the Army.

4422 The Tactical Planning Process. Prerequi-
site: ROTC advanced course status or consent of department head. The tactical planning pro-
cess and its components. Computer tactical simulations used to organize and synchronize the process.

Music (MUSIC)

0501 Concert and Recital Attendance. Gradu-
atation requirement for music degree or certifi-
cate candidates.


1011 Piano Class Lessons. For students with no previous experience.

1021 Piano Class Lessons.

1031 Voice Class Lessons.

1041 Voice Class Lessons.

1051 Organ Class Lessons.

1071 Single Reed Techniques. Lab 2. Methods for playing and teaching the clarinet and saxo-
phone.

1081 Double Reed Techniques. Lab 2. Methods for playing and teaching the oboe and bass-
oon.

1100 Secondary Harpsichord. 1-2 credits, maximum 8.

1110 Elective Organ. 1-4 credits, maximum 8.

1120 Elective Piano. 1-4 credits, maximum 8.

1130 Elective Voice. 1-4 credits, maximum 8.

1140 Elective Brass. 1-4 credits, maximum 8.

1150 Elective Strings. 1-4 credits, maximum 8.

1160 Elective Woodwinds. 1-4 credits, maximum 8.

1170 Elective Percussion. 1-4 credits, maximum 8.

1180 Secondary Organ. 1-2 credits, maximum 8.

1190 Secondary Piano. 1-2 credits, maximum 8.

1200 Secondary Voice. 1-2 credits, maximum 8.

1210 Secondary Brass. 1-4 credits, maximum 8.

1220 Secondary String. 1-2 credits, maximum 8.

1230 Secondary Woodwind. 1-2 credits, maximum 8.

1240 Secondary Percussion. 1-2 credits, maximum 8.

1250 Major Organ. 1-4 credits, maximum 8.
1260 Major Piano. 1-4 credits, maximum 8.
1270 Major Voice. 1-4 credits, maximum 8.
1280 Major Violin. 1-4 credits, maximum 8.
1290 Major Viola. 1-4 credits, maximum 8.
1300 Major Cello. 1-4 credits, maximum 8.
1310 Major Double Bass. 1-4 credits, maximum 8.
1320 Major Guitar. 1-4 credits, maximum 8.
1330 Major Harp. 1-4 credits, maximum 8.
1340 Major Viola. 1-4 credits, maximum 8.
1350 Major Oboe. 1-4 credits, maximum 8.
1360 Major Clarinet. 1-4 credits, maximum 8.
1370 Major Saxophone. 1-4 credits, maximum 8.
1380 Major Bassoon. 1-4 credits, maximum 8.
1390 Major Trumpet. 1-4 credits, maximum 8.
1400 Major French Horn. 1-4 credits, maximum 8.
1410 Major Trombone. 1-4 credits, maximum 8.
1420 Major Euphonium. 1-4 credits, maximum 8.
1430 Major Tuba. 1-4 credits, maximum 8.
1440 Major Percussion. 1-4 credits, maximum 8.
1450 Major Harpsichord. 1-4 credits, maximum 8.

1513 Music Literature. Music of the Baroque, Classical, Romantic, and Contemporary periods, with emphasis on style analysis.

1531 Sightsinging and Eartraining I. Prerequisite: 2672 or successful completion of Music Theory Placement Examination. Development of skills in sight-singing and aural perception. Taken concurrently with MUSIC 1531.

1533 Theory of Music I. Prerequisite: Successful completion of Music Theory Placement Examination. Choral and instrumental writing correlated with keyboard skills. Taken concurrently with MUSIC 1531.

1543 Theory of Music II. Prerequisites: 1531 and 1533. A continuation of 1531. Taken concurrently with 1541.


2011 Piano Class Lessons. Prerequisites: 1021 and music major status. Class lessons for music majors (non-keyboard concentration) preparing for the piano proficiency examination.

2021 Piano Class Lessons. Prerequisites: 2011 and music major status. Successful completion of the course fulfills piano proficiency examination requirement for music majors (non-keyboard concentration).


2061 Low String Techniques. Lab 2. Methods for playing and teaching the cello and double bass.


2091 Low Brass Techniques. Lab 2. Methods for playing and teaching the trombone, euphonium, and tuba.

2250 Major Organ. 1-6 credits, maximum 12. Prerequisite: 1250.

2260 Major Piano. 1-6 credits, maximum 12. Prerequisite: 1260.

2270 Major Voice. 1-6 credits, maximum 12. Prerequisite: 1270.

2280 Major Violin. 1-6 credits, maximum 12. Prerequisite: 1280.

2290 Major Viola. 1-6 credits, maximum 12. Prerequisite: 1290.

2300 Major Cello. 1-6 credits, maximum 12. Prerequisite: 1300.

2310 Major Double Bass. 1-6 credits, maximum 12. Prerequisite: 1310.

2320 Major Guitar. 1-6 credits, maximum 12. Prerequisite: 1320.

2330 Major Harp. 1-6 credits, maximum 12. Prerequisite: 1330.

2340 Major Flute. 1-6 credits, maximum 12. Prerequisite: 1340.

2350 Major Oboe. 1-6 credits, maximum 12. Prerequisite: 1350.

2360 Major Clarinet. 1-6 credits, maximum 12. Prerequisite: 1360.

2370 Major Saxophone. 1-6 credits, maximum 12. Prerequisite: 1370.

2380 Major Bassoon. 1-6 credits, maximum 12. Prerequisite: 1380.

2390 Major Trumpet. 1-6 credits, maximum 12. Prerequisite: 1390.

2400 Major French Horn. 1-4 credits, maximum 8. Prerequisite: 1400.

2410 Major Trombone. 1-6 credits, maximum 12. Prerequisite: 1410.

2420 Major Euphonium. 1-4 credits, maximum 8. Prerequisite: 1420.

2430 Major Tuba. 1-6 credits, maximum 12. Prerequisite: 1430.

2440 Major Percussion. 1-6 credits, maximum 12. Prerequisite: 1440.

2450 Major Harpsichord. 1-4 credits, maximum 8.

2551 Sightsinging and Eartraining III. Prerequisites: 1541 and 1543. Further development of skills in sight-singing and aural perception. Taken concurrently with 2553.

2553 Theory of Music III. Lab 1/2. Prerequisites: 1541 and 1543. Choral and instrumental writing correlated with sight-singing, melodic and harmonic dictation and keyboard skills. Taken concurrently with 2551.

2561 Sightsinging and Eartraining IV. Prerequisites: 2551 and 2553. A continuation of 2551. Taken concurrently with 2563.

2563 Theory of Music IV. Lab 1/2. Prerequisites: 2551 and 2553. A continuation of 2553. Taken concurrently with 2561.

2573 (H)Introduction to Music. Instruments, musical forms and styles, and major composers from the 16th century to the present. For non-majors; no prior musical experience required.
Elective String. 1-4 credits, maximum 8. Prerequisite: 1150.

Elective Woodwind. 1-4 credits, maximum 8. Prerequisite: 1160.

Elective Percussion. 1-4 credits, maximum 8. Prerequisite: 1170.

Secondary Organ. 1-2 credits, maximum 8. Prerequisite: 1180.

Secondary Piano. 1-2 credits, maximum 8. Prerequisite: 1190.

Secondary Voice. 1-2 credits, maximum 8. Prerequisite: 1200.

Secondary Brass. 1-2 credits, maximum 8. Prerequisite: 1210.

Secondary String. 1-2 credits, maximum 8. Prerequisite: 1220.

Secondary Woodwind. 1-2 credits, maximum 8. Prerequisite: 1230.

Secondary Percussion. 1-2 credits, maximum 8. Prerequisite: 1240.

Secondary Woodwind. 1-2 credits, maximum 8. Prerequisite: 1250.

Major Organ. 1-4 credits, maximum 8. Prerequisites: upper-division examination, 2250.

Major Piano. 1-4 credits, maximum 8. Prerequisites: upper-division examination, 2260.

Major Voice. 1-4 credits, maximum 8. Prerequisites: upper-division examination, 2270.

Major Violin. 1-4 credits, maximum 8. Prerequisites: upper-division examination, 2280.

Major Cello. 1-4 credits, maximum 8. Prerequisites: upper-division examination, 2290.

Major Harp. 1-4 credits, maximum 8. Prerequisites: senior music major status.

Major Trombone. 1-4 credits, maximum 8. Prerequisites: upper-division examination, 2310.

Major Trumpet. 1-4 credits, maximum 8. Prerequisites: upper-division examination, 2320.

Major French Horn. 1-4 credits, maximum 8. Prerequisites: upper-division examination, 2330.

Major Euphonium. 1-4 credits, maximum 8. Prerequisites: upper-division examination, 2340.

Major Tuba. 1-4 credits, maximum 8. Prerequisites: upper-division examination, 2350.

Major Organ. 1-6 credits, maximum 12. Prerequisites: 3250 and successful completion of recital attendance requirements.

Major Piano. 1-6 credits, maximum 12. Prerequisites: 3260 and successful completion of recital attendance requirements.

Major Cello. 1-6 credits, maximum 12. Prerequisites: 3270 and successful completion of recital attendance requirements.

Major Harp. 1-6 credits, maximum 12. Prerequisites: 3280 and successful completion of recital attendance requirements.

Piano Class Lessons. Prerequisite: senior music major status.

Marching Band Methods. Prerequisite: 3731. Organizational responsibilities and charting for public school marching bands.

Junior Recital. Prerequisite: junior standing and consent of major applied music teacher.

Piano Class Lessons. Prerequisite: senior music major status.

Solo Literature for the Adolescent Singer. Examination of solo literature and pedagogical approaches suitable for use at the high school level.

Music Industry Internship. 1-6 credits, maximum 12. Prerequisites: 90 credit hours and minimum 2.50 GPA in all music and business courses. Directed practical experiences in an approved retail store or in a work situation related to the music industry.

Major Organ. 1-6 credits, maximum 12. Prerequisites: 3250 and successful completion of recital attendance requirements.

Major Piano. 1-6 credits, maximum 12. Prerequisites: 3260 and successful completion of recital attendance requirements.

Major Voice. 1-6 credits, maximum 12. Prerequisites: 3270 and successful completion of recital attendance requirements.

Major Violin. 1-6 credits, maximum 12. Prerequisites: 3280 and successful completion of recital attendance requirements.
4300 Major Cello. 1-6 credits, maximum 12. Prerequisites: 3300 and successful completion of recital attendance requirements.

4310 Major Double Bass. 1-6 credits, maximum 12. Prerequisites: 3310 and successful completion of recital attendance requirements.

4320 Major Guitar. 1-6 credits, maximum 12. Prerequisites: 3320 and successful completion of recital attendance requirements.

4330 Major Harp. 1-6 credits, maximum 12. Prerequisites: 3330 and successful completion of recital attendance requirements.

4340 Major Flute. 1-6 credits, maximum 12. Prerequisites: 3340 and successful completion of recital attendance requirements.

4350 Major Oboe. 1-6 credits, maximum 12. Prerequisites: 3350 and successful completion of recital attendance requirements.

4360 Major Clarinet. 1-6 credits, maximum 12. Prerequisites: 3360 and successful completion of recital attendance requirements.

4370 Major Saxophone. 1-6 credits, maximum 12. Prerequisites: 3370 and successful completion of recital attendance requirements.

4380 Major Bassoon. 1-6 credits, maximum 12. Prerequisites: 3380 and successful completion of recital attendance requirements.

4390 Major Trumpet. 1-6 credits, maximum 12. Prerequisites: 3390 and successful completion of recital attendance requirements.

4400 Major French Horn. 1-6 credits, maximum 12. Prerequisites: 3400 and successful completion of recital attendance requirements.

4410 Major Trombone. 1-6 credits, maximum 12. Prerequisites: 3410 and successful completion of recital attendance requirements.

4420 Major Euphonium. 1-4 credits, maximum 8. Prerequisites: 3420 and successful completion of recital attendance requirements.

4430 Major Tuba. 1-6 credits, maximum 12. Prerequisites: 3430 and successful completion of recital attendance requirements.

4440 Major Percussion. 1-6 credits, maximum 12. Prerequisites: 3440 and successful completion of recital attendance requirements.

4450 Major Harpsichord. 1-4 credits, maximum 8.

4490 Lessons in Applied Music (Major Field). 1-4 credits, maximum 4. Prerequisite: bachelor's degree or equivalent performing level in applied major field. Major applied music field.

4600 Chamber Ensembles. 1 credit, maximum 8. Lab 2. Prerequisite: 2500 (4 hrs.) or equivalent. Combinations of voices, keyboard, and orchestral instruments for performing chamber music, music theater and duo piano repertoire.

4753 Advanced Music History and Literature. Prerequisite: two semesters of music history. Advanced music history and literature. Historical and stylistic analyses of musical forms and composers' techniques. Open to graduate students and advanced undergraduate students.

4810 Problems in Musical Composition. 1-2 credits, maximum 2. Prerequisites: 1543 and consent of instructor. Practical experiences in musical composition.

4840 Special Studies in Music Literature. 1-2 credits, maximum 4. Prerequisite: junior standing or consent of instructor. Survey of music literature suitable for teaching various levels in applied music.

4890 Special Studies in Music Pedagogy. 1-2 credits, maximum 4. Prerequisite: junior standing or consent of instructor. Survey of music pedagogical methods suitable for various levels and types of applied music.

4901 Senior Recital. Prerequisites: senior standing and permission of major applied music teacher.

4912 Orchestration and Arranging. Prerequisite: upper-division standing as a music major or consent of instructor. Orchestrating for instrumental ensembles and arranging for choral ensembles.

4940 Student Teaching in Public School Music. 1-12 credits, maximum 12. Prerequisites: 3501 and full admission to Teacher Education. Directed observation, seminars, and supervised student teaching in selected elementary and secondary music programs. Graded on a pass-fail basis.

4962 Music in the School Curriculum. Aims, content, and motivation of the music education program in elementary and secondary schools from the standpoint of the classroom teacher, music specialist and administrator.

4963 Music Education Seminar. Research into latest developments of public school choral and instrumental music.

4972 Twentieth Century Music Theory and Literature. Prerequisites: 2563, 3762. Melodic, harmonic and rhythmic techniques in 20th century music.

4990 Selected Studies in Music and Music Education. 1-3 credits, maximum 8. Short-term area studies in music and music education.

4993 Senior Honors Project. Prerequisites: departmental invitation, senior standing, Honors Program participation. A guided program in musicological research, music composition, or music performance, ending with an honors project under the direction of a faculty member with a second faculty member to complete an examining committee. Required for graduation with departmental honors in music.

5113 Introduction to Graduate Studies in Music. Prerequisite: admission to Master of Music program. Understanding of the resources available for research in the field of music. Explanation of the types of research materials needed for classes in the Master of Music degree program, as well as providing the groundwork for success in the professional world as a music educator and performer.

5480 Lessons in Applied Music (Minor Field). 1-2 credits, maximum 4. Prerequisite: bachelor's degree or equivalent performance level, in applied major field.

5490 Lessons in Applied Music (Major Field). 1-2 credits, maximum 8. Prerequisite: bachelor's degree or equivalent performance level, in applied major field. Private Lessons.

5512 Advanced Studies in Music Literature and Pedagogy I. Prerequisite: 3753, 3763 or equivalent. Techniques of successful programming, teaching and performance of ensemble literature through a survey of repertoire appropriate to the student's chosen medium.

5522 Advanced Studies in Music Literature and Pedagogy II. Prerequisite: 3753, 3763 or equivalent. A continuation of 5512, with emphasis upon music of the 20th century and its attendant specialized performance techniques.

5582 World Music. Survey of the richly diverse music of non-Western cultures emphasizing traditional musical practices prior to contact with Western media. Historical recordings supplemented by video tapes. Knowledge of Western classical music notation helpful. Taught in conjunction with 3583.

5610 University Bands. 1 credit, maximum 4. Large ensembles.

5620 University Orchestras. 1 credit, maximum 4. Large ensembles.

5630 University Choral Ensembles. 1 credit, maximum 4. Large ensembles.

5712 Advanced Studies in Conducting I. Prerequisites: 3712 and 3722 or equivalent. Acquaintance of an expressive conducting gesture vocabulary as it relates to the student's chosen medium.

5722 Advanced Studies in Conducting II. Prerequisites: 5712. A continuation of 5712 focusing upon the gesture vocabulary as it relates to the specific complexities of contemporary music.

5733 Techniques of Pedagogy and Performance. Prerequisites: 3712 and 3722 or equivalent. Advanced techniques and modes of ensemble rehearsal and practice.

5753 Advanced Studies in Music History I. Prerequisites: 3753 and 3763 or equivalent. Major European musical genres and pedagogical methods for the years 1000-1750. Investigation of source materials from the period to facilitate a knowledge of performance of genres studied.

5763 Advanced Studies in Music History II. Prerequisites: 3753 and 3763 or equivalent. Major European musical genres and pedagogical methods for the years following 1750.

5972 20th Century Music Theory and Literature. Prerequisites: 2563, 3763 or equivalent. Musical techniques and literature in the 20th century.
Natural Science (NATSC)


5990* Topics in Natural and Applied Sciences. 1-3 credits. Maximum 9. Prerequisite: graduate standing. Special topics in the natural and applied sciences for students interested in topics not normally covered in existing course work.

Nutritional Sciences (NSCI)

2111 Professional Careers in Nutritional Sciences. Career opportunities in dietetics and foods and nutrition. Roles and responsibilities of nutritional sciences professionals. Routes to professional memberships and current issues in professionalism.

2114 (N)Principles of Human Nutrition. Functions of the nutrients in human life processes. Nutrient relationship to health as a basis for food choices. Open to all University students.

2850 Special Topics in Nutritional Sciences. 1-3 credits. Maximum 4. Study of specific consumer education issues or topics in nutritional sciences.

3133 Science of Food Preparation. Lab 3. Prerequisites: HRAD 1114, organic chemistry. Application of scientific principles to food preparation. Same course as HRAD 3133.

3213 Management in Hospitality and Food Service Systems. Prerequisite: a course in economics. Function and methods of management as related to the hospitality and food service industries. Same course as HRAD 3213.

3223 Nutrition in the Life Cycle. Prerequisite: 2114 or equivalent. Nutritional needs and dietary concerns of individuals from conception through old age.

3440 Nutritional Sciences Preprofessional Experience. 1-3 hours, maximum 3. Supervised work experience in one or more of the following: college and university food service, health care facilities, and food processing plants.

3543 (LS)Food and the Human Environment. Impact of the various factors which affect food availability, production, processing, distribution and consumption of food in the world. Challenges and solutions to the world food crisis.

3553 Purchasing in Hospitality and Food Service Systems. Prerequisite: 3133 or concurrent enrollment. Procurement of food and nonfood materials in hospitality and related industries. Same as HRAD 3553.

4013* Experimental Foods. Lab 6. Prerequisite: 3133 or consent of instructor. Investigations in physical, chemical and sensory qualities of foods under experimental conditions. Development of an individual research project.

4023* Nutrition and Health Issues. Prerequisites: 2114, 3223. Analysis of the role of specific nutrients in health maintenance and in prevention of chronic disease. Communication of nutrition information to the public.

4323* Human Nutrition and Metabolism. Prerequisites: 2114 or equivalent, organic chemistry, physiology. Digestion, absorption and metabolism of nutrients; functions and health implications in the human organism.

4333* Food, Beverage and Labor Cost Controls. Prerequisites: ACCTG 2203, junior standing. Menu analysis and food/beverage/labor cost controls associated with hospitality industry operations. Same course as HRAD 4333.

4365* Quantity Food Production Management. Lab 5. Prerequisites: HRAD 2125, HRAD or NSCI 3553 and a course in accounting or mathematics or consent of instructor. Organizing, purchasing, costing, preparation and service of food in a quantity food production setting. Same course as HRAD 4365.

4373* Creative Teaching of Nutrition. Prerequisites: 2114, 3223 or concurrent enrollment. Analyses of various methods, techniques, resources and evaluation for nutrition education. Experimental component required.

4573* Institution Organization and Management. Lab 3. Prerequisites: NSCI or HRAD 3553, 4365. The organization of personnel and resources in a food service institution and the techniques required by the manager. Lab consists of work experience in Residence Hall Food Services. Same course as HRAD 4573.

4643 Critical Issues in Nutrition and Dietetics. Prerequisite: senior standing. Integration of the body of knowledge of nutrition and dietetics through examination of critical issues.

4733* Community Nutrition. Prerequisites: 2114, 3223 and an educational methods course. Application of nutrition, education and communication principles to community nutrition programs and services. Field work required.

4850* Special Unit Studies in Nutritional Sciences. 1-3 credits, maximum 6. Special units of study in nutritional sciences.

4853 Medical Nutrition Therapy I. Lab 2. Prerequisite: 4223 or concurrent enrollment. One course in biochemistry. Physiological and metabolic bases for dietary modifications in disease states. Interpretation of laboratory data as it applies to nutritional care.

4863* Medical Nutrition Therapy II. Lab 2. Prerequisite: 4853. A continuation of 4853.

4900 Honors Creative Component. 1-3 credits. Maximum 3. Prerequisites: College of Human Environmental Sciences Honors Program participation, senior standing. Guided creative component for students completing requirements for College of Honors and College of Human Environmental Sciences. Thesis, creative project or report under the direction of a faculty member in the major area, with second faculty reader and oral examination.

5000* Research in Nutritional Sciences. 1-6 credits. Maximum 6. Prerequisite: consent of adviser. Individual research and thesis that will fulfill the requirements for the master's degree.

5012* Public Policy Development in Food, Nutrition and Related Programs. Rationale underlying selected governmental programs in food and nutrition and other home economics areas and assessment of the effectiveness of the programs.

5123* Research Developments in Nutritional Sciences. Basic components of the research process and application of research methods to nutritional sciences.

5220* Contemporary Issues in Dietetics. 1-2 credits. Maximum 4. Prerequisite: acceptance as a dietetic intern. Contemporary issues in the practice of dietetics; formulation of innovative solutions and processes to enhance effectiveness in the workplace. Graded on a pass-fail basis.

5230* New Findings in Nutrition. 1-3 credits. Maximum 6. Prerequisite: 2114 or equivalent. Current emphases in nutrition, with implications for nutrition research, education, and public service.

5233* Quantity Food Development. Lab 5. Prerequisite: 4363 or equivalent. Experimental approach to methods in quantity food production as related to time factor, institution equipment and proportions of ingredients.

5343* Organization and Management of Food Service Systems. Prerequisite: 4573 or equivalent. Contemporary theories of organizational structures as applied in the management of food service systems.

5363* Maternal and Infant Nutrition. Prerequisite: 2114 or equivalent. Nutritional needs and dietary concerns during pregnancy, lactation and the first year of life. Implications for nutrition intervention, education and policy.

5373* Childhood Nutrition. Prerequisite: 2114 or consent of instructor. Normal nutritional needs of children, preschool through grade 12. Dietary implications for child care programs, school food service and parent education.

5393* Nutrition for the Elderly. Prerequisite: 2114 or equivalent. Nutritional needs and dietary concerns of the elderly. Implications for food and nutrition programs, policies, research and education.

5440* Dietetic Internship Practicum. 1-6 credits. Maximum 9. Prerequisites: admission as a dietetic intern and American Dietetic Association verification. Supervised learning experiences in approved facilities for the achievement of performance requirements for entry level dietitians. Graded on a pass-fail basis.
5463* Advanced Human Nutrition. Prerequisites: a biochemistry course and an upper-level nutrition course. Application to the human being of metabolic processes which involve essential dietary components.

5553 International Nutrition and World Hunger. Prerequisite: consent of instructor. Advanced study of the magnitude, causes, and nature of hunger and undernutrition in low income countries; emphasis on programs, policies and planning directed toward alleviating hunger.

5563* Nutritional Assessment. Prerequisites: 3223, 4323, or equivalent. Dietary, physical, and biochemical assessment techniques and their application to patient or client nutritional status assessment in health care systems.

5593 Quality of Work Life in Food Service Organizations. Prerequisite: one course in personnel management. Analysis of administrative problems in food service organizations. Focus on quality of work life assessment.

5643* Advanced Medical Nutrition Therapy. Prerequisite: admission to dietetic internship or consent of instructor. Physiological and metabolic bases for nutritional support in disease.

5650* Advanced Food Conservation and Processing. 2 credits, maximum 2. Lab 3. Prerequisite: 4013. Recent advances in food processing in relation to quality of product and conservation of food nutrients.

5673* Manpower Management in Health Care and Related Industries. Lab 3. Prerequisites: 3213, 4573, or consent of instructor. Management of human resources in health care and related industries.

5713* Community Dietetics. Prerequisites: 4373, 4733 or equivalent. Analysis of the impact of political, legislative, economic and cultural diversity factors on dietetic practice in public health and other community nutrition programs.

5743* Experimental Methods in Nutritional Sciences. Prerequisites: a course in biochemistry, a course in statistics, a graduate course in food or nutrition. Experimental design for research in food and nutrition based on analytical laboratory techniques and other research methodology.

5753* Management in Health Care Systems. Prerequisite: 4365, 4573 or consent of instructor. Total quality management for nutrition and food services in health care and related industries. Basics, systems and tools for monitoring and evaluating quality in nutrition and food service departments.

5850* Special Topics in Nutritional Sciences. 1-3 credits, maximum 4. Prerequisite: graduate standing. Specialized workshops in nutrition, food science or food service administration.

5870* Problems in Nutritional Sciences. 1-4 credits, maximum 6. Analysis of emerging problems and trends in nutritional sciences.

5890 Seminar in Nutritional Sciences. 1 credit, maximum 2. Prerequisite: for M.S. students. Individual and group seminars on current issues and research in nutritional sciences.

6000* Doctoral Thesis. 1-12 credits, maximum 30. Prerequisite: consent of major professor.

6113* Critical Analysis of Current Issues in Nutrition. Prerequisite: 5463 or consent of instructor. Current issues in human nutrition with emphasis on interrelationships of nutrients in metabolism and their impact on health.

6123* Micronutrients in Human Nutrition. Prerequisite: 5463 or consent of instructor. In depth study of vitamins and minerals and their interrelationships in metabolism.

6233* Critical Analysis of Current Issues in Food Service Administration. Prerequisites: 5593, 5673. Current issues in food service administration with emphasis on total quality management, robotics, solid waste management and research needs.

6453* Advanced Research Developments in Nutritional Sciences. Prerequisites: one course in research methods and one course in statistics. Components of the research process for students who have completed an advanced degree. Development, application and interpretation of research methodology.

6870* Independent Study in Nutritional Sciences. 1-3 credits, maximum 6. In-depth analysis of research issues in nutritional sciences.

6960* Advanced Studies in Nutritional Sciences. 1 credit, maximum 3. Critical evaluation of research in nutritional sciences. Individual and group seminars on selected topics.

Occupational and Adult Education (OAED)

3012 Analysis and Assessment of Training Needs. Prerequisites: TECED 3103, TIED 3203, and full admission to Teacher Education. Techniques and procedures used in determining needs for and content of, instructional programs. Emphasizes needs-assessment techniques and methods for identifying and analyzing the knowledge, skills and competencies required for satisfactory job performance. Preparation for translating such information into instructional programs. No credit for students with credit in TIED 4344.

3143 Career Education: An Introduction. Introduces current and prospective teachers to the fundamental concepts and operational practices of career education. Historical development, needs assessment, goals, implementation strategies, evaluation, developmental concepts, curriculum planning and articulation.

3901 Seminar in Teacher Education. Procedures for gaining admission to Teacher Education and student-teaching. Requirements for certification and graduation and course planning to meet those requirements. Documentation and completion of 45 clock hours of observations in various school settings. Graded on a pass-fail basis.

4010* Occupational and Adult Education Workshop. 1-3 credits, maximum 6. Professional workshops of various topics and lengths. Each workshop focused on a particular topic from such areas as the development, use and evaluation of instructional methods and materials.

4103 Methods of Teaching Occupational and Adult Education. Lab 2. Prerequisite: full admission to Teacher Education. Applications of teaching and learning principles. Instructional planning and delivery strategies available to the instructor, including shop and laboratory instruction, individualized and competency-based instruction and the use of instructional technology. Laboratory component involves course participants in micro-teaching and other actual situations. No credit for students with credit in TIED 4103.


4213 Computers and Multimedia for Workplace Education. Prerequisites: 3113 and 4103. Planning and designing programs for the development of human resources. Program goals and objectives, curriculum, facilities, teaching-learning theories, materials development, program resources and program and instructional evaluation.

4333* (International Occupational Education. Comparison and analysis of international occupational education.

4470 Teaching Practicum in Occupational Education. 12 credits. Prerequisite: basic knowledge of MS-DOS or consent of instructor. Overview of MS-DOS microcomputer applications in workplace education, including selection of hardware and software, databases, spreadsheets, planning systems, Internet and other on-line databases, and multimedia applications. Same course as BUSPR 4213.

4423* Program Planning and Development in Occupational and Adult Education. Prerequisites: 3113 and 4103. Planning and designing programs for the development of human resources. Program goals and objectives, curriculum, facilities, teaching-learning theories, materials development, program resources and program and instructional evaluation.

5113* Principles of Occupational and Adult Education. Underlying principles and evolving concepts in occupational and adult education. Critical analysis of educational programs and service areas and the resulting implications for leadership personnel at all levels of program responsibility.
5123* Program Evaluation in Occupational and Adult Education. Prerequisite: background in a vocational area. The purpose of evaluation in occupational and adult education programs with specific attention given to the evaluation of program development in laboratory and shop instruction.

5133* International Workplace Education. Prerequisite: graduate standing. Ideas, practices and systems of occupational education in other countries compared with contemporary practices in the United States to provide a basis for an enlarged, critical view of technical education.

5153* Curriculum Planning in Occupational and Adult Education. Principles and procedures for curriculum planning, development and management in occupational and adult education with analyses of current trends and practices and their implications for program quality.

5203* Foundations of Adult and Continuing Education. Societal trends, issues and institutions which have influenced the development and current status of adult and continuing education. Analyses and critiques of contemporary adult and continuing education activities, materials and clientele groups served, and their implications for new and existing programs in the field.

5213* Characteristics of Adult Learners. Learning patterns, interests and participation patterns among adults in a variety of educational settings. Theories of learning and behavior modification for adults, with implications for adult and continuing education programs. Particular attention given to learners in occupational, adult basic, community junior college, extension and proprietary program settings.

5223* Organization and Administration of Adult Education. Prerequisites: 5203 and 5213. Organizational procedures and administrative practices for effective planning, implementation and management of adult and continuing education programs. Analyses of legislation, finances and community groups that influence and impact upon adult and continuing education programs.

5233* Needs Analysis. Techniques of conducting organizational analyses of human performance problems, including surveys, interviews, records analysis, group interaction, and task analysis.

5243* Advanced Project in Needs Analysis. Prerequisite: 5233. The conduct of an analysis of human performance problems in an organizational, agency, institutional or community setting, including need or problem identification, investigation, clarification and resolution, and the development of a formal report and a presentation to management.

5253* Instructional Strategies for Adults. Prerequisite: graduate standing. An analysis and application of the various techniques and materials available to facilitate the learning process for adults. Concentration on the process of designing effective learning experiences for adults and developing competencies of the facilitators of group and self-directed learning.

5313* History and Organization of Vocational and Technical Education. Prerequisite: graduate standing. Social, political, and economic forces acting upon vocational and technical education studied in depth for leadership development.

5333* Administration and Supervision of Local Occupational Education Programs. The duties of administrative and supervisory personnel responsible for the development, coordination and promotion of occupational education programs.

5340* Special Problems. 1-6 credits, maximum 6. Prerequisite: consent of instructor. Directed independent study of special topics involving assigned readings, library research, field work or a combination of these.

5433* Instructional Design for Training. Design and development of training to address performance problems in organizations, business and industry. Indepth study of a systematic approach to training for performance. Same course as TCED 5433.

5443* Interpreting Research in Occupational and Adult Education. Prerequisite: elementary statistics. Seminar on the methods of review, synthesis and interpretation with application to particular fields of occupational and adult education.

5480* Modern Technology in Occupational Education. 1-6 credits, maximum 6. Technical developments in specialized occupational areas examined and analyzed for educational curriculum and program implications.

5533* Human Resource Development. Prerequisite: admission to the masters degree program. Introduction to training and development, including history and nature of the field, trainer roles, programs, techniques, needs analysis, program development, evaluation, and techniques of conducting training.

5553* Occupational Education for Students with Special Needs. Techniques and procedures by which occupational education may serve individuals with special needs. Field experiences an integral part of the course.

5720* Workshop. 1-3 credits, maximum 10. Professional workshops of various topics and lengths. Each workshop designed to meet unique or special needs of individuals concerned with occupational and adult education.

5880* Internship. 3-6 credits, maximum 6. Prerequisite: consent of instructor. Supervised experiences working in business, industry, human service, or education settings.

5912* Organization and Administration of Adult Basic Education Programs. Prerequisites: 5203 and 5213. Organizing and administering adult basic education for occupational programs.

6000* Doctoral Thesis. 2-10 credits, maximum 15. Required of all candidates for the Doctor of Education degree in occupational and adult education.

6103* Philosophy of Occupational and Adult Education. Prerequisite: graduate course in philosophy or philosophy of education. Alternative perspectives for developing a philosophy position in occupational and adult education.

6110* Graduate Reading in Occupational and Adult Education. 1-6 credits, maximum 6. Prerequisites: graduate standing and consent of department head and supervising professor. Supervised readings of significant literature not included in regularly scheduled courses.

6113* Teacher Education and Personnel Development for Occupational Education. Prerequisite: 6103. Research, trends and innovative practices in teacher education and personnel development for occupational education.

6213* Aging, Learning and Work. Prerequisite: graduate standing. An analysis of the nature of adult learning and work performance and their relationships to the aging process.

6333* Strategic Planning and Policy Development. Prerequisites: 5123, 5223 or 5333, master's degree. Theoretical and practical aspects of the concepts and implementation processes. Articulation among various public and private sector organizations involved with human resource development.

6343* Financing Vocational-Technical Education. Prerequisite: graduate standing. Development of conceptual and legal bases for funding public vocational-technical education programs. Sources of funds, distribution strategies, local, state and federal accountability requirements, and fraud and abuse of funds.

6353* Educational Futures. Prerequisite: admission to OSU doctoral program. An examination and discussion of demographic, social, economic, educational and technological trends and conditions having an impact on the nature and role of education and educational institutions.

6533* Critical Issues in Human Resource Development. Prerequisite: 5533. Issues of concern to training directors and other human resource development (HRD) practitioners are researched, including managing HRD, consulting, organization, development, productivity, and managing change.

6871* Doctoral Seminar: Level 1. Orientation to doctoral program in OAED. May be taken prior to program application; required of all applicants.

6880* Internship in Occupational and Adult Education. 1-8 credits, maximum 8. Prerequisite: consent of instructor. Directed field experiences related to the participant's area of concentration. Provides opportunities for an individual to put into practice and test ideas, theories and concepts learned in graduate study.

Petroleum Technology (PET)

124
Petroleum Fluid Properties. Lab 2. Prerequisites: MATH 1513 or 1715; CHEM 1215 or 1314. Chemical and physical properties of petroleum, petroleum products, natural gas, coal and drilling fluids. Introduction to reservoir engineering.

Philosophy (PHILO)

1013
(H)Philosophical Classics. Basic works by great thinkers, including Plato, Descartes and Hume.

1213
(H)Philosophies of Life. Introductory ethics and social philosophy. Moral decision-making, the good life, social values, freedom and responsibility.

1313
(A)Logic and Critical Thinking. Formal and informal reasoning, common fallacies, definitions and language functions, patterns of explanation. Practical criticism and development of everyday arguments.

2113
(H)Introduction to Philosophy. Selected philosophical problems: the nature of reality, knowledge, value, social ideals and religion.

3113
(H)Ancient and Medieval Philosophy. Main systems of Western thought from the Greeks to 15th century Europe. Emphasis on Plato, Aristotle, Augustine and Aquinas.

3213
(H)Modern Philosophy. Major philosophers and problems in Western thought from the 18th through the 19th century. Emphasis on Descartes, Hume and Kant.

3313
(H)19th and 20th Century Philosophy. Major philosophers and problems in Western thought from Hegel to the present.

3413
(H)Ethics. Contemporary and classical views on the nature of moral judgments, moral value, relativity and objectivity, freedom and responsibility.

3513

3613

3713
(H)Philosophy of Education. Classical and contemporary philosophers who have systematically developed their ideas about education, including Plato, Aristotle, Rousseau, Locke and Dewey.

3803
(H)Business Ethics. Ethical issues in business, such as employer-employee duties and loyalties, advertising uses, preferential treatment practices. Analytic grounding in basic theories of ethics.

3813
(H)Recent American Philosophy. Dominant trends in American philosophy during the last 100 years, with emphasis on pragmatism.

3823
(H)Engineering Ethics. Philosophical analysis of moral issues in engineering practice, such as whistleblowing, conflicts of interest and product liability. Professional codes of ethics.

3833
(H)Biomedical Ethics. Moral problems brought about by recent developments in scientific research and medical technology. Abortion, euthanasia, genetic engineering, and human experimentation.

3843
(H)Philosophy of Law. Prerequisite: upper-division standing. Philosophical issues related to U.S. law. The relationship between law and morality, the nature and functions of law, and grounds of liability.

3913
(H)Existentialism. Selected writings and themes in the development of existentialist and related intellectual movements. Subjectivity, phenomenological description, hermeneutics, freedom and value; and such writers as Kierkegaard, Nietzsche, Heidegger, Sartre, Marcel and Buber.

3923
(H)Contemporary Issues in Philosophy. Selected current controversies and recent trends in philosophy.

3943
(H)Asian Philosophy. Three main streams of Asian thought: Indian, Chinese and Buddhist. How various thinkers in the three traditions have dealt with questions of being and becoming, knowledge, ethics and society.

4013
(H)Perspectives on Death and Dying. Issues that arise as individuals confront the fact of mortality. Dying patients, the ethical issues of euthanasia and suicide, the process of grief, death in literature and the arts, and philosophical and religious views on immortality.

4113
(H)Philosophy of Art and Literature. Nature of aesthetic objects and experiences; form, meaning and value in the arts; the function of art in society; criteria of criticism of the arts.

4303
(A)Principles of Symbolic Logic. Symbolic analysis and calculus of propositions. Applications in various fields.

4313
(H)Philosophy of Mind. Problems in philosophical psychology. Mind and body, freedom and determinism, personal identity and survival, self-knowledge, analysis of mental concepts.

4453
(H)Philosophy in Literature. Selected literary works examined for philosophical ideas and themes. Attention to the interrelation of form and content. Thematic approach.

4713
(H)Philosophy of Science. Philosophical issues related to science and its role in society. Topics include science and common sense, laws and theories, causality, nature of scientific progress.

4723
(H)Philosophy of Biology. Selected philosophical topics, such as Darwinism and other theories of evolution, physical reductionism, and issues of genetic engineering.

4990
Special Studies in Philosophy. 1-3 credits, maximum 10. Selected philosophical topics or works.

4991
Contemporary Philosophy Research. Requires: upper-division standing, at least 12 hours in philosophy completed. Study of leading edge research in philosophy through presentation and discussion of current philosophy journal articles with faculty.

4993
Senior Honors Thesis. Prerequisites: departmental invitation, senior standing, Honors Program participation. A guided reading and research program ending with an honors thesis under the direction of a faculty member, with second faculty reader and oral examination. Required for graduation with departmental honors in philosophy.

5000
Thesis in Philosophy. 1-6 credits, maximum 6. Supervised individual work on a thesis for a master’s degree.

5210
Seminar on a Major Philosopher. 3 credits, maximum 9. Prerequisite: three courses in philosophy. The writings of a major philosopher and related material.

5310
Seminar on a Field of Philosophy. 3 credits, maximum 9. Prerequisite: three courses in philosophy. Selected topics in one field of philosophy.

5513
History of Educational Philosophy. Outstanding Western educational theorists. Emphasis on Plato, Aristotle, Quintilian, Comenius, Locke, Rousseau and Dewey.

5610
Philosophical Issues in Education. 2-3 credits, maximum 3. Contemporary issues in educational theory and practice. The linkage of education to political thought, religion, public law and culture.

5713
Contemporary Philosophies of Education. Analysis of contemporary educational philosophies, with attention to recommended aims, curricula and methods.

5910
Research Problems in Philosophy. 1-3 credits, maximum 10. Prerequisite: consent of instructor and department head. Individual or group research on specific philosophical problems.

Physical Education (PE)

1753
Introduction to Physical Education. The nature, scope and significance of physical education. Historical and philosophical foundations, major sub-disciplines and their interrelationships, and career opportunities.

1812
Pedagogy of Motor Skills I. Prerequisite: HPEL majors and minors only. Theory and practice of soccer, golf, volleyball and physical fitness; analysis and practice of skills in each area; basic rules and strategies.

1822
Pedagogy of Motor Skills II. Prerequisite: HPEL majors and minors only. Theory and practice of basketball, weight training, softball, and archery; analysis and practice of skills in each area; basic rules and strategies.

1832
Pedagogy of Motor Skills III. Prerequisite: HPEL majors and minors only. Theory and practice of track and field; gymnastics apparatus; gymnastics (floor), and social dance; analysis and practice of skills in each area; basic rules and strategies.
Pedagogy of Motor Skills IV. Prerequisite: HPEL majors and minors only. Theory and practice of badminton, folk and square dance, tennis, and rhythmic aerobics; analysis and practice of skills in each area; basic rules and strategies.


Psychomotor Development. Prerequisites: 1753 or concurrent enrollment; HPEL majors and minors only. Fundamental aspects of motor development for infants, children, and adults.

Physiology of Exercise. Lab 2. Prerequisite: MATH 1513. A study of the various bodily systems, including major organs and tissues, and how they respond to acute and chronic exercise of varying intensity, duration, and frequency.


Early Laboratory and Clinical Experiences in Physical Education. 1-2 credits, maximum 4. Prerequisites: 1753 and declaration of intention to pursue a program in Teacher Education. The initial professional clinical experience for schools, kindergarten through grade twelve with primary duties including instruction in physical education. Required for full admission to Teacher Education. Graded on a pass-fail basis.

Kinesiology and Biomechanics. Prerequisites: HLTH 2653; MATH 1513 or consent of instructor. A systematic approach to analysis of human movement through anatomical, mechanical, and kinesiological concepts. Quantitative and qualitative analysis related to kinesiological and kinetic principles.

Methods in Teaching Elementary Physical Education. Prerequisites: 1753, 2712. Theory and practical experience of physical education in the elementary school. Teaching styles and activities needed to meet the needs of children from kindergarten through grade five.

Methods in Teaching Secondary Physical Education. Lab 2. Prerequisites: 1812, 1822, 1832, 1842, 3663, and 3753; or consent of department head. Instructional styles, implementation of behavioral goals and objectives through unit and lesson preparation, teaching methods, and classroom management.

Internship in Physical Education. 6-12 credits, maximum 12. Prerequisites: last semester senior standing with cumulative GPA of 2.50 and consent of instructor. Supervised practical experience in physical education setting. Graded on a pass-fail basis.

Measurement and Evaluation in Health and Physical Education. Prerequisite: full admission. Theoretical and practical methods used in physical education setting to measure knowledge, attitudes, sport skill proficiency, and physical fitness.

Administration and Program Design in Physical Education and Athletics. Prerequisites: 3753, 3773 or concurrent enrollment; full admission to teacher education. Design and management of physical education (K-12) and athletic programs.

Adapted Physical Education. Lab 2. Prerequisites: 3663, 3753, full admission to teacher education, or consent of instructor. Equipping educators with the knowledge and activities to successfully include children with disabilities into the least restrictive environment of physical education.

Theory of Coaching. Prerequisite: junior standing or 45 hours with 3.25 GPA. The role of coaching, including practical aspects of performance, management and relationships, and management concerns such as drug abuse, stress, academic requirements and legal issues.

Physics (PHYS)

(N) Descriptive Physics. A survey course presenting the basic concepts and principles of physics with a minimum of mathematics. Motion, waves, temperature, electricity, magnetism, optics, atomic structure, and nuclear energy. No credit for students with credit in 1114.

(L,N) General Physics. Lab 2. Prerequisite: high school algebra and trigonometry, or MATH 1483 or MATH 1715. Algebra-based introductory course covering the basic concepts of physics. Practical examples of the role of physics in our lives. Spectroscopy, mechanics, fluids, heat, thermodynamics, waves, sound. No credit for students with credit in 1014.

General Physics. Lab 2. Prerequisite: 1114. Continuation of 1114; electricity, magnetism, optics, quantum physics, atomic and nuclear structure.

(L,N) Inquiry-based Physics. Lab 3. Properties of matter, motion, light and color, electrical circuits and energy conservation. Recommended for students preparing to be model course to learn and teach science.

General Physics. Lab 2. Prerequisite: A 2145 or concurrent enrollment. Calculus-based introductory course for science, math and engineering majors. Mechanics, waves, heat, and thermodynamics.

General Physics. Lab 2. Prerequisite: 2114. Continuation of 2114. Electricity, magnetism and optics.

Mechanics I. Prerequisites: 2114 or equivalent, and MATH 2233 or concurrent enrollment. Mechanics of particles, systems of particles and rigid bodies.

Heat. Prerequisites: 1214 or 2114, and calculus. Transfer, elementary theory of specific heat and the three laws of thermodynamics.

Optics. Prerequisites: 2114 and 3513, or consent of the instructor. Geometrical optics; interference, diffraction, dispersion, absorption and polarization of light.

Modern Physics I. Prerequisite: 2114. Atomic physics, special theory of relativity, and introduction to solid state and nuclear physics.

Computer Simulation Methods in Physics. Prerequisites: 3013, 3113, 3313 or consent of instructor. Introduction to computer simulation methods used in the physical sciences. Linear systems, nonlinear systems, molecular dynamics, Monte Carlo methods, cellular automata, simple quantum systems. Some knowledge of either C, FORTRAN, Pascal, or BASIC required.

Special Problems. 1-3 credits, maximum 9. Prerequisite: consent of instructor. Individual laboratory work of an advanced nature.

Electricity and Magnetism. Prerequisites: 2114 and MATH 2233, or their equivalents. Electrostatic fields, magnetic fields of steady currents, induced EMFs, Maxwell's equations and introduction to electromagnetic wave theory. Vector analysis used.

Introduction to Nuclear Physics. Prerequisites: 8 hours of physics and 8 hours of chemistry. For nonphysics majors. Fundamentals of nuclear physics with applications to chemistry, engineering and biology.

(N) Introduction to Solid State Physics. Prerequisites: 3013 and 3713. Atomic and X-ray spectra; one-dimensional Schroedinger equation; nuclear structure; introduction to statistical mechanics and elementary quantum statistics.

Mechanics II. Prerequisite: 3013. Coupled oscillators, propagation of waves in discrete and continuous media, mechanics of discrete and continuous media and acoustics.

Introductory Quantum Mechanics. Prerequisite: 4423 or equivalent. Uncertainty principle, setting up Schroedinger equation (time dependent as well as time independent) and solving it for linear oscillator, hydrogen atom, periodic and other potentials.
Radioactivity* and Nuclear Physics. Prerequisite: 3313. Natural and artificial radioactivity, decay laws; absorption, detection and measurement of radia-
tions; nuclear transformations.

Laboratory III. Lab 3. Laboratory experiments on electrical measurements and microcomputer applications to analysis and control of mea-
surements. Advanced individual research projects.

Electromagnetic Radiation. Prerequisites: 3213, 3513, 4113. Electromagnetic wave theory, reflection and refraction of electromag-
netic waves; resonant cavities, wave guides, fiber propagation of electromagnetic waves; radiation sources; relativistic description of elec-
 tromagnetic fields.

Senior Honors Thesis. Prerequisites: departmental invitation, senior standing, Honors Program participation. A guided reading and research program ending with an honors thesis under the direction of a faculty member, with second faculty reader and oral examination. Required for graduation with departmental hon-
ors in physics.

Master’s Thesis Research or Report. 1-9 credits, maximum 9. Prerequisite: consent of major professor. Thesis research or report for master’s degree.

Seminars. 1-5 credits, maximum 20. Prerequisite: graduate standing in physics. Special top-
ics in physics.

Statistical Thermodynamics and Kinetic Theory. Prerequisite: 3113. Fundamental con-
cepts of thermodynamics: first, second and third laws; thermodynamic potentials. Statisti-
cal physics: Maxwell-Boltzman, Fermi-Dirac, Bose-Einstein distribution functions. Kinetic theory: transport phenomena, Boltzman H Theo-
rem, the approach to thermodynamic equilib-
rium.

Theory of Spectra. Line spectra, hyperfine structure, Lamb shift, band spectra, NMR spec-
tra and ESR spectra.

Lasers. Prerequisite: 4813 or equivalent. Semi-
classical description of absorption and emis-

Statistical Mechanics. Prerequisites: 5113 and 5613 or consent of instructor. Classical and quantum mechanical distribution functions for independent particles; interacting classical and quantum systems, superfluidity, phase tran-
sitions and critical phenomena, approximation methods.

Nuclear Physics. Prerequisites: 5453 and 5613. Nuclear forces, structure of nuclei and nuclear models.

Electromagnetic Theory. Prerequisite: 5453. Electric and magnetic fields in free space and in matter. Boundary value problems, Green’s functions, stress tensors, multipole expansions, thermodynamics; electromagnetic waves.

Special Problems. 1-3 credits, maximum 3. Prerequisite: graduate standing in physics. Spe-
cial problems of experimental or theoretical nature. Largely individual work with written re-
port required.

Membrane Physiology. Prerequisites: 1214 and BIOCH 4113 or CHEM 3354 or PHYS 3313. Application of biophysical, bio-
chemical and biological techniques to the study of the structure and function of membranes and membrane components, kinetic measure-
ments, spectroscopic techniques and diffractive techniques. Application of these illustrated with current research problems. Same course as MICRO 5223.

Classical Mechanics. Prerequisites: 3013 and 3413 or equivalent. Generalized coordi-
nates and advanced dynamics; coupled sys-
tems, wave motion; theory of elasticity.

Methods of Theoretical Physics. Prereq-
usite: 3513. Introduction to the various meth-
ods and techniques used in theoretical phys-
ics.

Quantum Mechanics I. Prerequisite: 5453. Postulates of quantum mechanics. Operators, commutation relations, eigenfunctions. Schrodinger, Heisenberg and interaction for-
malism, angular momentum and central field problems; nondegenerate perturbation theory.

Solid State Physics I. Prerequisite: 4263. Crystal structure, cohesive energy of ionic crys-
tals and metals, specific heats, free electron theory of metals, band theory, Brillouin zones, insulators and alloys; magnetic properties, opti-
cal properties and thermal and electrical con-
ductivity of solids.

Solid State Physics II. Prerequisite: 5663 or equivalent. Symmetry, dielectric properties, fer-
roelectrics, magnetic properties, mechanical properties and defects of solids.

Selected Topics in Astrophysics. Recom-
manded: ASTRO 2023 and 3023. Derivation of fundamental equations and application to prob-
lems in astronomical spectroscopy, stellar at-
mospheres, stellar interiors, interstellar matter and radio astronomy.

Problems in Chemical Physics. 3-6 credits, maximum 6. Prerequisite: consent of instructor. Inter-
memolecular forces, interaction of radiation with matter in bulk form, dielectric properties of mate-
ry, polymer physics and quantum theory of biopolymers.

Doctoral Dissertation Research. 1-15 cred-
its, maximum 60. Prerequisites: admission to candidacy and permission of major professor.

Advanced Graduate Seminar. 1-3 credits, maximum 9. Prerequisite: consent of instructor. Special topics of an advanced nature in phys-
ics.

Advanced Theory of Solids. Prerequisite: 5663. Many-body techniques, transport pro-
cesses, band theoretical techniques, super-
conductivity, dynamics of electrons in a mag-
netic field, and alloys.

Group Theory and Crystal Structure. Prereq-
site: 5663. Group theory and impurities in crys-
tals. Discussion on theory and color centers.

Semiconductors I. Prerequisites: 5113, 5613, 5663. The first part of a survey of the physics of semiconductors. Bonding and structure, crys-
tal growth, epitaxial growth, band theory, phonons, photons, defects, intrinsic and ex-
trinsic statistics, trapping and recombination.

Quantum Mechanics II. Prerequisite: 5613. Scattering theory; many-particle quantum me-
chanics and application to atomic and molecular systems; degenerate and time-dependent perturbation theory.

Semiconductors II. Prerequisite: 6243. The second part of the semiconductors sequence. Transport phenomena, junctions, devices, heterostructures and optical properties.

Modern Optics. Prerequisites: 5313, 5163, 5613. Non-linear optics, higher-order suscepti-
bilities; four-wave mixing; quantum optics and photon statistics, Maxwell-Bloch equations.

Advanced Topics in Solid State Phys-
ics. Prerequisite: 5663 or equivalent. Interac-
tion of radiation and matter, neutron scattering, phase transitions, magnetic resonance and co-
operative phenomena.

Advanced Nuclear and Particle Phys-
ics. Prerequisites: 5263, 6313. Nuclear and elec-
tromagnetic particle interactions, resonances, and models; relativistic quantum mechanics and quantum field theory.

Classical Theory of Fields. Prerequisite: 5313. Radiation theory, waveguides, scatter-
ing and dispersion relations; relativity.

Plant Pathology (PLP)

Plant Pathology. Lab 4. Prerequisite: BIOL 1403. Concepts of disease development, spread and control of fungal, bacterial, viral, nema-
tode, and environmental diseases.

Fungi: Myths and More. Lab 2. Prerequi-
site: Biology. Colorful folklore and myths of fungi and the role of fungi in the ecosystem and human affairs as diseases of plants, animals and humans. Laboratory instruction on mush-
rooms, mechanisms of dispersal and genetic recombinations. Undergraduate research com-
ponent on isolation and growth of mushrooms and other fungi.

Plant Disease Control. Lab 3. Prerequisite: 3344 or concurrent enrollment. Disease-con-
trol theory and practices. Control practices and economics are considered in relation to prin-
ciples and results of the areas in quarantines, eradication, cultural practices, bio-
 logical control, physical factors and chemicals.

Plant Pathology Research. 1-6 credits, maximum 6. Research for the M.S. degree.

Plant Nematology. Lab 3. Prerequisite: 3344 or concurrent enrollment. General morphology, tax-onomy and biometrics of nonparasitic and plant parasitic nematodes. Plant parasitic nema-
tode assay techniques, subfamily identifica-
tion, symp-tomology, pathogenicity and con-
trol.
5012* Plant Virology Laboratory. Lab 4. Prerequisite: previous or concurrent enrollment in 5013. Methods of investigating plant viruses.

5013* Plant Virology. Prerequisites: 3344 or equivalent; one course in biochemistry or physiology. Transmission, characterization, differentiation, replication and control of plant viruses; discussion of current literature.

5043* Plant Pathology. Lab 4. Prerequisite: previous or concurrent enrollment in 5013. Principles of plant pathology: disease development, spread and control of fungal, bacterial, viral, nematode and environmental diseases. For advanced, special, and non-plant pathology graduate students.

5104* Mycology. Lab 4. Prerequisite: graduate standing. A systematic study of the fungi, with emphasis on taxonomy, comparative morphology and fungal biology. Taught in the Department of Plant Pathology. Same course as BOT 5104.

5304* Phytopathology. Prerequisite: 3344. Bacteria as plant pathogens, with examination of the taxonomy, genetics, ecology, physiology, host-parasite interaction and control of phytopathobacteria.

5413* Plant Disease Epidemiology. Lab 3. Prerequisite: 3344 of 5043. Introduction to methodology and technical equipment used in epidemiological research and application of epidemiological principles in plant disease control.

5560* Problems in Plant Pathology. 1-5 credits. Maximum 10. Prerequisite: consent of instructor.

5724* Physiology of Host-Pathogen Interactions. Lab 4. Prerequisites: 3344 and BIOCH 3653. Physiology of the interactions between plants and pathogens. Mechanisms by which pathogens infect and by which plants resist infection.


6102* Genetics of Plant Disease. Lab 4. Prerequisites: 3344 or equivalent and a course in general genetics. Genetics of host plants, plant pathogens, and the interaction between the two. Flor’s gene-for-gene hypothesis and its implications in breeding for disease resistance.

6202* Genetics of Fungi. Lab 4. Prerequisites: 5104 or BOT 5104 or equivalent and a general course in genetics. Mating systems, parasexuality, mutation, and genes mapping of fungi. Involvement of these topics in plant pathology.

6303* Soilborne Diseases of Plants. Lab 3. Prerequisite: 5104. Soilborne diseases, their reception and importance, the pathogens involved, rhizosphere and rhizophores influences, inoculum potential, specialization of pathogens, suppressive soil effects and disease management. Lecture and discussion sessions will emphasize in-depth understanding of problems and complexities associated with studies of soilborne pathogens.

Political Science (POLSC)

1010 Studies in American Government. 1-2 credits. Maximum 2. Special study in American government to allow transfer students to fulfill general education requirements as established by Regent policy.

1113 American Government. Organization, processes and functions of the national government of the United States. Satisfies, with HIST 1103 or 1483 or 1493, the State Regents requirement for six courses in American history and American government before graduation.


2033 Introduction to Public Administration. Public administration, including administration, administrative organization, decision-making, governmental public relations, and administrative responsibilities.

2113 (S) Comparative Politics. A comparative study of the political processes and institutions of contemporary societies. Introduction to the concepts and methods of comparative politics.

2993 Honors Tutorial in Political Science. Prerequisite: 1013, honors standing, and invitation by head of department. For the special needs of the sophomore honors students majoring in political science who wishes to study individualized topics at an accelerated pace in a tutorial format. After mastering basic principles in an area of interest the student will conduct independent research under close faculty supervision and prepare a report or reports.

3003 (I,S) The Soviet Union: History, Society and Politics. A comprehensive view of the political, economic, technological, geographical and cultural spheres which are most relevant to the current situation. Accessible to beginning undergraduates. Same course as HIST 3003 and RUSS 3003.

3013* (S) International Relations. Analysis of the major concepts in international relations - power, sovereignty, self-help, cooperation, dependency, and introduction to the dominant theoretical approaches to its study realism, pluralism, Marxism and feminism.

3033* International Law. The nature and scope of public international law, with emphasis on problems related to development of states relations, jurisdiction over nationals and aliens, and state responsibility in cases of expropriation and revolutionary damage.


3053 (I,S) Introduction to Central Asian Studies. A comprehensive view of newly-emerged Central Asian states examining the history, politics, economics, geography, and culture of Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan as reflected in their thoughts, religion, literature, and architecture, in the past, and the strategic importance of their natural wealth for the present and future. Same course as HIST 3053 and RUSS 3053.

3100 Political Science Internship. 1-6 credits. Maximum 6. Prerequisite: consent of department. Internship education experience in a specific field under the discipline of political science.

3123* (I) Government and Politics of the Former Soviet Bloc. Political processes, governmental institutions and public policies of the successor states of the former USSR and selected Eastern European countries in the post-communist era.

3133* (I,S) Politics of Anglo-American Democracies. Political processes and governmental institutions of the United Kingdom, Ireland, Canada, Australia, and New Zealand with comparisons to the United States.

3143* (I) Politics of Western Europe. Political processes and governmental institutions of continental Western European states, with emphasis on France, Germany and Italy.

3193* (I,S) Government and Politics in Latin America. Analysis of processes, institutions and contemporary trends in the politics of selected Latin American countries; political development, democratization, political role of the military, political economy and social movements.

3223* (I) Politics and Administration in East Asia. Political processes, governmental institutions and administration in China, Japan and Korea.

3223* (I) Chinese Politics. Political process, government institutions and experience of development in People’s Republic of China.

3243 Foreign Policies in the Former Soviet Bloc. The comparative foreign policies of the territories of the former "Eastern bloc" in the period following the revolutions of 1989-91. The resurgence of nationalism and the effects of defining and pursuing national self-interest on the foreign policies of Eastern European and former Soviet territories.

3313* (I) Governments and Politics in the Middle East. Analysis of political institutions and processes with emphasis on selected countries of the Middle East: the social and economic basis of politics; nationalism, political development and factors of instability and change.

3353* Parties and Interest Groups. Political parties and interest groups as institutions; their role in elections and government.
4053* Political Campaigns. Lab 2. Planning, fundraising, targeting, public opinion, support operations, voter contact, the mass media and candidate activities. Lab work in campaigns or government offices.

4223 (S)Voting and Elections. Electoral systems and their relationship to political development, political socialization, issue emergence, voting patterns, and electoral cycles.

4353* (S)The Legislative Process. The power and organization of legislatures, as well as the selection and behavior of legislators. Special attention given to the U.S. Congress.

4383* (S)The American Presidency. The politics of presidential selection, removal and succession; formal and informal powers of the president; relations with Congress, the national judiciary and national executive branch; proposed reforms and the vice-presidency.

4393* Public Policy. Prerequisite: any one of 1013, 2033, 2113, ECON 1113, 2123, SOC 1113, PHILO 2113. Identification of policy options open to policy makers and examination of measurements and rationales underlying governmental programs.

3513 Public Opinion and Polling. The nature of public opinion. Public opinion polling, the factors influencing opinion formation, and the effects of public opinion on policy and policy makers.

3613* State and Local Government. Political processes, government and administration in American states, cities and counties; special emphasis on Oklahoma.

3663* Political Thought. The teachings of the three lasting traditions of Western political thought: classical, Christian and modern.

3953 (S)Minorities in the American Political System. Prerequisite: 1113. Examination of mass and elite level behavior of minorities in the contemporary U.S. political system.

3983* (S)The Judicial Process: Courts, Judges and Politics. The American judiciary and legal process from a political perspective with particular emphasis on judicial organization and powers, recruitment, fact-finding, decision-making, impact of decisions, the legal profession and relations among courts. Oklahoma judicial organization.

4003* Political Analysis. Prerequisites: 60 credit hours, or 45 hours with GPA of 3.25, including 2113. Logic and techniques of modern political analysis, including the logic of political analysis, the collection and analysis of political information, and data processing and computer applications to the study of politics.

4013* American Foreign Policy. Major problems and policies of American foreign relations since World War II and description of foreign formulation and aid administration.

4053* (l)World Politics. Foreign policies of major powers, areas of tension and sources of international conflict.

4100* Problems of Government, Politics and Public Policy. 1-6 credits, maximum 6. Prerequisites: 60 credit hours, or 45 hours with GPA of 3.25, including 1013. Special problem areas of government, politics and public policy concentrating on topics not covered in other departmental course offerings.

4113* International Institutions. The organization, procedures, functions and role of international institutions, with emphasis on the United Nations and related agencies.

4213* (S)Legal Problems of the International Environment. A case survey of diverse areas in which international law finds applicability; problems of territorial jurisdiction, continental shelves, straits, canals and international river systems, maritime law, national and outer space law and the international law of pollution.

4343* The United States Constitution. An examination of the theoretical, philosophical, and legal underpinnings of the U.S. Constitution, relying heavily on a study of The Federalist Papers.

4353* (S)Administrative Law. Legal powers, limits, and procedures of administrative agencies with emphasis on federal and state administrative procedure acts.

4363* (S)Environmental Law and Administration. Statutory law, case law, and administrative practices relating to regulation of the environment including environmental impact statements, pollution, public lands, and preservation law.

4403* (S)Urban Politics. Problems of governing American metropolitan areas.

4413* Government Budgeting. The politics, planning and administration of government budgets.

4453* (S)Public Personnel Administration. Problems, processes and procedures of public personnel administration.

4513* (S)American Politics. Significant developments and issues in American politics, including American political behavior and political leadership.

4553* (H)American Political Thought. A survey of the major developments in American political thought from the Colonial period to the present, followed by a topical analysis of important recent theoretical developments in political science.

4593* (S)Natural Resources and Environmental Policy. Current issues in the law, politics and administration of energy, land, water, mineral and other natural resources policy with particular emphasis on relations to environmental policies and law.

4653* (H)Contemporary Political Thought. An analysis of 19th and 20th century political ideas, with emphasis on the rise and fall of ideologies along side controversies over relativism, positivism, pragmatism, and resurgent religious faiths.

4663* Politics and Human Reason. An overview of past and present accounts of politics as a rational activity, with attention given to Aristotle, the Federalist, and modern social choice theory.


4963* American Constitutional Law: Equal Protection of the Laws. Prerequisite: 2023 or 3983 recommended. Development of principles of constitutional law by the Supreme Court concerning federalism and separation of powers with particular emphasis on equal protection of the laws concepts in matters of race, gender, wealth, citizenship, legislative reapportionment and voting rights, government employment and affirmative action programs. Legal research techniques.

4973* American Constitutional Law: The Division of Governmental Powers. Prerequisite: 2023 or 3983 recommended. Development of principles of constitutional law by the Supreme Court concerning federalism and separation of powers with particular emphasis on political and doctrinal developments surrounding judicial review, regulation of commerce, taxing and spending and presidential power. Introduction to legal research methods.

4983* American Constitutional Law: Due Process of Law. Prerequisite: 2023 or 3983 recommended. Development of principles of constitutional law by the Supreme Court concerning 5th and 14th Amendment due process concepts, with particular emphasis on suspect's rights, search and seizure, free speech and press, religious liberty, property rights and procedural requirements at national and state level. Legal research techniques.

4993* Political Science Honors Thesis. Prerequisite: senior standing. Honors Program participation. A guided reading and research program ending with an honors thesis under the direction of a faculty member with second faculty reader and oral examination. Required for graduation with departmental honors in political science.

5000* Thesis. 1-6 credits, maximum 6.

5013* Quantitative Methods of Political Analysis. Required of all graduate students. Fundamental methodological issues in the scientific study of politics. Logic of science, principles of research design and computer data manipulation and analysis.

5020* Research in Public Administration. Public Policy and Politics. 1-6 credits, maximum 6. Individually supervised research.

5030* Internship in Public Administration and Government. 1-6 credits, maximum 6. Individually supervised internships in administrative and governmental career areas. Paper required.

5040* Readings in Politics, Public Policy or Public Administration. 1-6 credits, maximum 6. Prerequisite: consent of supervising professor. Readings in the student's major area of study.

5100* Advanced Problems in Government, Politics, and Public Policy. 3 credits, maximum 6. Special seminar, topics vary from semester to semester.
5113* Seminar in Program Budgeting and Finance. 3 credits, maximum 6. Major processes and practices involved in governmental budgeting in the United States at national, state, and local level.

5323* Seminar in Public Personnel Administration. Current practices, problems and issues in public sector personnel administration, including merit system, civil service reform collective bargaining, and equal opportunity and affirmative action.

5420* Seminar in Natural Resource Policy, Law, and Administration. 3 credits, maximum 9. Analysis of the legal and public policy aspects of environmental regulation, including environmental justice issues. Special emphasis on one of three components: environmental justice, administrative law, and national resource law and policy.

5633* Practical Environmental Compliance. Environmental decision making, reading and understanding environmental statutes and regulations, and effectively dealing with the EPA. Environmental permitting and enforcement, policies and procedures. Review of hazardous waste regulations with emphasis on ground water problems.

5643* Regulatory Risk Analysis. Risk-based decision making, government’s risk analysis paradigm, risk analysis policy, and social aspects of risk assessment. Review of the RCRA corrective action, CERCLA (Superfund) remedial action, and NEPA environmental impact study programs.

5710 Seminar in American Political Institutions. 1-3 credits, maximum 6. American institutions, including Congress, the presidency, courts, political parties and interest groups.

Psychology (PSYCH)

1113 (S) Introductory Psychology. Principles, theories, vocabulary, and applications of the science of psychology.

2313 Psychology and Human Problems. Prerequisite: 1113. Personality dynamics and their application to personal, cultural and vocational experience.

2593 Psychology of Human Sexuality. Prerequisite: 1113. Survey of behavioral, personality and psychophysiological components of human sexuality, with special emphasis on the delineation of facts from sexual myths.

3013 Psychology of Motivation. Prerequisite: 1113. Review of research and theory in such areas of motivation as hunger, sex, frustration, aggression, achievement, affiliation, and altruism.

3073 (N) Neurobiological Psychology. Prerequisite: 1113. Neural bases of human experience and behavior. Topics include sensation and perception, motivation and emotion, learning and thinking.

3113 (N) Comparative Psychology. Prerequisite: 1113. Comparative study of behavior characteristics of selected samples of the animal kingdom from protozoa to humans.

3173 Cognitive Neuroscience. Prerequisite: 1113. Multidisciplinary approach to understanding how mental activities of the mind are the result of the processing by the brain.

3213 Quantitative Methods in Psychology. Prerequisite: 1113, MATH 1313, or consent of instructor. Design and evaluation of research in psychology including scales of measurement, basic research designs, and quantitative procedures for data analysis, with emphasis on problems encountered in psychological research.

3223 (S) The Psychology of Work and Industrial Behavior. Prerequisite: 1113. Experimental literature in area of employee motivation. Techniques useful in measurement of employee attitudes and opinions.

3333 (S) Industrial and Organizational Psychology. Prerequisite: 1113. Behavior in task group and organizational contexts with emphasis on management, leadership and human relations.

3413 Psychology of Social Behaviors. Lab 1. Prerequisites: 1113, 3213. Contemporary theoretical and methodological issues in social psychology with special emphasis on the social psychology of the experiment and experimental social psychology with special emphasis on the social psychology of the experiment and experimental social psychology with special emphasis on the social psychology of the experiment and experimental effects of small groups, attitudes and the environment.

3743 (S) Social Psychology. Prerequisites: 60 credit hours or 45 hours with GPA of 3.25. Theories and applications of social cognition, the self, pro-social and aggressive behavior, groups, attitudes and the environment.

3771 Careers and Professionalism in Psychology. Lab 1. Prerequisite: psychology major or minor. Current career options in psychology are reviewed and career skills developed. Skills and information that a professional psychologist needs in a work setting stressed.

3823 (S) Cognitive Psychology. Prerequisites: 60 credit hours or 45 hours with GPA of 3.25. Theories and applications of social cognition, the self, pro-social and aggressive behavior, groups, attitudes and the environment.

3914 Experimental Psychology. Lab 4. Prerequisites: 1113, 3213 or equivalent and five additional hours in psychology. Problems, methods and applications of experimental psychology.
4990 Undergraduate Seminar. 1-6 credits, 6 maximum. Prerequisite: consent of instructor. For honors students and other outstanding students. Special topics in psychology.

4023 Human Evolutionary Psychology. Prerequisite: 1113. The practical and theoretical application of natural selection to human behaviors including sexuality, gender roles, emotion, personality, politics and religion.

4123 (S)Psychology of Women. Lab 1. Prerequisite: 1113. Sex differences and the development of sex role behavior. Encompasses the psychological dynamics of developmental and social issues for women.

4133 (S)Psychology of Minorities. Prerequisite: 9913. Review of psychological theories and research pertinent to minority group status.

4143 (S)Psychology and Law. Lab 1. The new psycho-legal literature reviewed with emphasis on the psychological basis of voir dire, eyewitness behavior, courtroom persuasion, jury deliberation, and mental health issues.

4153 Current Issues in Clinical Psychology. Prerequisites: 1113, 3443 and three additional credit hours in psychology. Problems of the individual in contemporary society and various clinical approaches that have been proposed as possible solutions to these problems.

4213 (S)Conflict Resolution. Prerequisite: 1113. Interpersonal conflict studied from psychological perspectives. Types and uses of conflict, and conditions for constructive dispute settlement.

4333 (S)Personality. Prerequisites: 1113, 3443, or consent of instructor. Basic assumptions, research, and clinical issues relating to the major personality theories.

4483 (S)Psychology of Parent Behavior. Prerequisite: 1113. Historical and contemporary conceptions of parent-child relationship and approaches to communication and discipline; special problems in parenting.

4493 (S)History of Psychology. Prerequisite: 1113. History of psychology as an aspect of European intellectual history. Psychological thought from early philosophical roots to modern conceptions of psychology as a science.

4813 Psychological Testing. Prerequisites: 1113 and 3213. Quantitative aspects of measurement and testing, with emphasis on scaling, standardization, reliability and validity. Basic principles of construction and the ethics of use.

4823 Computer Applications in Psychology. Prerequisites: 3213 and 3914 and consent of instructor. Organizing experimental data on computer-assisted analysis. Emphasis on problems peculiar to within-subject experiments used in psychology. Selection, modification and creation of data analysis programs. A thorough knowledge of statistical techniques is assumed.

4883 Current Issues in Psychology. Prerequisites: 3213, 3914. A capstone course examining issues in psychology, their relationship to current issues in other academic disciplines, and their relevance in an educated society.

4990 Special Problems. 1-6 credits, maximum 6. Prerequisites: 1113, 3213 and consent of instructor. For honors students and other outstanding students. Experimental or library research.

5000 Thesis. 1-6 credits, maximum 6. Required of all graduate students majoring in psychology and writing a thesis.

5011 Proseminar in Biopsychology. Prerequisite: graduate standing in the Department of Psychology. Major theories, methodologies and substantive issues in biopsychology.

5021 Proseminar in Cognitive Psychology. Prerequisite: graduate standing in the Department of Psychology. Major theories, methodologies and substantive issues in cognitive psychology.

5031 Proseminar in Developmental Psychology. Prerequisite: graduate standing in the Department of Psychology. Major theories, methodologies and substantive issues in developmental psychology.

5041 Proseminar in History and Systems of Psychology. Prerequisite: graduate standing in the Department of Psychology. Major theories, methodologies and substantive issues in history and systems of psychology.

5051 Proseminar in Psychology of Learning. Prerequisite: graduate standing in the Department of Psychology. Major theories, methodologies and substantive issues in learning psychology.

5061 Proseminar in Psychology of Personality. Prerequisite: graduate standing in the Department of Psychology. Major theories, methodologies and substantive issues in personality psychology.

5071 Proseminar in Social Psychology. Prerequisite: graduate standing in the Department of Psychology. Major theories, methodologies and substantive issues in social psychology.

5081 Proseminar in Tests and Measurements. Prerequisite: graduate standing in the Department of Psychology. Major theories, methodologies and substantive issues in tests and measurements.

5091 Proseminar in Psychology. Prerequisite: graduate standing in the Department of Psychology. Major theories, methodologies and substantive issues in current relevance in the discipline.

5113 Psychopathology. Prerequisites: 15 credit hours of psychology, graduate standing in the Department of Psychology or consent of instructor. Principles of diagnosis and treatment of major disorders.

5120 Psychology Workshop. 2-6 credits, 6 maximum. Provides an opportunity to study specific psychological problems, both applied and theoretical.

5153 Cognitive Assessment. Lab 1. Prerequisites: 3443, 4813; graduate standing in the clinical program of the Department of Psychology or the doctoral school or counseling psychology program or the psychometry program, or consent of instructor. Cognitive and intellectual assessment of children, adolescents and adults. Fundamental skills in administration, scoring, and interpretation of cognitive tests and report writing. Application of cognitive tests to specific clinical problems.

5183 Seminar in Neuropsychology. Prerequisites: one introductory course in physiological psychology and cognitive psychology; graduate level neurobiology recommended. Introduction to the experimental and clinical nature of congenital and acquired neuropsychological disorders and their treatments.

5193 Ethics and Professional Development in Psychology. Prerequisite: graduate standing in the Department of Psychology. Principles of ethics with a focus on the guidelines and standards for psychology. Legal and ethical issues for the practice of clinical psychology.

5303 Quantitative Methods in Psychology I. Prerequisite: 3213. Statistical methods of evaluating research hypotheses in psychology. Descriptive measures, Student's t, one-way analysis of variance, comparisons among groups and statistical robustness are stressed.

5313 Quantitative Methods in Psychology II. Prerequisite: 5303. A continuation of 5303. Higher-order analysis of variance designs, correlation and regression techniques, and analysis of covariance, with emphasis on the applications to psychological experimentation.

5333 Systems of Psychotherapy. Prerequisite: 5113; graduate standing in the clinical program of the Department of Psychology or consent of instructor. The major approaches to psychotherapy. Methods for creating multiple impact for behavioral change, including interpersonal, social, community and preventative interventions.

5380 Research. 1-12 credits, maximum 12. Prerequisite: consent of instructor. Research project on some psychological problem.

5620 Seminar in Psychology. 1-9 credits, maximum 9. Prerequisite: consent of instructor. Consideration of special topics that are particularly timely or technical in nature.

5660 Teaching Practicum. 1-2 credits, maximum 2. Prerequisite: consent of instructor. Primarily for graduate students with well-defined new teaching responsibilities.

5823 Cognitive Processes. Theory and experimental research findings dealing with human thought processes from a developmental and functional standpoint.

6000 Dissertation. 1-16 credits, maximum 60. Research and report thereon by graduate students in partial fulfillment of requirements for the Doctor of Philosophy degree.

6083 Principles of Behavior Therapy. Prerequisite: graduate standing in the clinical program of the Department of Psychology or consent of instructor. Principles and procedures of behavior therapy and modification.
6133* Ethnic and Cultural Diversity in Psychotherapy. Prerequisites: six credit hours of psychology and consent of instructor. Increasing understanding and appreciation of ethnic and cultural diversity in the psychotherapy context. Critical examination of theory and research related to psychotherapy with multicultural populations.

6143* The Psychology of Substance Abuse. Prerequisite: consent of instructor. Introduction to psychological classification of psychoactive substance (alcohol and drug) use disorders. Theory and research on psychological, biological, and environmental factors that are concomitants of substance abuse. Overview of major research techniques and treatment modalities in this area.

6173* Child Psychopathology and Treatment. Prerequisites: 3443, 3583 or equivalent; graduate standing in the clinical program of the Department of Psychology, the doctorate school psychology program or the psychometry program, or consent of instructor. Theoretical positions and issues in child psychopathology. Procedures used in the treatment of psychological disorders of children.

6223* Research Design. Prerequisites: 3914 and doctoral level standing. Experimental techniques in psychophysics, sensory processes, attention and perception, motivation and emotion, and learning and memory.

6233* Clinical Research Design. Prerequisites: 5303, 5313, and 6223 or consent of instructor. Methodology and research practices in clinical psychology, including experimental design, research practice, data analysis and interpretation, ethics, and dissemination of research findings.

6253* Seminar in Human Development. Prerequisite: consent of instructor. Behavioral aspects of development from the prenatal period to senescence. Normal development contrasted to exceptional development.

6263* Personality Theories. Prerequisites: nine credit hours of psychology and consent of instructor. Various theories of personality.

6283* Factor Analysis. Factor analysis and implications for measurement of mental abilities, personality traits and learning.

6353* Psychology of Motivation. Prerequisite: 3914. Outline of theory and research in human and animal motivation.

6383* Community Psychology. Prerequisite: consent of instructor. Positive rehabilitative and preventive objectives: application of psychological knowledge and skills to problems of social change and general improvement of the quality of life. Physical, psychological and social factors viewed through system analysis.

6393* Psychology of Language. Review of data and theories of speech and language behaviors. Laboratory techniques and experimental designs will also be reviewed to emphasize understanding of psycholinguistic research.

6413* Systems of Psychology. Two different meanings of "system" considered: the traditional meaning, the meaning of the various schools of psychology, and the modern meaning in which contemporary social problems are viewed as sets of interrelated variables that produce unforeseen and remote effects.

6433* Psychology of Information Processing: Development and Aging Aspects. Attention, list processing, pattern recognition and related areas in terms of contemporary facts, theory and application. Special attention paid to development and aging aspects of information processing.

6443* Behavioral Medicine. Prerequisites: graduate standing in the clinical program of the Department of Psychology; consent of instructor. An advanced graduate course for students in training for a Ph.D. in clinical psychology. General considerations for psychophysiological disorders, general intervention strategies in behavioral medicine including biofeedback, and specific consideration and intervention strategies for specific disorders.

6453* Pediatric Psychology. Prerequisite: graduate standing in the Department of Psychology; consent of instructor. Overview of the field of pediatric psychology, including historical perspectives, theoretical underpinnings and application to a variety of child health problems. Child health issues prevention, pain management, and consultation and intervention in medical contexts.

6483* Neurobiological Psychology. Prerequisites: 3073 and 3914 or consent of instructor. Physiological, neuroanatomical, and neurochemical underpinnings of human behavior. Emphasis on effects of central nervous system dysfunction on behavioral processes ranging from sensation to concept formation.

6513* Group Treatment Methods. Prerequisite: graduate standing in the clinical program of the Department of Psychology or the doctorate counseling psychology program, or consent of instructor. Introduction to major group techniques of group treatment including Gestalt and transactional analysis as well as more conventional techniques.

6523* Family Treatment Methods. Prerequisite: graduate standing in the clinical program of the Department of Psychology or the doctorate counseling psychology program. Introduction to techniques and philosophies of family treatment. Includes marital counseling and emphasis on family dynamics.

6553* Advanced Practice in Marital and Family Therapy. Prerequisites: 6523, concurrent enrollment in counseling or clinical practice; graduate standing in the clinical program of the Department of Psychology or the doctorate counseling psychology program, or consent of instructor. Advanced methods in assessment, diagnosis and treatment of marital and family problems. Skill development, professionalism, ethics and case management. Dynamics of co-therapy and conjoint treatment. Case consultation format. Same course as ABED 5953.

6563* Advanced Social Psychology. Prerequisite: 3743. History, theory and experimentation of dynamic interaction of group membership and individual behavior.

6583* Developmental Psychobiology. Prerequisites: 3073 or equivalent; consent of instructor. An exploration of the biological aspects of human development, with particular emphasis on the physiological, ethological, and genetic perspectives.

6613* Experimental Learning Theories. Prerequisite: nine credit hours of psychology. Basic concepts and empirical findings in animal and human learning.

6640* Clinical Practicum. 1-12 credits, maximum 17. Prerequisite: graduate standing in the clinical program of the Department of Psychology. Practicum experience for graduate students in the clinical psychology program.

6643* Psychopharmacology. Prerequisites: 3073 or 5054, consent of instructor. A comprehensive course dealing with the various classes of drugs that affect the central nervous system. Primary focus is on clinical research with humans. Covers topics ranging from drug-receptor interactions through substance abuse and behavioral disorders.

6650* Practicum. 1-16 credits, maximum 16. Prerequisite: graduate standing in the clinical program of the Department of Psychology. For the marriage and family practicum only, doctoral level counseling psychology students may also enroll. Practicum experience for graduate students in the clinical program of the Department of Psychology who are doing supervised practicum in specific clinical areas of specialization.

6673* Neuropsychological Assessment. Prerequisites: 5054 or 6483, and 5064 and 5153, 6753; graduate standing in the clinical program in the Department of Psychology or consent of instructor. Psychological assessments of the effects of cerebral damage or disease.

6713* Projective Psychodiagnostic Methods. Prerequisites: 5113, 515; graduate standing in the clinical program in the Department of Psychology or consent of instructor. Administration and interpretation of projective tests such as the Rorschach, TAT, DAP and their derivatives.

6723* Child Diagnostic Methods. Prerequisites: 5153, 5173; graduate standing in the clinical program in the Department of Psychology or the doctorate school psychology program, or consent of instructor. Administration and interpretation of diagnostic instruments used specifically with children.

6753* Assessment of Personality. Prerequisites: graduate standing in the clinical or counseling program or consent of instructor. Personality assessment and training in the practice of clinical assessment. Trait theory and assessment, techniques of test construction, contemporary assessment techniques including the MMPI-2, test result interpretation and communication, and behavioral methods of assessment.

6883* Seminar in Psychological Testing. Prerequisites: 5153, 6713, 6753, and graduate standing in the clinical program of the Department of Psychology, or consent of the instructor. The administration, interpretation, and integration of projective and objective personality test data and intelligence test data with adult psychiatric patients.
Religious Studies (REL)

1103

[H]The Religions of Mankind. Major world religions such as Hinduism, Buddhism, Judaism, Christianity and Islam with a view to understanding the general nature of religion and its various dimensions.

3013

[H]The Old Testament and Its Study. A study of the Hebrew Scriptures with emphasis upon content, historical background, the history of its study and the critical analysis and theological interpretation of selected passages.

3023


3123


3223


3243

[H]Paul and the Early Church. Recommended: 3023. The letters of Paul in their historical context with special emphasis on his theology and ethics.

3573

H]The Religions of Native Americans, ethnographic and historical perspectives. An analysis of Native American spiritual and cultural practices, mythology, and cosmology.

3613

[H]African Cultures and Religion. Key ideas, values and achievements in African culture and tradition as found in literature, art and music viewed in historical and religious perspective.

3713

[H]Religion, Culture and Society. Recommended: 1103, ANTH 2353, SOC 1113. An introduction to the scientific study of religion. Religious activity in both tribal and technological societies studied in the light of contemporary interpretations of culture and of social behavior. Same course as SOC 3713.

4050*

Studies in Religion. 2-6 credits, maximum 6. Independent studies, seminars and courses on selected topics in religion.

4113*

[H]J]The World of Islam: Cultural Perspectives. The cultural heritage of the world of Islam explored through its expression in the art, architecture and literature of the Muslim peoples.

4330*

Seminar in Biblical Studies. 3 credits, maximum 9. Prerequisites: two courses in Biblical studies. Selected topics in the academic study of the Bible.

Russian (RUSS)

1115

Elementary Russian I. Lab 1 1/2. Understanding, speaking, reading and writing. Method of instruction is audio-lingual.

1225

Elementary Russian II. Lab 1 1/2. Prerequisite: 1115 or equivalent. Continuation of 1115.

2115

Intermediate Russian I. Prerequisite: 1225 or equivalent. Continuation of 1225. Russian grammar, composition and conversation.

2225

[II]Intermediate Russian II. Prerequisite: 2115 or equivalent. Continuation of 2115.

3003


3053

[LS]Introduction to Central Asian Studies. A general overview of the Central Asian states examining the history, politics, economics, geography, and culture of Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan as reflected in their thoughts, religion, literature, and architecture, in the past, and the strategic importance of their natural wealth for the present and future. Same course as HIST 3053 and POLSC 3053.

3113

Russian Conversation. Prerequisite: 2225. Development of conversational skills in formal and informal Russian language; study of oral communication and idioms; vocabulary enhancement.

3223

[H]Russian Culture and Civilization. Art, literature, music, architecture, and contemporary life of Russia. Course taught in English.

3233

Russian Composition. Prerequisite: 2225. The development of all forms of written communication in Russian through practice in writing compositions, letters, reports and other documents in Russian.

4113


4123

[H]Russian Literature in Translation II. Russian and Soviet literature from mid-19th century to present: Tolstoy, Chekhov, Gorky, Zamyatin, Sholokhov, Pasternak, Bunin, Solzhenitsyn, Arzhat (Daniel), Tertz (Sinyavsky), Voznesensky and Evtushenko. Readings in English. Classes conducted in English.

4253

Reading Russian Literary Texts. Prerequisite: 31 13 or 3223. A survey of original literary texts by major Russian authors of the 19th and 20th centuries. Conducted in Russian.

Sociology (SOC)

1113

[S]Introductory Sociology. Coming to terms with the requirements for living in a complex social world. Sociological concepts used to assist students in understanding the social influences in day-to-day life.

2113

Principles of Sociology. Prerequisites: 15 semester credit hours. The science of human society. Emphasis on basic concepts and research studies. Required of all sociology majors and minors.

2123

Social Problems. Exploration in selected social issues in contemporary American society, such as deviance, poverty, sexism, racism and ageism.

2133

[S]American Racial and Ethnic Relations. The historical and sociological dimensions of race and ethnicity in American life, and the social psychological origins and consequences of conflict that race and ethnicity have generated in the American experience.

3113

Theoretical Thinking in Sociology. Prerequisites: 9 credit hours of sociology, including 1113. Sociological theory in three broad areas: the emergence of social theory, the major schools of social theory and the relevance of theory to sociological research.

3223

[S]Social Psychology. Social basis of personality development and behavior, including symbolic environment, self and group, motivation, attitudes and opinions, and social roles.

3323*


3413

Rural Sociology. Life in rural America and nonwestern societies examined with special emphasis on social relations, population movements, social change and problems of rural society.

3423


3523*


3623

Clinical Sociology. Prerequisites: nine hours of sociology including introductory sociology and two other sociology courses. Planned positive change through interventions of services, programs and policies. An examination of the field, practice concerns, clinical sociology in specific settings and with special populations.

3713

3723* (S)American Marriage, Family, and Male-Female Relationships. The sociological relationship between marriage and family and other institutional structures and systems, especially work and the economy. Male and female roles and relationships in mate selection, sexuality, marriage, divorce, and other intimate situations.

3823* (S)Sociology of Death and Dying. Death and dying as social phenomena including cross-cultural perspective. An understanding of occupations and professions dealing with terminally ill patients in hospitals and with funerals. Students required to engage in original research from community sources.

3952 Applied Sociology. Prerequisite: sociology majors or consent of instructor or adviser. Application of sociological theory and methods to various job situations.

3993 (S)Sociology of Aging. Sociological problems of aging, including the analysis of the behavior of the aged within the framework of social institutions.

4003 Senior Thesis in Sociology. Prerequisites: 3113, 4013, 4313, STAT 4013, and consent of instructor. Conduct a research project (review literature, propose research question, gather data, and write report) on a sociologically significant topic or issue.


4023* (S)Juvenile Corrections and Treatment Strategies. Prerequisite: 3523 or 4333. The juvenile justice system, emphasizing the juvenile court, diversion and youth service bureaus as well as the institutionalized treatment of delinquents and foster homes. Experimental treatment strategies with institutionalized delinquents.

4043 (S)Gender and Work. Prerequisite: one upper-division course. Consideration of unpaid and paid volunteer work and gender differences. Linkages between economy, work, and family with examples from the United States and less developed countries.

4133* (A)Social Research Methods. Prerequisites: 3113 and STAT 4013. Applying sociological theory to designing qualitative and quantitative research; methods of data collection, processing, and analysis; basic skills in computer analysis of social data. Research project included.

4203* (S)Sexuality in American Society. Prerequisite: junior standing or consent of instructor. Sociological aspects of sexual behavior, attitudes, and belief systems in society. Similarities and differences in males and females in all types of sexuality.


4323* Sociology of Agriculture. Overview of U.S. agriculture focusing on changing markets and technologies and their impact on farm families and other social institutions and relationships. Emphasis on agricultural problems, policies, and alternatives to traditional farming practices.

4333* (S)Criminology. Summary of sociological research pertaining to crime causation and criminal behavior. Modern trends in criminal justice system and treatment and control.

4343* (S)Medical Sociology. Health and illness as social and societal phenomena including the doctor-patient relationship, distribution and etiology of disease, the social meaning of health and illness, basic epidemiology, and the social processes involved in medical practice. Cross-cultural comparisons and the sociology of the health professions.

4383* (S)Social Stratification. Systems of class and caste, with special attention to the United States. Status, occupation, income and other elements in stratification.

4423* (S)Community Organization and Development. Structure, change and development of the local community in a rapidly changing society. Emphasis on community organization and planned change.

4433* (S)Environmental Sociology. Critical assessment of the social causes and consequences of problems with resource scarcity and environmental degradation. Environmental problems viewed as social problems viewed as social problems requiring an understanding of the structural conditions producing environmental problems and inhibiting resolutions.

4443* (S)Sociology of Law and Legal Institutions. Prerequisite: 3523 or 4333. Criminal and civil law as mechanisms of social control; conflict and consensus models of legislation; legal doctrine and its application by police, prosecution, and courts. Emphasis on gender differences. Case studies including empirical research from the United States and less developed countries.

4453* (S)Demography of Ethnic and Immigrant Population in Global Perspective. The population characteristics of immigrants, ethnic and racial groups along major demographic dimensions. Cross-national comparisons between minority groups on demographic and cultural factors.

4533* (I,S)World Population Problems. Fertility, mortality and migration, and other factors related to population size, density, and composition; the population explosion, worldwide famine, birth control, and other serious social issues.

4623* (I,S)International Industry and Work. Prerequisite: six hours of social sciences. A focus on the international industry and globalization within a sociocultural context. The impact of country cultures upon industry and work and adjustment to cross-cultural problem solving and development of global work teams.


4850 Internship in Sociology. 1-4 credits, maximum 4. Prerequisites: 3952, completion of 12 hours of sociology, or consent of internship coordinator. Field experience in a variety of work settings.

4923* The Field of Corrections. An overview of correctional work focusing on probation, parole and institutions. A survey of contemporary alternatives to conventional imprisonment.

4990 Exploration of Sociological Issues. 1-3 credits, maximum 6. Prerequisite: consent of instructor. Examines sociologically significant topics and issues.

4993 Senior Honors Thesis. Prerequisites: departmental invitation, senior standing, Honors Program participation. A guided reading and research program ending with an honors thesis under the direction of a senior faculty member, with the second faculty reader and oral examination. Required for graduation with departmental honors in sociology.

5000* Thesis in Sociology. 1-6 credits, maximum 6.

5043* Advanced Topics in Gender and Work. Prerequisite: graduate standing. In-depth examination of sociological theories of paid, unpaid and volunteer work with special emphasis on gender differences. Case studies including empirical research from the United States and less developed countries.

5113* Classical Sociological Theory. Prerequisite: 3113 or equivalent. Major trends in sociological thought. The development of sociological theory in Europe and America.

5123* Contemporary Sociological Theory. Prerequisite: 3113 or equivalent. Critical examination of significant theoretical formulations, 1920 to the present. Relation between theoretical development and current research emphasis.

5213* Techniques of Population Analysis. Examination of primary sources of demographic data and techniques employed in collection and analysis of statistics. The use of interpretation and application of population analysis techniques.

5243* Social Research Design and Analysis. Techniques in design, data collection, analysis and interpretation of data for qualitative and quantitative sociological research.

5263* Methods of Social Research II. Prerequisites: 4133 and STAT 4013, or equivalents. Advanced techniques in sociological research and data analysis focusing on the formulation of substantive research questions and application of a variety of statistical techniques and computer programs to answer such questions.

5273* Qualitative Research Methods. Examination of ethnographic studies and implementation issues connected with qualitative research. Research project required.

5323* Seminar on Collective Behavior and Social Movements. Prerequisite: graduate standing. Analysis of major theoretical and empirical approaches employed in the study of social movements. Exploration of problems on the nature and current theories of social movements, including individual versus group approaches. Grassroots resistance, community organizing, political conflicts, and revolutions.
5353* Rural Social Systems. Prerequisite: graduate standing or consent of instructor. Rural social systems in contemporary societies examined historically, theoretically and empirically, focusing on social relations and institutions within rural societies and their relationship to urban social structures.


5533 Correctional Institutions and Residential Treatment. Prerequisite: 4923 or equivalent. Nature and effects of custodial institutions on the inmates. Prison community, its structure, social processes and dynamics. Resocialization of prison inmates in new vocational and social skills.

5563* Community Treatment of Offenders. Prerequisite: 4923 or equivalent. Treating offenders in the community without incarcerating them in prison. Probation and other rehabilitative services. Impact of new community treatment centers, group homes, probation hotels and halfway houses. Effectiveness of the individual, group and family therapies on the offenders.

5753* Complex Organizations. Prerequisite: six hours of undergraduate sociology or equivalent. Nature and types of complex organizations: organizational structure; organizations and society; organizational changes.

5883* Sociology of Education. Manner in which social forces and institutions influence education and the educational system in the United States.


5990* Advanced Problems and Issues in Sociology. 1-9 credits, maximum 9. Prerequisite: consent of instructor. Group enrollment or individual research enrollment as needed. Graduate level analysis of special problems and issues in sociology not covered in other department offerings.

6000* Dissertation. 1-12 credits, maximum 18.

6213* The Sociology of Knowledge. Prerequisite: six hours of undergraduate sociology or equivalent. Relationship between human thought and the social context within which it arises.

6233* Sociology of Entrepreneurship: Economic Development Issues. Prerequisite: graduate standing. Exploration of the nature, philosophy and role of entrepreneurship in societies. Entrepreneurship organized around race, ethnicity, gender and immigrant groups.

6260* Seminar in Current Research Literature. 2-3 credits, maximum 6. Methodological analysis of advanced research in major areas of sociology.

6390* Seminar in the Family. 2-3 credits, maximum 6. Intensive analysis of published research in the sociology of the family.

6420* Seminar in Urban Sociology. 2-6 credits, maximum 6. A theoretical and applied approach to cross-cultural urban studies. Examines different methodologies for urban community analysis.

6450* Seminar in Industrial Sociology. 2-3 credits, maximum 6. Intensive analysis of selected problems in industrial sociology.

6460* Advanced Studies in Environmental Sociology. 1-6 credits, maximum 6. Prerequisite: 5463 or consent of instructor. Intensive examination of selected topics in environmental sociology.

6550* Seminar in Social Organization. 2-3 credits, maximum 6. Research and literature relating to macro-social analysis.


6750* Seminar in Deviance and Criminology. 2-3 credits, maximum 6. Current research and theory in criminology, penology and deviance in modern society.

6853* Seminar in Symbolic Interactionism. Symbolic interactionism, a major theoretical school of thought in sociology and psychology, emerging from philosophical pragmatism with special emphasis on the thoughts of George H. Mead and its derivatives including dramaturgy, existential social psychology and phenomenological.

6950* Seminar in Social Gerontology. 2-3 credits, maximum 6. A theoretical and practical examination of the sociological implications of aging, both individual and societal, of an aging population.

Spanish (SPAN)

1115 Elementary Spanish I. Lab 1 1/2. Pronunciation, conversation, grammar and reading.

1225 Elementary Spanish II. Lab 1 1/2. Prerequisite: 1115, or equivalent.

2112 Intermediate Reading and Conversation I. Lab 1. Prerequisite: 1225 or equivalent. (May have been gained in high school.) Reading and discussion of simpler Spanish texts, mostly cultural. May be taken concurrently with other 2000-level Spanish courses.

2113 Intermediate Conversation and Composition I. Lab 1. Prerequisite: 1225 or equivalent. (May have been gained in high school.) Review and further presentation of grammar and pronunciation; consolidation of basic skills, with additional emphasis on writing. May be taken concurrently with other 2000-level Spanish courses.

2222 Intermediate Conversation and Composition II. Lab 1. Prerequisite: 2113 or equivalent. (May have been gained in high school.) Readings, vocabulary building, conversation, guided composition. May be taken concurrently with other 2000-level Spanish courses.

2223 Intermediate Reading and Conversation II. Lab 1. Prerequisite: 2112 or equivalent. (May have been gained in high school.) Reading and discussion of more advanced Spanish texts, mostly literary. May be taken concurrently with other 2000-level Spanish courses.

3003 (H)Survey of Spanish Literature. Prerequisite: 20 credit hours of Spanish or equivalent. Development of Spanish and Spanish-American literature to the present. Class conducted in Spanish.

3200 Advanced Conversation and Composition. 1-3 credits, maximum 3. Lab 0-6. Prerequisite: 20 credit hours of Spanish or equivalent. Practice in composition and stylistics, designed to bring students up to a high level of proficiency in speaking and writing. Spanish majors must take all three credits in one semester.

3210 Advanced Grammar. 1-3 credits, maximum 3. Prerequisites: 20 credit hours of Spanish or equivalent proficiency. Spanish majors must take all three credits in one semester.

3333 (H)Hispanic Civilization I. Prerequisite: 20 credit hours of Spanish or equivalent. Reading and discussion of selected texts outlining the development of contemporary Spanish civilization. Classes conducted in Spanish.

3463 Advanced Diction and Phonetics. 1-3 credits, maximum 3. Prerequisites: 20 credit hours of Spanish or consent of instructor. Required course for teacher certification/licensure. Spanish speech sounds and intonation patterns, with practice to improve the student's pronunciation.

4113 (H)Chicano Literature and Civilization. Prerequisites: 20 credit hours of Spanish or equivalent competence. Reading, analysis, and discussion of the most outstanding works in Chicano literature produced since 1948. Contemporary works are emphasized. Classes conducted in Spanish.

4173 (H)Hispanic Drama. Prerequisite: 20 credit hours of Spanish or equivalent competence. Reading and interpretation of dramatic works selected from the Hispanic literatures.

4220 20th Century Hispanic Literature. 1-3 credits, maximum 3. Prerequisite: 20 credit hours of Spanish or equivalent. Major 20th century Hispanic writers. Classes conducted in Spanish.

4243 Translation and Writing of Documents. Prerequisite: 20 credit hours of Spanish or equivalent competence. Translation of documents produced by government agencies, universities, business and industrial organizations. Writing of letters, memos and contracts.

4253 (H)Masterpieces of Hispanic Literature I. Prerequisite: 20 credit hours of Spanish or equivalent competence. Reading and analysis of classics selected from the Hispanic literatures.

4263 (H)Masterpieces of Hispanic Literature II. Prerequisite: 20 credit hours of Spanish or equivalent competence. Reading and analysis of classics selected from the Hispanic literatures. An historical continuation of 4253. SPAN 4263 is not a prerequisite for this course.
Communicative behavior.

4550  Seminar in Spanish.  1-3 credits, maximum 9.  Prerequisite: 20 credit hours of Spanish or equivalent.  Readings and discussion of selected texts outlining the development of contemporary Hispanic civilization outside the Iberian peninsula.  Classes conducted in Spanish.

5110* Advanced Hispanic Studies.  1-3 credits, maximum 9.  Prerequisite: 20 credit hours of Spanish or equivalent.  Readings and discussion of vital subjects in Spanish.

Speech Communication (SPCH)

2713  (S)Introduction to Speech Communication.  Principles and techniques of preparing for, participating in and evaluating communication behavior in the conversation, the interview, group discussion and the public speech.  A competency-based approach.

3010  Speech Activity Participation.  1-3 credits, maximum 6.  Preparation for, and participation in, speech communication and speech pathology activities.

3703  Small Group Communication.  General systems approach to small group processes.  Special consideration given to group roles, norms, leadership and decision making.  Participation in various types of discussion groups.

3270  Practicum I.  1-2 credits, maximum 2.  Prerequisite: speech communication major.  Communication facilitation for the speech communication major, with student's initial role as interventionist.

3723  Business and Professional Communication.  Oral communication encounters in business and professional settings.  The interview, informative briefing, talking-paper, small group interaction and informative, integrative and persuasive speeches.

3733  (S)Elements of Persuasion.  Principles and concepts of interpersonal and public persuasive encounters.  The instrumental and interactive nature of persuasion.  Designing and participating in actual persuasive campaigns.

3743  Advanced Public Speaking.  The preparation and delivery of various types of public speeches.

3793* Communication in Interviews.  General principles of interviewing.  Specific guidelines for the interviewer in survey, journalistic, counseling, selection, appraisal, legal, medical, and sales interviews.

4010  Independent Study in Speech Communication.  1-3 credits, maximum 3.  Prerequisite: consent of instructor.  Supervised research projects in speech communication.

4703  Communication Theory.  Survey of current theories and models dealing with symbolic and communicative behavior.

4710  Topics in Speech Communication.  1-3 credits, maximum 6.  Selected current topics in speech communication.

4720  Practicum II.  1-3 credits, maximum 3.  Prerequisite: consent of instructor.  Individual research projects providing practical experience for advanced undergraduate students on and off campus.

4723  (H)History of Public Address.  Analysis of speeches of selected American orators as artifacts and rhetorical responses.  Content, structure and style of the speeches and the historical situations in which they were given.

4733  Legal Communication.  Analysis and applications of oral communication and analytical skills required for effective performance in trial courts.  Course culminates in a day-long mock trial.

4743* Problems of Interpersonal Speech Communication.  Application of communication theory to interactions in person-to-person settings.  Identification and management of barriers related to the concepts of perception, attraction, self-disclosure, listening and conflict.

4753* (I)Intercultural Communication.  Social and cultural differences between individuals from diverse backgrounds as possible barriers to effective communication.

4760* Organizational Communication.  The interface between communication theory and organizational structure.  Nature of communication problems in organizations, strategies for overcoming such problems and the design of effective communication systems in organizational settings.


4793* (S)Nonverbal Communication.  Nonverbal aspects of speech communication.

4993  Senior Honors Thesis.  Prerequisites: departmental invitation, senior standing, Honors Program participation.  A guided reading and research program ending with an honors thesis under the direction of a faculty member.  Required for graduation with departmental honors in speech communication.

5000  Research and Thesis.  1-3 credits, maximum 6.  Prerequisite: approval of major professor.  Research in speech and audiology.

5013* Introduction to Graduate Study.  Research methods with special emphasis on those used most frequently in communication research; professional opportunities in the various speech fields; practical experience in outlining a piece of research.

5023* Introduction to Quantitative Research in Speech.  Methods and major findings of empirical research in speech.

5210* Advanced Practicum.  1-3 credits, maximum 9.  Prerequisite: consent of instructor.  Practical experience for advanced students on and off campus.

5710* Seminar in Speech.  1-3 credits, maximum 9.  Individual and group investigations of problems in speech communication, theater, and speech pathology and audiology.

5713* Rhetorical Theory.  Contemporary rhetorical theory focusing on the processes of social influence.

5723* Oral Communication Theory.  Modern theories dealing with symbolic and communicative behavior.

5733* Human Relations in Organizations.  The place of oral communication in decision-making in organizations.  Relationship of oral communication to organizational structure, organizational needs, patterns of leadership and techniques of information collection.

5763* Seminar in Organizational Communication Consultancy.  Diagnostic measures for identifying communication problems in organizations and the development of consulting or interventionist programs to solve such problems.

Statistics (STAT)

2013  (A)Elementary Statistics.  Prerequisite: MATH 1513.  An introductory course in the theory and methods of statistics.  Descriptive measures, elementary probability, samplings, estimation, hypothesis testing, correlation and regression.  There is a separate section for students in social sciences.  No credit for students with credit in 2023.

2023  (A)Elementary Statistics for Business and Economics.  Prerequisite: MATH 1513.  Basic statistics course for undergraduate business majors.  Descriptive statistics, basic probability, discrete and continuous distributions, point and interval estimation, hypothesis testing, correlation and simple linear regression.  No credit for students with credit in 2013.

3013  (A)Intermediate Statistical Analysis.  Prerequisite: 2013 or 2023.  Applications of elementary statistics to management, behavioral and social science data.  Elementary probability, sampling, estimation, hypothesis testing, correlation and regression.  Analysis of variance for data that are in a one-way, two-way crossed, or in a two-fold nested classification.

401* (A)Statistical Methods I.  Lab 2.  Prerequisites: 20 credit hours including MATH 1513.  Basic experimental statistics, basic probability distributions, methods of estimation, tests of significance, linear regression and correlation, analysis of variance for data that are in a one-way, two-way crossed, or in a two-fold nested classification.

402* (A)Statistical Methods II.  Lab 2.  Prerequisites: 3013 or 4013 or 4033.  Basic concepts of experimental design.  Analysis of variance, covariance, split-plot design.  Factorial arrangement of treatments, multiple regression in establishment, curvilinear regression, enumerative data.

403* Engineering Statistics.  Prerequisite: MATH 2155.  Introduction to probability, random variables, probability distributions, estimation, confidence intervals, hypothesis testing, linear regression.
<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Prerequisites</th>
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<tbody>
<tr>
<td>4043*</td>
<td>Applied Regression Analysis</td>
<td>Prerequisite: one of 4013, 4033, 5013 or equivalent. Matrix algebra, simple linear regression, residual analysis techniques, multiple regression, dummy variables.</td>
</tr>
<tr>
<td>4091</td>
<td>Statistical Analysis System</td>
<td>Prerequisite: MATH 4013 or equivalent. SAS dataset construction, elementary statistical analysis, and use of statistics and graphics procedures available in the SAS package.</td>
</tr>
<tr>
<td>4113*</td>
<td>Probability Theory</td>
<td>Prerequisites: MATH 2155 and one other course in MATH that has either 2145 or 2155 as a prerequisite. Basic probability theory, random events, dependence and independence, random variables, moments, distributions of functions of random variables, weak laws of large numbers, central limit theorems.</td>
</tr>
<tr>
<td>4203*</td>
<td>Mathematical Statistics I</td>
<td>Prerequisite: MATH 2155. Introduction to probability theory for students who are not graduate majors in statistics or mathematics. Probability, dependence and independence, random variables, univariate distributions, multivariate distributions, moments, functions of random variables, moment generating functions.</td>
</tr>
<tr>
<td>4223*</td>
<td>Statistical Inference</td>
<td>Prerequisites: 41 13 and MATH 3013. Sampling distributions, point estimation, maximum likelihood methods, Rao-Cramer inequality, confidence intervals, hypothesis testing, sufficiency, completeness.</td>
</tr>
<tr>
<td>4233*</td>
<td>Mathematical Statistics II</td>
<td>Prerequisites: 4203 and MATH 3013. Statistical inference for students who are not graduate majors in statistics or mathematics. Sampling distributions, maximum likelihood methods, point and interval estimation, hypothesis testing.</td>
</tr>
<tr>
<td>4503*</td>
<td>Nonparametric Methods</td>
<td>Prerequisite: one of 4013, 4043, 5023 or consent of instructor. A continuation of 4013 and 4023, concentration on nonparametric methods. Alternatives to normal-theory statistical methods; analysis of categorical and ordinal data; methods based on rank transforms, measures of association, goodness of fit tests, order statistics.</td>
</tr>
<tr>
<td>5043*</td>
<td>Sample Survey Designs</td>
<td>Prerequisite: one of 4013, 4033, 5013 or consent of instructor. Constructing and analyzing personal, telephone and mail surveys. Descriptive surveys including simple random, stratified random designs. Questions, frame construction, non-sampling errors, use of random number tables, sample size estimation and other topics related to practical conduct of surveys.</td>
</tr>
<tr>
<td>5053*</td>
<td>Time Series Analysis</td>
<td>Prerequisite: 4043. An applied approach to analysis of time series in the time domain and the frequency domain. Descriptive techniques, probability models for time series, autoregressive processes and forecasting. Box-Jenkins methods, spectral analysis and use of computers.</td>
</tr>
<tr>
<td>5063*</td>
<td>Multivariate Methods</td>
<td>Prerequisites: 4043 and 5023 or 503. Use of Hotelling's $T^2$ statistic, multivariate analysis of variance, canonical correlation, principal components, factor analysis and linear discriminant functions.</td>
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<tr>
<td>5073</td>
<td>Categorical Data Analysis</td>
<td>Prerequisites: 4223, 5023 or equivalent. Analysis of data involving variables of a categorical nature. Contingency tables, exact tests, binary response models, loglinear models, analyses involving ordinal variables, multinomial response models. Computer usage for analysis is discussed.</td>
</tr>
<tr>
<td>5113*</td>
<td>Intermediate Probability Theory</td>
<td>Prerequisites: 4113 and MATH 5143. Measurement of theoretical presentation of probability, integration and expectation, product spaces and independence, conditioning, different kinds of convergence in probability theory, statistical spaces, characteristic functions and their applications. Same course as MATH 5113.</td>
</tr>
<tr>
<td>5133*</td>
<td>Stochastic Processes</td>
<td>Prerequisites: 4113 and MATH 2223, MATH 3013. Definition of a stochastic process, probability structure, mean and covariance function, the set of sample functions, stationary processes and their spectral analyses, renewal processes, counting processes, discrete and continuous Markov chains, birth and death processes, exponential model, queueing theory. Same course as INDEN 5133 and MATH 5133.</td>
</tr>
<tr>
<td>5203*</td>
<td>Large Sample Inference</td>
<td>Prerequisites: 4223 and 5113. Different types of convergence in probability theory, central limit theorem, consistency, large sample estimation and tests of hypotheses, concepts of asymptotic efficiency, nonparametric tests.</td>
</tr>
<tr>
<td>5213*</td>
<td>Bayesian Decision Theory</td>
<td>Prerequisite: 4023. Statistical spaces, decision spaces, loss and risk, minimum risk decisions, conjugate families of distributions, Bayesian decisions.</td>
</tr>
<tr>
<td>5303*</td>
<td>Experimental Design</td>
<td>Prerequisite: 5023 or 503 with consent of instructor. Review of basic concepts and principles of comparative experiments, the role of randomization in experimentation, interpretation of effects and interactions in multi-factor designs, error term selection principles, multiple comparisons, split unit experiments, incomplete block designs, confounding of factorial effects in 2$^n$ and 3$^n$ series of factorials, single and fractional replication optimum seeking designs, pooling of experiments over time and space, crossover and switch back designs.</td>
</tr>
<tr>
<td>5323*</td>
<td>Theory of Linear Models I</td>
<td>Prerequisites: 4223, and MATH 3013, and one of 4023 or 5023. Multivariate normal distributions of quadratic forms, general linear models, Markov theorem, variance components, general linear hypotheses of full rank models.</td>
</tr>
<tr>
<td>5333*</td>
<td>Theory of Linear Models II</td>
<td>Prerequisite: 5323. Maximum likelihood estimation, missing data structures; balanced incomplete block design; less than full rank models; general mixed models; intrinsically linear models; sequential estimation.</td>
</tr>
<tr>
<td>5403*</td>
<td>Theory of Sample Design</td>
<td>Prerequisite: 4113 or 4203. Deriving estimates and variances of estimates for different sampling designs. Mathematical development of sampling. Construction of simple probability sampling including simple random, stratified random, cluster and multistage sampling. Estimation techniques including ratio and regression techniques. Determination of sample sizes and allocations.</td>
</tr>
<tr>
<td>5600*</td>
<td>Seminar in Statistics</td>
<td>1-6 credits, maximum 12. Special studies for master's students. Survey and discussion of research in mathematical statistics and statistical methods.</td>
</tr>
<tr>
<td>6123*</td>
<td>Advanced Probability Theory</td>
<td>Prerequisites: 5113 or MATH 5113, and MATH 4283. Sequences of random variables, convergence of sequences, and their measure theoretical foundations. Different kinds of convergence in probability theory. Characteristic functions and their applications. Laws of large numbers and central limit theorems. Conditioning. Introduction to stochastic processes. Same course as MATH 5123.</td>
</tr>
<tr>
<td>6213*</td>
<td>Advanced Statistical Inference</td>
<td>Prerequisite: 5113. Point estimation, maximum likelihood, Cramer-Rao inequality, confidence intervals, Neyman-Pearson theory of testing hypothesis and power of test.</td>
</tr>
</tbody>
</table>
Technical Education (TECED)

3101 Introduction to Technical Education. The role and function of technical education in the development of human resources. Historic and philosophic bases for technical education with emphasis on programs, purposes, and objectives and the variety of environments in which such programs exist.

5233 Occupational Analysis. Techniques for determining educational requirements of technical occupations. Analysis systems used by educational institutions, the military and the United States Department of Labor.

4533 Instructional Design for Training. Design and development of training to address performance problems in organizations, business and industry. In-depth study of a systematic approach to training for performance. Same course as OAED 5433.

Technical and Industrial Education (TIED)

2000 Field Experience in Industrial Practice. 2-6 credits, maximum 16. Prerequisite: consent of instructor. Supervised work experience in student's proposed teaching area with special emphasis on occupational skill development. Written agreement between student, employer and department must be made prior to beginning of field experience program. Graded on a pass-fail basis.

3000 Trade and Industrial Occupational Experience. 1-24 credits, maximum 24. Prerequisites: two years teaching experience, satisfactory factory completion of the required basic 16 credit hours of TIED courses and consent of instructor. Credit to be determined by a special skill competency examination.

3203 Foundations and Services of Trade and Industrial Education. Opportunities provided by vocational education, with special emphasis on trade and industrial education and its relationship to other elements of the educational system. Legislative aspects of vocational education, general education, student guidance, and programs for disadvantaged and handicapped students.

4103 Instructional Procedures in Trade and Industrial Education. Prerequisites: 4344 and full admission to Teacher Education. Methods and techniques for effective teaching and learning in classroom and shop instruction. Emphasis on the use of instructional aids and competency development. No credit for students with credit in OAED 4103.

4110 Trade Technical Information. 1-4 credits, maximum 6. Prerequisite: consent of instructor. New developments in scientific and technical information and knowledge that are relevant to current trade practices.

4123 Coordinating Vocational Student Organizations and Activities. Student organizations and activities in vocational education at local, state and national levels. Procedures for planning programs of work, incorporation of student organization activities into curriculum, adviser characteristics and responsibilities, fund-raising activities, and techniques for recognizing outstanding members and community supporters.

4214 Safety, Organization and Management of Learning Facilities. Prerequisite: full admission to Teacher Education. Analysis of trades and occupational job activities; development of course outlines and specific instructional materials for shop and laboratory courses.

4773 Practices and Problems of School-to-Work Transition Programs. Problems of school-to-work transition and examination of practices designed to improve it. Planning, organizing, and developing strategies to implement and evaluate school related work-based learning.

4883 Practices and Problems in Integrating Academic and Vocational Education. Prerequisite: 4103 or consent of instructor. Experiences in learning, designing and practicing that technical and industrial teachers can use to integrate academic competencies into their particular curricula. Design and presentation of cognitive psycho-motor and affective occupational lessons that integrate math, social studies, science and/or English-related competencies.

5113 School-to-Work Transition. Strategies and procedures for coordinating school-to-work transition programs (e.g., cooperative education, youth apprenticeship exploration). Planning, organizing, implementing, and evaluating school-related, work-based learning.

5153 Supervision of Vocational Education. Prerequisite: consent of instructor. Role and function of administrators responsible for supervising the planning, implementation and management of vocational education programs.

5223 Evaluation of Instruction. Prerequisite: 4103. Principles of evaluation and methods for applying these principles to improve the effectiveness of vocational education programs.

5233 Advanced Instructional Procedures in Trade and Industrial Education. Advanced methods and procedures for effective teaching and learning in the trade and industrial classroom and laboratory. Teaching basic educational and employment skills and the selection of job-related topics common to most occupations with procedures for incorporating those topics into the regular curriculum.

5313 Guidance, Placement and Follow-up in Occupational Education. Prerequisite: vocational teaching experience. Teacher-counselor activities in vocational student advisement, placement and follow-up.

5443 Individualizing Competency-based Instruction Programs. Develops knowledge and skills utilizing the concept of open entry/open exit necessary for planning, developing and implementing a competency-based vocational education program.

5553 Vocational Education, Community and Industry Relations. Exploration of strategies for developing meaningful relationships among vocational educators, industry representatives, and community members to increase the likelihood that the needs of students, workers, employers and community members are met.

5665 Conference Leading. Developing skills in planning, organizing and leading conferences.

9510 Developing and Analyzing Teaching Content. 1-3 credits, maximum 6. Prerequisite: 4344 and consent of instructor. Provides opportunity for experienced teachers to incorporate the latest industrial technology into their course of study.

Technology Education (TE)

3002 Introduction to Industrial Technology Education. Industrial technology education in a modern educational system, including the historical and philosophic bases for such programs. Purposes, objectives and functions of contemporary industrial arts and technology education programs in public schools. Participation in on-site observation experience in the public schools.


3033 Materials and Processes. Lab 4. Introduces students to the basic properties of metallic, polymeric, wood, ceramic and composite materials and the proper techniques used to convert these materials into products. Special attention is given to the safety and care of industrial equipment.
### Telecommunications Management (TCOM)

#### 5012*
**Telecommunications Laboratory. Lab 2.** Prerequisites: graduate standing and consent of program director. Familiarization with the hardware used to move voice, data and video traffic. Data network experiments include set up and operation of a small LAN, interconnection of these LANs via bridges or routers, and attaching voice and video modules to the LANs. Telephone network experiments include installation of small PBXs and interconnection of them to the campus phone system, and interconnection of the lab PBXs with crosspoint switches and fiber. Video experiments include interconnection and operation of a small two-camera studio, and digitizing and transferring the video over the laboratory telephone system. Practical operating aspects and state of distance transmission devices, switching equipment for transmitting data, voice and video signals. Handling information problems within selected environments.

#### 5113
**Industry Overview and Telecommunications Applications.** Prerequisites: graduate standing and consent of program director. Overview of telecommunications industry, technology, regulatory environment, and current topics in telephone services (wireless and wireline), business data services, CATV, and Internet services and providers (including JAVA and HTML). Managerial and strategic aspects of telecommunications technologies. Guest speakers from the telecommunications industry.

#### 5123*
**Telecommunications Systems II.** Prerequisites: ECEN 5553 and consent of program director. Applied technical coverage of selected topics from the upper layers of the OSI model. Network and Transport layers using, TCP/IP, IPX/SPX, and Netbeui, as well as security issues, and other multilayer exploits of state-of-art protocols: flow control, RSVP, encryption, compression, and LAN/WAN applications.

#### 5143*
**Telecommunications Analysis, Planning and Design.** Prerequisites: ECEN 5553 and consent of program director. Introduction to the basic system analysis tools and the procedures for conducting a system analysis. System requirements, the initial analysis, the generation of useful story analysis, detailed analysis, logical design, and the general system proposal. Current system documentation through use of classical and structured tools and techniques for describing flows, data flows, data structures, files designs, input and output designs, and program specifications.

#### 5153*
**International Telecommunications Management.** Prerequisites: graduate standing and consent of program director. Investigation of the institutions that affect the use of telecommunications. The various parts of the federal government involved, such as the Department of Commerce, the FCC and the Department of State. The role of international institutions, including the ITU, UNESCO, and the various satellite organizations such as INTELSAT.

#### 5163*
**Telecommunications Practicum. Lab 3.** Prerequisites: graduate standing and consent of program director. Application of knowledge and skills developed in core courses in an organizational environment to solve telecommunications management problems. Integration of concepts and adaptation of theory to fit organizational reality.

#### 5213*
**Network Design and Management.** Prerequisites: ECEN 5553 and consent of program director. Technical as well as managerial aspects of developing an integrated communications network. Systems analysis and design of the communications networks covering voice, data and video. Management of a network.

### Advanced Topics in Telecommunications Management

#### 5310*
**Advanced Topics in Telecommunications Management.** Prerequisites: graduate standing and consent of program director. Advanced topics in the interdisciplinary field of telecommunications management, such as legal and regulatory issues, electronic commerce, internet and intranet development.

#### 5350*
**Advanced Telecommunications Management Lab. 2-3 credits, maximum 3. Lab 2-3.** Prerequisites: 5012 and consent of program director. Advanced state-of-the-art topics in voice, data and video. Hands-on network experiments beyond coverage in the required TCOM 5012 lab.

### Directed Studies in Telecommunications Management

#### 5990*
**Directed Studies in Telecommunications Management.** 3-6 credits, maximum 6. Prerequisites: graduate standing and consent of program director. Special advanced topics, projects and independent study in telecommunication management.

### Theater (TH)

#### 1500
**Theater Practicum.** 1 credit, maximum 6. Lab 2. Laboratory experience in theater production, acting and crew assignments. Graded on a pass-fail basis.

#### 1533
**Voice and Diction.** Freeing the natural voice; developing the ability to use various speaking styles (loud, soft, whispers, etc.); working with resonance, and range; use of International Phonetic Alphabet in developing articulation and pronunciation; exercises in phrasing and intonation; preliminary dialect work.

#### 2413
**Introduction to the Theater.** Character, plot, thematic, historical and production analyses of various types of play scripts; understanding the work of various theater artists; developing appreciative audiences.

#### 2533
**Oral Interpretation.** Reading aloud effectively; training in voice improvement, platform techniques, selection criteria and audience analysis.

#### 2543
**Acting I.** Prerequisite: 2413 or consent of instructor. Ensemble techniques and creative improvisation; vocal and physical development for the actor; theories and techniques of acting; fundamental scene and character analysis; scene performance workshops.

#### 2663
**Technical Production I.** Lab 4. Elementary techniques of stagecraft and costume for the stage. Basic stagecraft skills. Practical experience preparing departmental productions.

#### 3023
**Theater History I.** Aesthetic and social relationships of theater and western civilization from primitive times to the 17th century.

#### 3123
**Theater History II.** Aesthetic and social relationships of theater and western civilization from the mid-17th century through the 19th century.
4753* Stage Management. Prerequisite: consent of instructor. Procedures and skills of effective stage management. Coordinating and controlling movement of performers and technicians during rehearsal and performance periods. Maintenance and use of the production prompt book, notation of ground plan and blocking; scene shifts; cues for lighting, sound, special effects, and performers; opening and calling the show; post-show wrap-up. Practical experience in stage managing director stationed scenes.

4953* Directing. Prerequisite: 2543. Play analysis for production, problems in staging, and the role of the director. Planning and direction of scenes in laboratory situations.

4963* Theater Graphic Techniques. Fundamental theater graphic techniques to communicate theatrical design ideas.

4973* Stage Costume Design. Lab 4. Prerequisites: 2413, 4963. Approaches to basic costume design including research, conceptual analysis, figure drawing, and executions of character and renderings.

4983* Scene Painting. Lab 3. Prerequisite: 2613. Elementary techniques of scene painting. Individual projects in large scale in representing marble, rock to landscape, interiors. Color theory, forced perspective, ability to paint different styles. Practical experience preparing for departmental productions.

5013* Theater Research Methods. Diverse methods of performance, design and technology, and history and theory. Developing familiarity with standard references and journals of the field, and introduction to professional organizations.

5063* Scenography. Prerequisites: proven experience in scenery, lighting or costume design and consent of instructor. Scenographic design processes for the advanced theater design student. Investigation of design styles and theories and the designers whose works advanced these theories; practical application of designing scenery, lighting and costumes.

5213* Script Analysis. Analytical and interpretive techniques in studying play scripts for theatrical production. Emphasis on writing skills appropriate to script analysis.

5243* Problems in Advanced Acting. Prerequisites: 4953, consent of instructor. Problems in directing period styles, especially Shakespeare. Restoration comedy, absurdist drama, and avant garde drama. Preparation, rehearsal and staging of a complete production by each student.

University (UNIV)

3110 Directed Study. 1-3 credits, maximum 12. Prerequisite: written application approved by instructor, the department head, and the dean of the student's college. Independent study, research, field work or internship.

5940* Career Orientation and Guidance. 1-3 credits, maximum 6. Developing models for career orientation; implementing programs of guidance for occupational choice. Employment opportunities and career development.
Veterinary Anatomy, Pathology and Pharmacology (VAPP)

5000*
Masters Thesis and Research. 1-6 credits. Consent of instructor. May be repeated for a total of 12 credits for advanced undergraduate students.

5110*
Problems in Physiology. 1-6 credits, maximum 20. Consent of instructor. Emphasis on integration of knowledge of morphological, physiological, and behavioral sciences and consent of instructor. Investigates research in physiology for graduate and advanced undergraduate students.

5224*
Comparative Vertebrate Cell Structure and Function. Prerequisites: BIOCH 3653; ZOOL 3204 or ZOOL 4215; consent of instructor. Integrates lecture-dissection laboratory format.

5225*
Veterinary Gross and Developmental Anatomy I. Lab 2. Prerequisite: Consent of instructor. Lectures and laboratories covering the functional anatomy and morphological anatomy of domestic animals. Interaction of developmental process, radiographic, and applied aspects of veterinary anatomy as they relate to a topographical appreciation of the living individual. Integrated lecture-dissection laboratory format.

5315*
Veterinary Pathology I. Lab 2. Prerequisite: Consent of instructor. Lectures and laboratories covering cellular and tissue pathology, pigments, inflammation, immunopathology, disturbances of growth and circulation. Introduction of pathology of the various systems. The functional disturbances that accompany changes in structures, as well as the cause, pathogenesis, and clinical correlations of diseases. Correlation of altered structure and function with clinical signs.

5353*
Veterinary Pharmacology I. Prerequisite: Second-year standing in the College of Veterinary Medicine, consent of instructor. Introduction to the principles of pharmacodynamics, drug disposition and pharmacokinetics. Mechanisms of action, pharmacological effects, dosage considerations, and possible adverse effects of chemotherapeutic and anti-infectious agents. Appropriate selection of pharmacological agents used in the therapy of animal diseases and compliance with statutory and regulatory guidelines correlating the didactic student-centered learning.

5413*
Clinical Pathology. Prerequisite: Second-year standing in the College of Veterinary Medicine, consent of instructor. Data interpretation and laboratory methods used in evaluation of pathologic conditions in animals. Hematology, urinalysis, and clinical chemistry.

5425*
Veterinary Pathology II. Lab 2. Prerequisite: Consent of instructor. Continuation of 5315. Lectures and laboratories covering the pathology of those systems not covered in preceding course.

5434*
Veterinary Pharmacology II. Lab. 8 hours per semester. Prerequisite: 5335 or consent of instructor. A continuation of 5335 that includes pharmacodynamics, pharmacokinetics and toxicities of drugs acting on the nervous, cardiovascular, respiratory, renal, gastro-intestinal, endocrine, and reproductive systems. With each system, the relationship between the basic pharmacology of the drugs and the pathophysiology of the most important diseases treated.

5550*
Pathological Techniques and Special Problems 1-4 credits, maximum 20. Prerequisite: Consent of instructor. A study of pathological techniques and methods used in diagnosis, technical work, and research in pathology.

6000*
Doctoral Thesis and Research. 1-15 credits, maximum 40 for VPATH. Prerequisite: Consent of instructor. Research in physiological sciences and veterinary pathology. Graduate credit in meeting requirements for the Ph.D. degree.

6132*

6200*
Toxics in Advanced Pharmacology and Toxicology 1-5 credits, maximum 15. Prerequisite: Consent of instructor. Selected topics in advanced pharmacology and toxicology such as cardiovascular, gastrointestinal or neurological pharmacology; chemotherapy; heavy metal, chemical or plant toxicity or bio-toxicology. Repeatable: Re-enrollment permits study of additional topics.

6222*
Fertilization and Early Development. Lab 3. Prerequisite: Consent of instructor. A study of fertilization, development, and the activation of embryonic development, described at the cellular and molecular level. Emphasis on current literature.

6233*
Laboratory in Electron Microscopy. Lab 12. Prerequisite: Consent of instructor. Students learn to prepare specimens for, and to operate, the electron microscope for printing and preparation of electron micrographs for publication.

6440*
Applied Veterinary Agronomics. 1-3 credits, maximum 6. Applications of soil-plant-animal interactions to the practice of veterinary medicine.

6524*
Pathology of Infectious Diseases. Prerequisite: 5425. Pathology of domestic and exotic infectious diseases of food and companion animals and methods employed in diagnosis.

6550*
Problems in Functional Morphology. 1-3 credits, maximum 12. Lab 3-9. Prerequisite: Consent of instructor. Investigations in comparative, gross, developmental or histologic morphology for graduate students.

6560*
Advanced Pathology Techniques and Special Problems. 1-6 credits, maximum 20. Prerequisite: Consent of instructor. Graduate standing in biological sciences and consent of instructor. Investigations of contemporary techniques and methods used in diagnosis, technical work and research in pathology.

6564*
Veterinary Toxicology. Lab 2. Prerequisite: Three-year standing in the College of Veterinary Medicine or consent of instructor. Veterinary toxicological problems and therapeutics. Identification of selected poisonous plants and discussions of their toxicity.

6701*
Seminars. 1-6 credits, maximum 6. Consideration of literature and research problems pertaining to physiological sciences.

6712*
Poultry and Laboratory Animal Diseases. Prerequisite: Consent of instructor. Biochemical characteristics, husbandry, diagnosis, prevention, and treatment of diseases of domestic poultry and selected species of animals used in teaching and biomedical research.

6723*
Diagnostic Problems in Veterinary Medicine. Prerequisite: Fourth-year standing in the College of Veterinary Medicine. Elective topics in physiological sciences related to veterinary medicine. Course can fulfill one of elective options of fourth-year veterinary medical students.

6733*
Diagnostic Problems in Veterinary Medicine. Prerequisite: Consent of instructor. Selected topics in veterinary medicine and medical history and other investigative methods to study diagnosis, prognosis, prevention and treatment of diseases. Graded on a pass-fail basis.

6811*
Differential Diagnosis. Prerequisite: Fourth-year standing in the College of Veterinary Medicine. Exercises in the differential diagnosis of diseases of domestic animals.

6910*
Seminars. 1-2 credits, maximum 6. Prerequisite: Medical degree or graduate standing in biological sciences. For students with medical degrees: Interpretation of histologic materials. For students with graduate standing in biological sciences: review of literature and discussion of research problems.

6920*
Diagnostic Pathology. 1-4 credits, maximum 20. Prerequisite: Consent of instructor. Case studies in differential diagnosis of diseases of domestic animals.

6930*
Laboratory Animal Pathology. Prerequisite: Consent of instructor. Studies in the pathology of the most important diseases treated. Pathogenesis of domestic and exotic infectious diseases of food and companion animals and methods employed in diagnosis.

6940* Advanced Systemic Pathology. 2-4 credits, maximum 12. Prerequisite: Consent of instructor. Study of basic and clinical pathology. Emphasis on the more common causes of death in animals.

6963* Advanced Clinical Pathology. Lab 3. Prerequisite: Consent of instructor. Applied clinical biochemistry, organ function tests and related cytologic examination.
Veterinary Infectious Diseases and Physiology (VIDP)

3123 Animal Disease Control and Prevention. Prerequisite: junior standing in the College of Agriculture. Principles of sanitation and of prevention and control of common diseases of livestock and other animals.

5000* Thesis. 1-6 credits, maximum 6. Prerequisite: senior standing with registration for graduate credit or graduate standing. Research problem for graduate credit to meet requirements of the M.S. degree under the supervision of a graduate faculty member and with permission of the department head.

5110* Special Problems. 1-6 credits, maximum 6. Prerequisite: graduate standing or consent of department head. Special research problems in veterinary microbiology and parasitology.

5113* Veterinary Immunology. Lab 3. Prerequisite: first-year standing in the College of Veterinary Medicine or consent of instructor. Basic principles of immunology and their application to veterinary medicine.

5120* Current Topics in Veterinary and Biochemistry. 1 credit, maximum 4. Prerequisite: a minimum of one undergraduate introductory course in microbiology. Development of oral presentation skills, critical thinking and deductive reasoning through the use of discussion of current literature from the field of veterinary and biomedical science as it pertains to the study of infectious disease in humans and animals.

5213* Diseases and Parasites of Wild Animals. Lab 1. Prerequisite: consent of instructor. A systematic approach to bacterial, viral and parasitic diseases of wild animals. Principles of disease transmission as it relates to individuals and populations of wild animals. Principles applicable to all areas of zoology, veterinary medicine and wildlife management.

5224* Veterinary Bacteriology and Mycology. Lab 2. Prerequisite: first-year standing in the College of Veterinary Medicine or consent of instructor. The basic principles of bacteriology and mycology that are applicable to the understanding of the pathogenesis, diagnosis, treatment, and control of bacterial and fungal infections of veterinary importance.

5242* Veterinary Biometry and Principles of Public Health. Prerequisite: first-year standing in the College of Veterinary Medicine. Statistics applied to biological observations applicable to veterinary medicine and principles of public health and epidemiology.

5245* Veterinary Metabolism and Nutrition. Prerequisite: first-year standing in the College of Veterinary Medicine. Functional metabolism in domestic animals; metabolic disorders using certain diseases as models. Principles of veterinary nutrition and their application in the prevention and treatment of diseases of animals.

5313* Veterinary Virology. Lab 3. Prerequisite: second-year standing in the College of Veterinary Medicine or consent of instructor. Viruses responsible for disease in domesticated animals.

5322* Food Safety. Prerequisite: second-year standing in the College of Veterinary Medicine. Public health principles and standards applying to the maintenance of a wholesome food supply. Regulations and procedures for inspection of animals slaughtered for food and of food products of animal origin. Human nutrition, environmental and consumer aspects of food quality.

5333* Veterinary Parasitology. Lab 3. Prerequisite: second-year standing in the College of Veterinary Medicine or graduate standing with major in certain biological sciences. Protozoan and external parasites of domestic animals.

5353* Veterinary Endocrinology and Reproduction. Two 2-hour labs and one 4-hour lab. Prerequisite: second-year standing in the College of Veterinary Medicine. Functions of the endocrine and reproductive systems of domestic animals.

5404* Techniques in Parasitology. Lab 1. Prerequisite: graduate standing and general parasitology. Helminthology or concurrent enrollment. Experimental application of basic research and teaching techniques in helminthology and protozoology. Individual participation and analysis of experimental situations and techniques applicable to all areas of zoology.

5413* Basic Reproductive Physiology. Prerequisite: second-year standing in the College of Veterinary Medicine or graduate standing with major in certain biological sciences. Internal helminth parasites of domestic animals.

5523* Advanced Helminthology. Lab 3. Prerequisite: senior or graduate standing in zoology or entomology or graduate standing or consent of department head. Structure, taxonomy, life cycles and host-parasite relationships of the helminth parasites affecting invertebrate and vertebrate animals.

5533* Veterinary Virology. Prerequisites: 5313, MCB 4124 or equivalent. Discussion of theoretical and practical problems relating to the molecular biology of virus replication including virus structure and replication strategies, virus-host cell interactions, and anti-viral mechanisms.

5613* Biology of Parasites. Prerequisites: graduate standing, general parasitology, or consent of instructor. A systematic and ecologic approach to the study of parasitology. Host-parasite relationship, physiology, ecology and behavioral aspects of parasitic organisms.

5723* Parasitic Protozoa. Lab 3. Prerequisite: graduate standing in zoology or entomology or consent of instructor. Structure, life cycle, physiology, host-parasite relationships, and diagnosis concerned with protozoan parasites.

5833* Veterinary Diagnostic Microbiology. Lab 2. Prerequisite: graduate veterinarian status or consent of instructor. Laboratory methods employed in the isolation of microorganisms and application of these methods in the diagnosis of specific animal diseases.

6000* Research Thesis. 1-11 credits, maximum 45. Prerequisite: candidacy for the Ph.D. degree. Research problems for graduate student to meet thesis requirement of the Ph.D. degree.

6110* Seminar. 1-6 credits. Maximum 6. Prerequisite: graduate standing. Subjects for study and discussion for graduate students.

6120* Advanced Physiology of Selected Systems. 2-10 credits, maximum 10. Prerequisite: 5125 or ZOOL 4215. Advanced studies in gastrointestinal, cardiovascular, respiratory, excretory and neuroendocrine physiology. Each part of this sequential course may be taken for two hours credit. Student should present the topics for this course a second time.

6203* Advanced Concepts in Veterinary Immunology. Prerequisite: 5113 or BIOL 5653 or MCB 5254. Induction of immune responses, host defense mechanisms, immunoregulation, antigen presentation and immune recognition by B and T lymphocytes, using contemporary research publications.

6273* Comparative Neurophysiology. Lab 2. Prerequisite: 5263. Physiology of mammalian nervous systems.

6410* Endocrine Control of Fuel Metabolism. 1-5 credits, maximum 5. Lab 0-2. Prerequisite: consent of instructor. Emphasis on cellular and molecular aspects of hormone action in target tissues as basis for understanding endocrine regulation of organ and whole body metabolism. Special reference to endocrine pancreas regulation of ketone, carbohydrate (glucose) and lipid (FFA) metabolism in pregnancy, lactation, fasting, obesity and diabetes. Content applicable to health and disease in humans and domestic animals. Course offered in spring semester of alternate years.

6613* Public Health and Preventive Medicine. Prerequisite: third-year standing in the College of Veterinary Medicine or consent of instructor. The relationship of zoonotic diseases to community and environmental health. Epidemiological principles in the practice of veterinary preventive medicine.

6701 Veterinary Physiological Science Topics. Lab 1. Prerequisite: fourth-year standing in College of Veterinary Medicine. Elective topics in physiological sciences related to veterinary medicine. Course fulfills one of elective options of fourth-year veterinary medical students.

6753* Advanced Veterinary Epidemiology. Prerequisite: STAT 2013 or equivalent. The application of epidemiologic techniques to disease investigations in veterinary medicine. A group discussion format. Also a project involving the application of epidemiologic principle to population disease problems.

6763* Special Topics in Veterinary Immunology. Prerequisite: one course in immunology or consent of instructor. Selected areas of current interest in veterinary immunology. The subject matter varies from year to year.
Veterinary Medicine (VMED)

5111 Veterinary Medical Orientation I. Prerequisite: first-year standing in the College of Veterinary Medicine. Veterinary medical terminology, history and ethics of the profession; veterinary surveys of the biological kingdom, selected techniques and clinical presentations, and special topics. Graded on a pass-fail basis.

5115 Cell and Tissue Form and Function I. Prerequisite: first-year standing in the College of Veterinary Medicine or consent of instructor. Cell and tissue organization and structure at the microscopic level and physiology of organ systems. (8-week module).

5126 Cell and Tissue Form and Function II. Prerequisite: 5115 or consent of instructor. Continuation of VMED 5115. (8-week module).

5144 Gross and Developmental Anatomy. Pre-requisite: first-year standing in the College of Veterinary Medicine or consent of instructor. Embryology and anatomy of domestic mammals using the dog as the primary model. Integrated lecture-laboratory format. The integration of developmental gross, radiographic and applied aspects of veterinary anatomy as they relate to a topographical appreciation of the living individual. An overview of domestic bird and laboratory animal anatomy.

5152 Zootechnology. Prerequisite: first-year admission to College of Veterinary Medicine fall semester. Animal breeds and identification, animal production and marketing systems and animal handling and restraint as it applies to production and marketing.

5162 Jurisprudence and Ethics. Prerequisite: first-year standing in College of Veterinary Medicine. Introduction to veterinary jurisprudence, ethics, licensing, government regulations, human-animal bond, and evolving issues in animal law and animal welfare.

5221 Veterinary Medical Orientation II. Prerequisite: 5111. Major trends in veterinary medicine; veterinary perspectives concerning animal production and marketing systems; selected techniques and clinical presentations; and special topics.

6610 Basic Science Elective. 1-8 credits, maximum 8. Prerequisite: third-year standing in the College of Veterinary Medicine. Problems in the basic sciences. Graded on a pass-fail basis.

6611 Veterinary Medical Specialty Conference. Prerequisite: third-year standing in the College of Veterinary Medicine. Specialty conferences for third-year veterinary medical students presented by visiting professionals. A limited number of field trips will be conducted in which special presentations will be made.

6620 Clinical Science Elective. 1-8 credits, maximum 8. Prerequisite: third-year standing in the College of Veterinary Medicine. Problems in the clinical sciences. Graded on a pass-fail basis.

6721 Veterinary Medical Conference I. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Presentation and discussion of selected clinical cases by fourth-year students and interdepartmental faculty groups. Graded on a pass-fail basis.

6821 Veterinary Medical Conference II. Prerequisite: 6711. Presentation and discussion of selected clinical cases by fourth-year students and interdepartmental faculty groups. Graded on a pass-fail basis.

Veterinary Medicine and Surgery (VMS)

5412 Jurisprudence and Medical Economics. Prerequisite: second-year standing in the College of Veterinary Medicine. Veterinary jurisprudence, medical economics, ethics, public relations, records, banking, insurance, U.S.D.A. and F.D.A. regulations. Visiting lecturers in specialty areas assist in this course.

5422 Veterinary Surgery I. Prerequisites: PHSI 5333; completion or enrollment in PHSI 5434; VPATH 5413; second-year standing in the College of Veterinary Medicine. The pathophysiology of surgery including an introduction to techniques in veterinary surgery and anesthesiology.

5441 Clinical and Surgical Techniques I. Prerequisite: second-year standing in the College of Veterinary Medicine. Veterinary anatomy, history and ethics of the profession; the surgical examination and restraint of animals; introduction to clinical techniques of medicine and surgery relating to clinical handling of animals. Graded on a pass-fail basis.

6003 Elective I. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Continuation of clinical rotations.

6013 Elective II. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Continuation of clinical rotations.

6023 Elective III. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Continuation of clinical rotations.

6033 Elective IV. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Continuation of clinical rotations.

6043 Elective V. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Continuation of clinical rotations.

6053 Elective VI. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Continuation of clinical rotations.

6501 Avian Medicine and Surgery. Prerequisite: third year standing in the College of Veterinary Medicine. Clinical aspects of diseases of pet, zoo, exotic, and wild birds.

6516 Systemic Medicine and Diseases of Domestic Animals I. Prerequisite: third-year standing in the College of Veterinary Medicine. Diagnosis, prognosis, treatment and prevention of diseases of food and fiber animals.

6523 Veterinary Surgery II. Prerequisites: 5422 and third-year standing in the College of Veterinary Medicine. Lectures and discussions in operative techniques and practices in veterinary surgery.

6531 Veterinary Surgery III. Prerequisites: 5431 and third-year standing in the College of Veterinary Medicine. Diagnosis, prognosis, treatment and prevention of diseases of companion animals.

6642 Veterinary Surgery IV. Prerequisites: 5432 and third-year standing in the College of Veterinary Medicine. Diagnosis, prognosis, treatment and prevention of diseases of companion animals.

6700 Preceptorship Clinic. 1-8 credits, maximum 8. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Diagnosis, prognosis, prevention and treatment of diseases of animals presented in the preceptorship program. Graded on a pass-fail basis.

6703 Intensive Care Clinic. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Receiving and managing of emergency and critical care cases in companion animals. Graded on a pass-fail basis.

6710 Non-OSU Clinic. 1-8 credits, maximum 8. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Approved clinical rotations off the OSU campus. Graded on a pass-fail basis.

6713 Radiology Clinic. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Diagnostic radiography, ultrasound, and other special imaging modalities.

6720 Special Clinic I. 1-8 credits, maximum 8. Prerequisite: fourth-year standing in the College of Veterinary Medicine or graduate veterinarian. Special assignments for introductory clinical studies in the following: selected species clinic; herd-health program; necropsy, clinic pathology and parasitology; diagnostic laboratory; and special aspects of the basic sciences.

6723 Equine Medicine Clinic I. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Diagnosis, prognosis, treatment and prevention of equine medical diseases.
Veterinary Medicine and Surgery

6730 Special Clinic II. 1-8 credits, maximum 8. Prerequisite: fourth-year standing in the College of Veterinary Medicine or graduate veterinary student. Special assignments for continuing clinical studies in the following: selected species clinic; herd-health program; necropsy; clinical pathology and parasitology; diagnostic laboratory, and special aspects of the basic sciences.

6733* General Medicine and Surgery Clinic I. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Receiving and managing emergency and general medical and surgical cases in companion animals.

6743* Small Animal Medicine Clinic I. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Diagnosis, prognosis, treatment and prevention of companion animal medical diseases.

6753* Small Animal Surgery Clinic I. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Diagnosis, prognosis, treatment and prevention of companion animal surgical diseases.

6763* Food Animal Medicine Clinic I. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Health studies of animals in herds, bands and flocks entered in health programs of the Boren Veterinary Medical Teaching Hospital.

6773 Production Medicine Clinic I. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Diagnosis, prognosis, treatment and prevention of diseases of food animal medical and surgical diseases.

6783 Field Services Clinic I. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Diagnosis, prognosis and treatment of animal disease cases presented to the Field Services unit.

6793 Equine Surgery Clinic I. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Diagnosis, prognosis, treatment and prevention of equine surgical diseases.

6803 Clinic Pool I. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Elective clinical assignment.

6811 Special Lectures and Discussions. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Special lectures and discussions of selected topics in veterinary medicine and surgery.

6813* Anesthesiology Clinic. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Management of clinical anesthesiology in various domestic species.

6823 Equine Medicine Clinic II. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Diagnosis, prognosis, treatment and prevention of equine medical diseases. Continuation of 6723.

6823* General Medicine and Surgery Clinic II. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Receiving and managing emergency and general medical and surgical cases in companion animals. Continuation of 6733.

6843 Small Animal Medicine Clinic II. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Diagnosis, prognosis, treatment and prevention of companion animal medical diseases. Continuation of 6743.

6853 Small Animal Surgery Clinic II. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Diagnosis, prognosis, treatment and prevention of companion animal surgical diseases. Continuation of 6753.

6863 Food Animal Medicine Clinic II. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Health studies of animals in herds, bands and flocks entered in health programs of the Boren Veterinary Medical Teaching Hospital. Continuation of 6773.

6873 Production Medicine Clinic II. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Diagnosis, prognosis, treatment and prevention of animal disease cases presented to the Field Services unit. Continuation of 6783.

6893* Equine Surgery Clinic II. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Diagnosis, prognosis, treatment and prevention of equine surgical diseases. Continuation of 6793.

6900* Clinical Problems and Investigation. 1-6 credits, maximum 6. Prerequisite: third-year standing in the College of Veterinary Medicine. Diseases of animals.

6910* Advanced Clinics. 1-6 credits, maximum 6. Prerequisite: third-year standing in the College of Veterinary Medicine. Diseases of animals.

6920* Seminar. 1-3 credits, maximum 3. Prerequisite: graduate standing in the College of Veterinary Medicine or biological sciences. Literature and research pertaining to veterinary medicine and surgery.

6930* Comparative Anesthesiology. 1-3 credits, maximum 3. Prerequisite: graduate standing in the College of Veterinary Medicine or consent of the head of the department. Anesthesiology of animals.

6950* Special Surgical Problems and Techniques. 1-5 credits, maximum 5. Lab 3-5. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Advanced training in surgical problems and techniques especially as they are related to research.

6981 Clinic Pool II. Prerequisite: fourth-year standing in the College of Veterinary Medicine. Elective clinical assignment. Graded on a pass-fail basis.

Zoology (ZOOL)


3013* Biological Microtechnique. Lab 3. Prerequisite: BIOL 1403 or 1604. Techniques for preparation of biological materials for microscopic examination. Same course as BOT 3013.

3104* Invertebrate Zoology. Lab 4. Prerequisite: BIOL 1604. Morphology, physiology, reproduction and ecology of major invertebrate groups.

3115* Vertebrate Morphology. Lab 6. Prerequisite: BIOL 1604. Comparative gross anatomy of representative vertebrates with consideration given to embryology, histology and evolution.

3123* (N) Human Heredity. The impact of genetics on human endeavor.

3133* Evolution. Prerequisite: 3123 or BIOL 3024. Development of the evolutionary concept: speciation, evolutionary mechanisms and phylogenetic concepts.

3143 (N) Oceanography. Ocean basins, circulation, tides, waves, chemistry of sea water, life in the ocean, ocean communities.

3204* (N) Physiology. Lab 2. Prerequisites: CHEM 1215 or equivalent and BIOL 1214 or equivalent. Anatomy and function of the human body. Human and domestic animal physiology considered in laboratory. No credit for students with prior credit in 4215.

3500 Colloquium on Environmental Crises. 1 credit. Maximum 4. Current environmental issues presented by films and speakers. Questions written on selected presentations.

3513* Principles of Conservation Biology. Prerequisites: 60 credit hours including BIOL 3034. Application of ecological principles to the maintenance and restoration of biological diversity at genetic, population, and community levels.

3700 Readings and Special Studies in Zoology. 1-3 credits, maximum 6. Prerequisites: BIOL 1604 and consent of instructor. Discussion of selected readings.

4103* (N) General Parasitology. Lab 2. Prerequisites: BIOL 3104 or BIOL 1604 and consent of instructor. Fundamentals of parasitism with emphasis on life cycles, disease conditions, epidemiology, diagnosis, treatment, historical significance, terminology, taxonomy and parasitological techniques.

4113 Conservation Genetics. Prerequisites: BIOL 3024 or equivalent. MATH 1513. Principles of population genetics as they pertain to issues in conservation biology. Evolutionary relationships, hybridization, natural selection, factors affecting small population growth, captive populations, and META populations. No credit for students with credit in 5113.

4114* Biology of Fishes, Amphibians and Reptiles. Lab 5. Prerequisite: BIOL 1604. Systematics, evolution, and natural history of fishes, amphibians and reptiles; laboratory emphasis on Oklahoma species. Offered spring semester of even-numbered years. Weekend field trips required.

4124* Biology of Birds and Mammals. Lab 3. Prerequisites: BIOL 1604. Classification, identification, evolution, zoogeography, life histories, and techniques of study for wild birds and mammals. Weekend field trips required.
4134 Embryology. Lab 4. Prerequisite: 3115, BIOL 3014, or consent of instructor. Biochemical basis of development with emphasis on gene regulation. Comparative development of sea urchin, frog, chicken and pig. Experiments using frog and mouse, including the molecular level.

4215 Mammalian Physiology. Prerequisites: CHEM 3015 and BIOL 1604. Descriptive and quantitative functional analysis of the mammalian nervous, endocrine, respiratory, excretory, digestive, cardiovascular, musculoskeletal and reproductive organ systems. For majors in basic biological (including premedical, pre-dental and pre-veterinary) sciences.

4222 Mammalian Physiology Laboratory. Lab 6. Prerequisite: 4215. Laboratory experiments that illustrate function of organs, organ systems or mechanisms of whole body physiological control. For students majoring in basic biological sciences.

4231 Seminar in Physiology. Research and the integration of experimental biology with applied biology. Active participation by the student.

4243 Introductory Pharmacology. Prerequisite: 3204 or 4215 or consent of instructor. Major drug classes based on their predominant use or principal activity in the body; basis for drug action; and modification of drugs and their action by physiological processes.

4253 General Vertebrate Histology. Lab 3. Prerequisite: 3115 or consent of instructor. Cellular structure of tissues and organs.

4264 Cell Physiology. Lab 3. Prerequisite: BIOCH 3653 or BIOL 3014. Cellular activities and fundamental physiological processes. Same course as CLMOL 4264.

4273 Comparative Physiology. Prerequisite: 3204 or 4215 or equivalent. Comparative, environmental and ecological physiology of nonhuman animals, with emphasis on vertebrates. Thermoregulation, osmoregulation, comparative aspects of respiratory, circulatory, digestive, muscle, and sensory physiology, and adaptations to extreme environments. Same course as 5273.

4414 Fisheries Management. Lab 4. Prerequisite: BIOCH 3653. Techniques and principles involved in management of fishes. Field trip fee required.

4434 Limnology. Lab 3. Prerequisite: BIOL 3034. Physical, chemical and biological factors in lakes and streams.

4513 Wildlife Management. Prerequisite: 3513. Biological basis for the management of wildlife populations and habitats, with emphasis on current management problems.

4523 Wildlife Management Techniques. Prerequisite: 4513. ENGL 3323 strongly recommended. The semistructured format includes problem identification, project planning and design, land use surveys and mapping, wildlife populations and habitat analysis, data interpretation, development of project area research and management recommendations, and report preparation and presentation.

4532 Zoo Biology and Management. Lab 3/day. Prerequisite: 4 hours of zoology or biology. Conservation and propagation of endangered species, animal acquisition and transport, restraint, sanitation and animal health, exhibit planning and design, public relations, administration and research. Lectures by professional zoo staff members. Extension course taught at the Oklahoma City and Tulsa zoos.

4700 Undergraduate Research Problems. 1-4 credits maximum 4. Prerequisite: consent of instructor. Participation in faculty research or execution of a problem formulated by the student.

4750 Honors Study in Zoology. 1-5 credits, maximum 5. Prerequisites: 90 credit hours, GPA of 3.30 in 16 or more hours in zoological courses, consent of department head and proposed supervising instructor. Individual study in the development of zoological concepts. Extensive reading, literature search and special experiment. An individual problems course for the gifted student.

5000 Research for Master’s Thesis. 1-6 credits, maximum 6. Prerequisite: approval of major advisor. Independent research for the M.S. thesis under the supervision of graduate faculty member.

5010 Graduate Seminar. 1-3 credits, maximum 10. Prerequisite: consent of instructor. Discussion of selected topics.

5020 Special Problems. 1-4 credits, maximum 10. Prerequisites: graduate standing and consent of instructor. A report of results obtained is to be placed in department files.

5030 Teaching Zoology. 1-4 credits, maximum 4. Prerequisites: senior or graduate standing and consent of department head. Supervised teaching in the department laboratories. Attendance at seminar on problems involved in teaching zoology in college.

5113 Conservation Genetics. Prerequisites: BIOL 3024 or equivalent, MATH 1513. Theory and principles of population genetics as they pertain to issues in conservation biology. Evolutionary relationships, hybridization, natural selection, factors affecting small populations, gene flow, captive populations, META populations, and data analysis. No credit for students with credit in 4113.

5123 Behavioral Ecology. Prerequisite: BIOL 3034 or equivalent. Analysis and description of the behavior of animals in their natural environment, especially in terms of natural selection and adaptation. A synthesis of ethology, population genetics, sociobiology, and evolutionary theory. Largely descriptive and generalized with limited emphasis on mathematical theory.

5133 Evolutionary Ecology. Lab 2. Prerequisite: BIOL 3034. Ecological concepts dealing with contemporary evolutionary processes, not phylogeny. Life history traits, R and K selection, sociality, kin and group selection, speciation, coevolution, competition, plant-animal coevolution, niche theory, species diversity and biogeography. General models and mechanisms, with examples drawn from all kingdoms.

5143 Ecological Computer Modeling. Lab 3. Prerequisite: BIOL 3034; BIOL 5133 strongly recommended. Use of BASIC to write programs that model simple concepts in ecology and behavioral biology. Use of interactive program packages that model more complex ecological and behavioral phenomena at the computer console. No prior experience with computers or programming necessary.

5153 Ecosystem Analysis. Prerequisites: BIOL 3654, CHEM 3015 or equivalents. Theory and principles of ecosystem ecology focusing on metabolism and biogeochemical cycles in terrestrial and aquatic systems. Application of principles to current issues of environmental change and management. Same course as BOT 5153.

5273 Comparative Physiology. Prerequisites: 3204 or 4215 or equivalent. Comparative, environmental and ecological physiology of nonhuman animals, with emphasis on vertebrates. Thermoregulation, osmoregulation, comparative aspects of respiratory, circulatory, digestive, muscle, and sensory physiology, and adaptations to extreme environments. Same course as 4273.

5314 Wildlife Toxicology. Lab 6. Prerequisites: BIOCH 3653, BIOL 3024, 3034. Examination of methods used for evaluation of toxic responses of wildlife to pollutants; demographic surveys, biomarkers, toxicity tests. Emphasis on terrestrial ecosystems.

5323 Principles of Toxicology. Prerequisites: BIOCH 3653, BIOL 3014 or consent of instructor. Basic toxicological principles, mechanism of toxicity, and toxicological testing procedures. Toxic effects of environmental exposure to xenobiotics.

5413 Principles of Ecotoxicology. Prerequisites: BIOCH 3653 and consent of instructor. Integration of major processes involved with transport, exposure and response of biological systems to xenobiotics.

5424 Analysis of Environmental Contaminants. Lab 1. Prerequisites: organic chemistry and graduate standing. Analytical methods for measuring environmental contamination or pollution: toxicity bioassay, gas chromatography, atomic absorption, infrared and ultraviolet spectrometry.

5433 Fisheries Science. Prerequisite: 4414 or equivalent or consent of instructor. Principles of fisheries science as they relate to fish and aquatic biota, their habitats, and the humans who utilize them.

5463 Stream Ecology. Lab 1. Prerequisite: BIOL 3034 or equivalent. Ecology of streams and rivers with emphasis on physical and chemical processes, adaptations of aquatic biota to riverine environments, and human impacts on riverine ecosystems.

5553 Wildlife Nutritional Ecology. Prerequisite: 4523. Basic nutritional principles for application in solving wildlife and fisheries management problems. Importance of nutrition in regulating wild animal populations through examination of the effects of malnutrition on recruitment, growth, disease, and survival. Techniques and skills for assessing both the nutritional suitability of the habitat and condition of the population.
Woodland Wildlife Ecology. Lab 3. Prerequisite: 4513 or BIOL 3034. Vertebrate species diversity in the world's woodland and forested biomes. Changes imposed by land clearing and development and their effects upon wildlife diversity and populations. Options for wildlife conservation, from strict nature reserves to integrating wildlife habitat management into land use practices. Field trip required.

Grassland and Desert Wildlife Ecology. Prerequisite: BIOL 3034. Ecology of grasslands and deserts with emphasis on vertebrate species diversity, adaptations to semi-arid and arid ecosystems, and management problems associated with such habitats.

Diseases and Parasites of Wild Animals. Lab 2. Prerequisite: consent of instructor. A systematic approach to bacterial, viral and parasitic diseases of wild animals. Principles of disease transmission as it relates to individuals and populations of wild animals. Principles are applicable to all areas of zoology, veterinary medicine and wildlife management. Same course as VPARA 5213.

Research for Ph.D. Dissertation. 1-15 credits, maximum 30. Prerequisite: 30 credit hours of acceptable graduate work. Independent research for the Ph.D. dissertation under the supervision of a graduate faculty member.

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